Top 20 Medtech Companies Leveraging AI in 2025

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Executive Summary

Artificial Intelligence (AI) has become a driving force in the medical technology (medtech) sector, transforming how healthcare is delivered – from imaging and diagnostics to robotic surgery, patient monitoring, personalized medicine, and even drug development. In 2025, leading medtech companies worldwide are integrating AI algorithms and platforms into their products and services to improve accuracy, efficiency, and patient outcomes. This report profiles 20 top medtech companies (a mix of industry giants and high-impact startups) that are at the forefront of AI adoption. Each profile highlights the company's overview and location, core AI technologies, key medical applications or devices using AI, notable AI-driven innovations or FDA clearances, and the company's market position or influence. Together, these companies illustrate the broad global impact of AI in healthcare – from smarter medical imaging devices and diagnostic tools, to intelligent surgical robots and monitoring systems, to AI-designed drugs and personalized treatment strategies.

Medtronic (Dublin, Ireland – global)

Overview: Medtronic is one of the world's largest medical device companies, with operational headquarters in the U.S. (Minnesota). It offers products across cardiac care, surgical technologies, diabetes, neurological and more. Medtronic has embraced AI to enhance a range of its medical devices and therapies.

AI Technologies & Platforms: Medtronic develops and deploys machine learning algorithms for signal processing and computer vision in its devices. The company often runs AI in the cloud linked to its devices (e.g. via the CareLink network) and partners with AI startups to augment its offerings.

AI-Powered Applications: Medtronic's AI integration spans multiple specialties. For example, it introduced the **GI Genius™** system – the first FDA-cleared AI endoscopy module – which uses computer vision to detect colorectal polyps in real time during colonoscopies ('Our next frontier is prediction': Medtronic on AI and heart disease - MedTech Dive). In cardiac care, Medtronic's insertable cardiac monitors (LINQ™ II) use the **AccuRhythm AI** algorithms to analyze heart rhythm data in the cloud and filter out false arrhythmia alerts, greatly improving specificity in detecting atrial fibrillation and asystole ('Our next frontier is prediction': Medtronic on AI and

heart disease - MedTech Dive) (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive). In diabetes management, Medtronic uses AI-driven sensor algorithms to eliminate the need for fingerstick calibrations in continuous glucose monitors (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive). The company’s spinal surgery systems leverage AI to optimize screw placement in surgical planning (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive). Medtronic is also in surgical robotics (e.g. the Hugo RAS system), incorporating AI for enhanced vision and guided instrument control.

Notable Innovations: In 2021, Medtronic’s GI Genius (developed with Cosmo/IBM) received FDA De Novo clearance as the first machine learning-based device for colonoscopy polyp detection (GI Genius Intelligent Endoscopy Module, US - Medical Device Network). The LINQ II cardiac monitor’s AI algorithms (AccuRhythm) were cleared by FDA in 2021 and updated in 2023, significantly reducing false positives in heart rhythm monitoring (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive). Medtronic has actively formed partnerships to extend its AI capabilities – for instance, partnering with Brainomix in 2025 to distribute AI software for stroke diagnostics alongside its neurovascular devices (Medtronic partners with Brainomix on AI stroke tool - MedTech Dive), and teaming with precision medicine company Tempus to use AI in identifying patients eligible for advanced interventions like transcatheter aortic valve replacement (TAVR) (Medtronic partners with Brainomix on AI stroke tool - MedTech Dive). Such collaborations underscore Medtronic’s commitment to data-driven patient selection and earlier disease detection.

Market Impact: As a medtech leader, Medtronic’s adoption of AI boosts confidence across the industry. Its extensive data (from decades of implants and therapies) gives it an edge in training robust algorithms. Medtronic’s AI-enhanced products (from intelligent pacemakers to smart insulin pumps and surgical tools) have broad reach in hospitals globally. By investing in AI, Medtronic aims to shift its devices from reactive to **predictive** healthcare – exemplified by efforts to predict cardiac events before they occur (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive) (‘Our next frontier is prediction’: Medtronic on AI and heart disease - MedTech Dive). Medtronic’s scale and regulatory experience also help set standards for AI-enabled devices in the U.S. and worldwide.

Johnson & Johnson MedTech (New Brunswick, NJ, USA)

Overview: Johnson & Johnson (J&J) is a healthcare conglomerate with a major MedTech division (Johnson & Johnson MedTech) focused on medical devices and diagnostics. J&J MedTech encompasses surgical device companies (like Ethicon) and orthopedics (DePuy Synthes), among others. J&J is leveraging AI both in its medtech products and in its pharmaceutical R&D, making use of its global footprint.

AI Technologies & Platforms: J&J employs AI and machine learning for surgical robotics, digital surgery analytics, and imaging. It has developed an ecosystem called **Ottava™** (its next-gen robotic surgery platform) and the **Caresurgical/VELYS** digital surgery systems which use data and AI for procedure planning. J&J also collaborates with technology partners to bolster its AI – a notable example is its partnership with NVIDIA to scale AI in surgery. J&J and NVIDIA signed a memorandum of understanding in 2024 to integrate NVIDIA's edge AI computing platform into J&J's digital surgery ecosystem, enabling **real-time analysis of surgical data** and rapid deployment of AI models for decision support (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). This allows J&J's surgical platforms to run advanced algorithms (for imaging, guidance, etc.) with ultra-low latency in the operating room.

AI-Powered Applications: In surgery, J&J uses AI to improve surgeon training and intraoperative guidance. The company's **Cognitive AI** systems can automatically analyze surgical video footage – essentially creating a "highlight reel" of key moments for surgeons to review within minutes (6 ways Johnson & Johnson is using AI to help advance healthcare). This helps surgeons learn and improve, much like athletes reviewing game tape. J&J's **Polyphonic™ Digital Ecosystem** connects operating rooms, allowing surgeons to share live OR video and data with remote peers; AI in this system helps identify significant events in the surgery video feed for discussion (6 ways Johnson & Johnson is using AI to help advance healthcare) (6 ways Johnson & Johnson is using AI to help advance healthcare). In orthopedics, J&J's VELYS™ platform for knee replacements uses AI-driven modeling of patient anatomy to personalize implant positioning. J&J is also developing the **Ottava** robotic surgical system (a multi-arm, versatile soft-tissue surgical robot) which is expected to incorporate AI for image-guided instrument navigation and automation of routine tasks. Beyond devices, J&J applies AI in pre-surgical planning (e.g. patient-specific 3D modeling) and in diagnostics (e.g. analyzing images or pathology slides via its Verily partnership).

Notable Innovations: J&J's embrace of digital surgery was cemented by acquisitions like Auris Health (for robotic bronchoscopy) and Digital Surgery (UK-based developer of surgical AI analytics). In 2024, J&J announced completion of the first-in-human surgeries with the Ottava robot, indicating progress in robotic systems that will likely leverage AI for advanced visualization and autonomy (Johnson & Johnson MedTech Announces Completion of First Cases ...). J&J's collaboration with NVIDIA (announced March 2024) is a landmark, as it brings state-of-the-art AI hardware (NVIDIA IGX and Holoscan) into J&J's surgical platforms to enable **connected, smart operating rooms** (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech) (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). J&J also launched the **Centre for Device AI** to ensure their AI algorithms meet ethical and regulatory standards. On the diagnostics side, J&J's enterprise AI teams use machine learning to accelerate drug discovery and to map patient genomes (the company co-leads the GenomeAsia 100K project using AI for genomics).

Market Position: With its global scale, J&J is a bellwether for AI in medtech. It has publicized that AI is already helping it **detect diseases earlier, accelerate drug discovery, assist clinical**

trial recruitment, map patient anatomy in 3D, and even predict the best surgical tool to use (6 ways Johnson & Johnson is using AI to help advance healthcare). J&J's multi-faceted use of AI – spanning devices and pharma – positions it as a leader in integrated healthcare solutions. For IT and pharma professionals, J&J represents a company investing heavily in AI to personalize and improve care, and its partnerships (with Big Tech like NVIDIA and many startups) indicate a collaborative approach to innovation.

GE HealthCare (Chicago, IL, USA)

Overview: GE HealthCare, spun off as an independent company in early 2023 from General Electric, is a global leader in medical imaging, diagnostics, and healthcare IT. Headquartered in Chicago, GE HealthCare produces MRI, CT, ultrasound, X-ray, monitoring equipment, and related software. The company has been at the forefront of embedding AI into medical imaging devices and hospital workflow solutions, under its **Edison** digital platform.

AI Technologies & Platforms: GE HealthCare's core AI strategy revolves around its **Edison** platform – a cloud and edge computing ecosystem for developing and deploying AI algorithms in healthcare. They leverage deep learning for image reconstruction (to speed up scans and improve image quality) and machine learning for decision support tools. GE has also integrated third-party AI applications into its systems (for example, partnering with app developers via the Edison Marketplace). The company uses AI not only for images but also for operational efficiency (e.g. Command Center software uses AI for hospital operations). Many GE devices now include AI co-processors to run algorithms in real-time (such as the AI capabilities in ultrasound and MRI machines).

AI-Powered Applications: GE HealthCare boasts the **industry's largest portfolio of AI-enabled imaging devices**. Its AI is present in: **Imaging** – e.g., GE's MR scanners use AI-based reconstruction (AIR Recon DL) to reduce scan time and improve clarity; GE's CT and X-ray systems have AI to automatically detect anatomies or abnormalities. The **Edison TruePACS** radiology system can host AI algorithms that flag critical findings to radiologists. In Ultrasound, GE acquired Caption Health in 2023 and integrated **Caption AI Guidance** into its Venue ultrasound systems – this provides real-time guidance to clinicians to capture optimal cardiac ultrasound images, effectively turning novices into more skilled sonographers (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News). GE's **Vscan Air** handheld ultrasound and other ultrasound devices also feature AI-driven tools for automated measurements and image analysis (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News) (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News). In patient monitoring, GE partnered with Biofourmis to use AI for predicting patient deterioration in hospital and at home, extending monitoring beyond the ICU (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News). Moreover, GE's **Command**

Center software in hospitals uses AI "tiles" that aggregate data and predict bottlenecks (like ICU bed availability or ED wait times), enabling staff to proactively manage care (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News).

Notable Achievements: As of 2024, GE HealthCare leads in regulatory-cleared AI devices – **58 of GE's devices have FDA clearances for AI/ML features**, the most of any medtech company (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News). Notably, GE's AI-based chest X-ray algorithm for pneumothorax detection (Critical Care Suite) was among the first FDA-cleared AI triage tools in radiology. GE's **Venue Ultrasound with AI** (Caption Guidance) became the first ultrasound system with FDA-cleared AI guidance for cardiac scanning in 2021 (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News). The company's **AI-powered OCTANe*** platform for anesthesia monitors and its fetal monitoring AI are also cutting-edge. At RSNA 2024, GE unveiled a suite of new AI-enabled imaging innovations, demonstrating how AI is now integral to imaging workflows (e.g., automatic patient positioning, organ segmentation, etc.). GE is also pioneering the use of **generative AI** for analyzing multi-modal health data (they've discussed using big language models for imaging reports). The acquisition of Caption Health and partnerships with companies like Caravan (for population health AI) underscore GE's aggressive push in AI.

Market Influence: GE HealthCare's adoption of AI is highly influential for hospitals – many of which use GE scanners and software. By embedding AI "under the hood" of familiar equipment, GE has accelerated AI acceptance. Clinicians benefit from AI that operates seamlessly (for instance, an AI that automatically measures the heart's ejection fraction on an ultrasound, or flags a collapsed lung on an X-ray). GE's claim of topping the FDA's list of AI devices (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News) highlights its leadership. For IT professionals, GE's Edison platform provides an integration point for various AI tools into clinical workflow, showing the importance of interoperability. Overall, GE HealthCare's broad AI portfolio and emphasis on precision care position it as a key enabler of AI-driven healthcare around the world.

Siemens Healthineers (Erlangen, Germany)

Overview: Siemens Healthineers is a global medtech powerhouse specializing in medical imaging (MRI, CT, PET, X-ray, ultrasound), laboratory diagnostics, and oncology (following its acquisition of Varian). Headquartered in Germany with a large U.S. presence, Siemens Healthineers has long invested in digital technologies. It considers AI a "key technology" to advance precision medicine and improve workflows (Artificial intelligence in healthcare - Siemens Healthineers USA). Siemens packages many of its AI solutions under the **AI-Rad Companion** and **AI-Pathway Companion** branding for imaging and clinical decision support.

AI Technologies & Platforms: Siemens Healthineers employs deep learning for image analysis and reconstruction, natural language processing for report interpretation, and machine learning for diagnostic decision support. They have built an AI ecosystem that spans edge devices and cloud – for example, AI algorithms can run on modalities (like MRI scanners with inline AI reconstruction) or in the syngo.via and teamplay digital health platforms. Siemens also uses AI in combination with **digital twin** simulations for therapy planning. Their teamplay platform allows hospitals to deploy and manage AI applications across imaging networks.

AI-Powered Applications: In medical imaging, Siemens' **AI-Rad Companion** is a family of AI assistants for radiologists – these tools automatically highlight and quantify findings on scans (for instance, detecting lung nodules on CT, measuring organ volumes on MRI, or identifying coronary plaque on CT angiography). This reduces the manual workload and provides consistent preliminary assessments. Siemens' MRIs use AI for acceleration (Deep Resolve) and artifact reduction, improving image quality even with faster scans. Similarly, Siemens CT scanners (like Naeotom Alpha) integrate AI to assist in image reconstruction and noise reduction. In ultrasound, Siemens has AI to auto-measure cardiac parameters. In oncology, Siemens (with Varian) is incorporating AI in radiotherapy – e.g., algorithms that automatically contour tumors on CT images for treatment planning. The **AI-Pathway Companion** is another offering: it analyzes patient data (imaging, lab results, genomics) to suggest personalized diagnostic or treatment pathways, for conditions like prostate cancer or cardiovascular disease. Additionally, Siemens Healthineers provides AI solutions for workflow optimization in hospitals – such as AI that predicts exam durations and optimizes scheduling.

Notable Innovations: Siemens Healthineers has garnered regulatory approvals for numerous AI tools. One notable achievement was its **AI-Rad Companion Chest CT** – one of the first AI solutions cleared by FDA to automatically identify and label anatomical structures and abnormalities on scans (e.g., detect emphysema, coronary calcifications, vertebral fractures from a single chest CT). In 2023, Siemens launched an AI-powered MRI named **MAGNETOM Free.Max** with an advanced deep learning reconstruction allowing high-quality imaging at lower magnet strength, expanding access. In 2025, Siemens inked a **$560M deal with the Canadian government** to upgrade imaging equipment across Alberta province, which notably includes establishing AI and machine learning centers of excellence (Siemens Healthineers inks $560M imaging and AI deal with Canadian government). As part of this "value partnership," Siemens is investing over $124M of its own funds in AI and training centers, underscoring the importance of AI in modern health systems (Siemens Healthineers inks $560M imaging and AI deal with Canadian government). Siemens also received accolades for **AI in COVID-19** (e.g., AI algorithms that quantified lung involvement on CT). On the lab side, Siemens is exploring AI in diagnostics analyzers to flag abnormal results or suggest reflex tests.

Market Position: Siemens Healthineers is seen as a close competitor to GE in the AI-enabled imaging domain. Its large install base of scanners and its strong R&D in AI make its solutions widely adopted. In many hospitals, Siemens' AI features are becoming standard – for example, radiologists increasingly rely on the automated measurements from AI-Rad Companion. Siemens

promotes the vision of an **"AI-enhanced clinical decision-making"**, and even its executives (like North America's Digital head, Peter Shen) are vocal advocates for AI as the future of healthcare. With a broad international market, Siemens also tailors AI solutions to local needs and has deployed many AI tools in Europe and Asia (often with CE marking) even ahead of U.S. clearance. For U.S. IT and pharma professionals, Siemens Healthineers is a critical partner when developing AI that needs to integrate with imaging and diagnostics infrastructure at scale.

Philips (Amsterdam, Netherlands)

Overview: Royal Philips is a Dutch multinational focused on health technology, including advanced imaging systems (MRI, CT, ultrasound), patient monitoring, and consumer health devices. Philips has a strong footprint in areas like radiology, critical care, and digital pathology. In recent years Philips has pivoted squarely into healthcare and is leveraging AI across its portfolio to improve clinical insights and operational efficiency.

AI Technologies & Platforms: Philips uses AI for image processing, pattern recognition in diagnostic data, and predictive analytics for patient monitoring. The company's AI developments often fall under its **HealthSuite** digital platform and specific product lines. Philips invests in both classical machine learning and deep learning. They also have partnerships to augment their AI capabilities (e.g., with AI pathology and imaging firms). Philips emphasizes "adaptive intelligence," integrating AI with clinician workflows.

AI-Powered Applications: In medical imaging, Philips has introduced AI enhancements like **SmartSpeed** for MRI – an AI-driven reconstruction that significantly accelerates scan time while improving image quality (Next-gen SmartSpeed Precise MR technology - Philips). Philips' CT scanners incorporate AI for automated patient positioning and for detecting lesions (their CT Lung Nodule Assessment tool uses AI to quantify nodules over time). In ultrasound, Philips systems (EPIQ and Affiniti) use AI for tasks like automatically calculating organ measurements or guiding the user to optimal views. **Imaging Workflow:** Philips offers **Illumeo**, an AI-driven radiology workflow software that adapts to the radiologist's usage patterns and brings relevant prior exams or highlights to the forefront. In digital pathology, Philips is a market leader with its IntelliSite Pathology Solution (PIPS) for scanning slides. Philips has **partnered with Ibex Medical Analytics** to integrate AI into digital pathology workflows – their expanded partnership announced in 2025 enables AI algorithms to automatically detect cancer in prostate, breast, and gastric tissue slides within Philips' pathology platform (Philips and Ibex expand partnership to enhance AI-enabled) (Philips and Ibex expand partnership to enhance AI-enabled). This helps pathologists diagnose faster and more accurately, addressing the pathologist workforce shortage with AI support. Philips also uses AI in patient monitoring – for instance, in the ICU, Philips' IntelliVue monitors with **Guardian AI** can analyze vital sign trends and alert clinicians of deterioration risk hours in advance. In cardiology, Philips' interventional imaging systems (like Azurion for image-guided therapy) use AI to automatically recognize anatomy and aid device navigation (e.g., an AI that outlines coronary arteries during catheterization).

Notable Innovations: Philips achieved a milestone in 2021 by launching an **AI-powered software for cardiac ultrasound (AutoStrain)** that automates strain imaging, making advanced heart function analysis accessible to more clinicians. In 2022, Philips' **AI-based CT scanner (Spectral CT 7500)** was introduced, which includes smart spectral reconstruction algorithms. A flagship achievement is in pathology: Philips and Ibex's AI integration has demonstrated up to **37% productivity gains in pathology reporting** (Philips and Ibex expand partnership to enhance AI-enabled), and this collaboration aims to deliver **augmented companion diagnostic tests** using AI for pharmaceutical trials. Philips also expanded its enterprise imaging to the cloud with AI – in 2025 it announced cloud-based imaging platforms to give hospitals easier access to the latest AI algorithms for image analysis (Philips expands cloud-based enterprise imaging services to). Another notable area is **genomics and AI**: Philips participated in the effort to use AI on large genomic databases (as seen in its partnership in the European Pan-Cancer project). Philips has garnered FDA clearances for multiple AI features, such as its **EKG algorithm for detecting atrial fibrillation** in wearable devices and an AI-ECG integration in patient monitors.

Market Influence: Philips, with its broad hospital presence (radiology to ICU), plays a critical role in mainstreaming AI. It often highlights how AI can simplify complex diagnostics – calling it "a silent revolution" where AI behind the scenes makes diagnostics more accessible (10 healthcare technology trends for 2025 – Feature - Philips). Philips' global perspective (strong in Europe, North America, Asia) means its AI solutions are tested and tuned in diverse healthcare settings. For U.S. pharma/IT professionals, Philips' involvement in AI-driven pathology and imaging is particularly relevant for drug development and clinical trials – their **AI-enabled pathology partnership with Roche and others** is paving the way for digital AI companion diagnostics. Philips is thus a key medtech player demonstrating how AI can seamlessly integrate into clinical practice to improve accuracy and efficiency without disrupting workflow.

Intuitive Surgical (Sunnyvale, CA, USA)

Overview: Intuitive Surgical is the pioneer and leader in robotic surgery. Its flagship **da Vinci Surgical System** has been used in millions of minimally invasive surgeries worldwide. Intuitive also developed the Ion robot for lung biopsy. As robotic surgery evolves, Intuitive is increasingly leveraging AI to enhance surgical capabilities, user training, and system analytics. The company is focused on improving surgical precision and outcomes using data from its large install base of robots.

Core AI Technologies: Intuitive uses machine learning and advanced analytics on data collected from surgical systems (such as instrument motion data and video feeds) to derive insights. The newest da Vinci systems are designed with the computing power to support AI and machine learning applications (the latest generation da Vinci 5 has *10,000x* the computing power of earlier models to enable real-time data processing and future AI features) (Meet the da Vinci 5 robotic surgical system - Intuitive). Intuitive applies computer vision AI to surgical video for tasks

like identifying anatomy or alerting the surgeon to critical structures. They also use AI in instrument tracking and for providing **augmented reality** overlays to surgeons.

AI in Surgical Applications: Intuitive's systems now incorporate features that assist the surgeon by processing visual and other data. For example, in newer da Vinci systems, an AI-driven endoscopic imaging feature can enhance tissue visualization (e.g., highlighting blood flow or tissue boundaries using fluorescence imaging combined with AI interpretation). Intuitive's **training simulators** and **SkillAssist** modules use AI to gauge surgeon proficiency: by analyzing motion metrics, the system can give feedback or even adjust difficulty in simulations. During procedures, the robot can employ **adaptive algorithms** – for instance, maintaining steady camera views or preventing unintended instrument collision, which is a form of intelligent automation. Intuitive is also researching **automatic suturing** or cutting: while not yet autonomous, AI is being tested to have the robot carry out subtasks under supervision (like closing incisions with minimal input). Furthermore, the company's cloud-connected analytics program, **Intuitive Insights**, uses AI to benchmark surgical performance across institutions and suggest improvements.

Notable Innovations: In 2024, Intuitive launched the **da Vinci 5** – its most advanced robotic system to date – which Intuitive has indicated is built to be AI-ready, with the ability to power new machine learning features via software updates (Intuitive CEO drills down on da Vinci 5 rollout, force feedback debate). Intuitive has acquired companies like Orpheus Medical (surgical video management) to bolster its informatics platform – this indicates a strategy to collect and analyze surgical videos, where AI can be applied for things like identifying best practices or flagging portions of a procedure for review (Intuitive Surgical acquires Orpheus Medical to expand informatics ...). Intuitive has also been involved in research collaborations (some with IBM's AI researchers in the past) to explore AI for identifying surgical phases automatically and to detect surgeon fatigue or tremor in real-time. While regulatory-cleared "AI features" on Intuitive's systems are not heavily advertised yet, the groundwork has been laid: for instance, Intuitive's systems have FDA-cleared augmented reality overlays for certain procedures, which rely on AI image processing of CT scans to guide the surgeon. Intuitive's use of AI for **predictive maintenance** is notable too – they use AI to predict when a robot might need service or when instruments are nearing end-of-life, to prevent downtime in operating rooms.

Market Impact: Intuitive's da Vinci is by far the market leader in robotic surgery, so its integration of AI can rapidly set industry standards. As hospitals adopt new AI-driven capabilities (like automated analytics of their surgeons' performance), it could improve overall surgical outcomes and consistency. Intuitive's massive database of past surgeries (an estimated 10+ million procedure recordings) is a treasure trove for developing surgical AI algorithms, giving it a competitive moat. The company's clear focus on data suggests that in coming years, Intuitive systems could transition from merely surgeon-driven tools to **smart surgical partners** that can warn, guide, or even execute tasks – effectively augmenting the surgeon's skills. For the broader medtech landscape, Intuitive's work signals that **AI and robotics together are the future** of

surgery, with the potential for more automation in simple tasks and better training for complex ones.

Stryker (Kalamazoo, MI, USA)

Overview: Stryker is a leading medical device company known for its orthopedic implants, surgical equipment, neurotechnology, and spine products. Stryker also has a strong presence in robotic surgery for orthopedics (the Mako robot for joint replacement). The company has been increasingly investing in digital and AI solutions to complement its hardware. Stryker's focus with AI is on surgical guidance, smart implants/instruments, and enhancing clinical workflows in hospitals.

AI Technologies & Platforms: Stryker utilizes AI in a few key domains: in surgical robotics (to improve planning and execution of procedures), in data analytics for its medical software, and in "smart hospital" solutions. Notably, Stryker has moved into **ambient intelligence** for healthcare – evidenced by its 2024 acquisition of **Care.ai**, a company specializing in AI-powered virtual care and smart hospital rooms (Stryker Completes Acquisition of care.ai). This brings Stryker an AI platform that can, for example, use computer vision in hospital rooms to monitor patient falls or ensure staff compliance with protocols. In surgical devices, Stryker's Mako robot uses AI-driven 3D modeling of patient anatomy from CT scans to plan the optimal bone cuts for joint replacements, and employs haptic (force feedback) technology to keep the surgeon within the planned boundaries – essentially an AI constraint system enhancing precision.

AI-Powered Applications: Robotic Surgery: Stryker's Mako SmartRobotics™ system for knee and hip replacement is a prime example of AI use; it builds a 3D model of the patient's joint (via AI segmentation of CT images) and assists the surgeon in executing the plan with sub-millimeter accuracy, reducing variability. Stryker is reportedly expanding its robotic portfolio (with new robots expected in spine and other areas) which will likely incorporate AI for navigation and automation (The top 10 surgical robotics stories of the year so far - MassDevice). **Imaging & Guidance:** In spine surgery, Stryker offers the SpineMap software and spinal navigation systems that use AI algorithms to map spinal anatomy and guide screw placement. **Hospital Solutions:** Through Care.ai, Stryker now offers an ambient AI platform that can continuously observe and analyze activity in healthcare facilities. For instance, AI cameras can detect if a patient is at risk of falling out of bed or if a room hasn't been sanitized post-discharge, alerting staff in real-time. This "smart room" technology aims to improve patient safety and staff efficiency (Stryker Completes Acquisition of care.ai). **Data Analytics:** Stryker's Neurotechnology division uses AI to analyze brain scans for hemorrhagic stroke interventions, integrating with its stroke care products. Additionally, Stryker has been developing AI-based predictive maintenance for its equipment – using data from devices in the field to predict failures and schedule service proactively.

Notable Innovations: In 2023-2024, Stryker took significant steps in digital innovation. The **Care.ai acquisition** (completed in Sept 2024) is notable as it strengthens Stryker's position in hospital AI and IoT, enabling "real-time, smart and connected decision-making tools" for caregivers (Stryker Completes Acquisition of care.ai). Stryker also opened a new **AI Digital Innovation Lab** to explore machine learning solutions across its product lines. In its core ortho business, the Mako robot has seen software upgrades that leverage AI for improved bony anatomy recognition and even suggestions for optimal implant sizing/position based on a database of prior cases. Stryker has indicated that its future robotics will have increasing autonomy; for example, a future knee surgery robot might automatically balance the ligaments through AI feedback, rather than the surgeon manually making adjustments. In 2025, Stryker also partnered with leading surgical training centers (like IRCAD) to include AI and VR in surgeon education, acknowledging the role of AI in accelerating surgical learning (Stryker joins Atrium Health affiliate IRCAD North America to advance ...).

Market Standing: Stryker is recognized not just as an implant maker but as a tech-forward company, especially after Mako's success. The integration of AI has allowed Stryker to offer hospitals a more holistic solution (implants + robot + AI analytics + now ambient intelligence for patient care). This ecosystem approach can be attractive for healthcare systems looking to modernize their surgical suites and wards. For IT professionals, Stryker's moves highlight the convergence of medtech hardware with AI software – from operating room to hospital ward. Stryker's competitors in ortho (like Zimmer Biomet) are also using AI, but Stryker's broad acquisition of Care.ai gives it a unique angle in general healthcare AI. In summary, Stryker's embrace of AI in both **surgical precision** and **hospital operations** positions it as an innovator that is elevating medtech solutions to the next level of connectivity and intelligence.

Boston Scientific (Marlborough, MA, USA)

Overview: Boston Scientific is a major manufacturer of interventional medical devices, with products spanning cardiology (stents, catheters), electrophysiology (pacemakers, defibrillators), endoscopy, neuromodulation (pain management implants), and urology. While not traditionally viewed as a software company, Boston Scientific has been investing in AI to support its devices and improve procedural outcomes. The company's AI efforts are focused on improving diagnosis and therapy guidance, especially in cardiovascular interventions and rhythm management.

AI Technologies: Boston Scientific applies AI in analytics of signals (for example, ECG or intracardiac electrograms), in medical imaging for intervention guidance, and in digital health apps connected to its devices. They utilize machine learning for predictive algorithms in implanted devices and are beginning to use data science to personalize therapy. The company's digital infrastructure supports connecting physicians and patients, and AI is used to derive insights from these connections ([PDF] Advancing Science for Life - Boston Scientific).

AI-Powered Applications: Cardiac Rhythm & Heart Failure: Boston Scientific's implantable cardioverter defibrillators (ICDs) and heart failure devices incorporate algorithms like **HeartLogic™** – a diagnostic that uses multiple sensor inputs (heart sounds, respiration, impedance, etc.) to predict heart failure events weeks in advance. While HeartLogic is algorithm-based (not a neural net per se), it's an early example of device "AI" providing actionable alerts. Boston Scientific is likely enhancing such algorithms with machine learning on large datasets of patient device data to reduce false alerts and improve predictive value. In 2022, the company also introduced an AI-based mapping system in electrophysiology: the **Rhythm AI** module in its Rhythmia HDx mapping system can automatically interpret electroanatomical maps to identify arrhythmia circuits, helping electrophysiologists target ablation therapy more effectively. **Interventional Cardiology:** Boston Scientific's coronary imaging (IVUS/OCT) and physiology tools are seeing AI integration. For example, its **Coronary Advanced Analysis** software uses AI to analyze optical coherence tomography images (or intravascular ultrasound) to characterize plaque (similar to Abbott's Ultreon). This assists cardiologists in stent planning by automatically measuring vessel diameters and plaque burden. **Endoscopy:** In gastrointestinal endoscopy, Boston Scientific has been evaluating AI for polyp detection to complement its range of endoscopic tools. They've partnered with software firms to incorporate AI into their endoscopy imaging systems, aiming for real-time lesion detection similar to Medtronic's GI Genius. **Neuromodulation:** For pain therapy devices, Boston Scientific provides the **WaveWriter** spinal cord stimulators which come with digital platforms. They are beginning to use AI to recommend stimulation settings based on patient feedback data – a form of adaptive therapy optimization.

Notable AI Initiatives: Boston Scientific's management has explicitly highlighted digital and AI as key to reaching the "next level" of innovation (Boston Scientific targets M&A, AI to reach 'next level' - MassDevice). In 2023, the company set up an AI Center of Excellence to coordinate machine learning projects across divisions. A notable project is using AI to improve **pre-procedural planning**: for example, in Left Atrial Appendage Closure (LAAC) with their Watchman device, they are training AI on cardiac CT images to help size the device and predict optimal positioning, which could reduce procedure times and complications. Boston Scientific has also been active in M&A and partnerships: it acquired Preventice in 2021 (wearable cardiac monitors), which came with AI algorithms for arrhythmia detection in long-term ECG patches. It also invested in startups like **Caption Health** (before GE acquired it) and others, signaling interest in AI. As of late 2024, analysts pointed out Boston Scientific as one of the "AI-powered healthcare bigwigs" to watch for growth (Watch These 5 AI-Powered Healthcare Bigwigs for Portfolio Gains), alongside companies like Medtronic and Abbott, indicating it has caught Wall Street's eye for its digital strategy.

Influence: With its strong position in interventional cardiology and other therapeutic areas, Boston Scientific's integration of AI can directly impact procedural outcomes for many patients. Its AI-enhanced systems can make complex procedures (like ablations or structural heart interventions) safer and more efficient by guiding physicians with data-driven insights. For healthcare providers, Boston Sci's push into AI means more **smart cath labs** and smarter implants that not only treat but also monitor and predict. The company's focus on responsibly

building a digital infrastructure ([PDF] Advancing Science for Life - Boston Scientific) suggests that it's ensuring these AI tools are well-integrated with physician workflows. For pharma professionals, Boston Scientific's AI in diagnostics and monitoring could provide richer real-world data (e.g., continuous monitoring from implants with AI interpretation) that might be useful in clinical studies or post-market surveillance. In summary, Boston Scientific is evolving from a pure device-maker to a device-and-data company, with AI as a catalyst for improved patient management in the fields it serves.

Abbott Laboratories (Abbott Park, IL, USA)

Overview: Abbott is a diversified healthcare company with a strong medtech presence, including medical devices (especially in cardiovascular and neuromodulation), diagnostics (laboratory and point-of-care tests), and nutrition products. In medtech, Abbott is known for innovations like the FreeStyle Libre glucose monitors, Xience coronary stents, and high-end diagnostics analyzers. Abbott has been incorporating AI into its devices and diagnostics platforms to enhance decision making and patient care.

AI Technologies & Platforms: Abbott leverages AI in both **device software** and **diagnostics data analytics**. They apply machine learning for pattern recognition in sensor data (such as glucose trends), deep learning in imaging and signal processing (for example, in analyzing optical images from blood vessels), and algorithmic decision support in laboratory instruments. Abbott's approach often involves embedding AI algorithms directly into devices or companion software, so clinicians get real-time insights. They also use cloud-based analytics for certain products – e.g., LibreView platform for glucose monitoring uses AI to identify patterns in a diabetic patient's glucose levels and recommend therapy adjustments.

AI-Powered Applications: One of Abbott's standout AI-driven products is its **Ultreon™ OCT platform** for coronary imaging. Ultreon (launched in 2021) uses artificial intelligence to automatically detect and quantify plaque deposits (like calcium) in real-time during an intravascular OCT imaging of coronary arteries (FDA Clears Abbott's AI-Powered Coronary Imaging Platform). By identifying calcified plaques and measuring vessel diameters via AI, Ultreon helps interventional cardiologists precisely place stents and decide if plaque modification (like atherectomy) is needed (FDA Clears Abbott's AI-Powered Coronary Imaging Platform). This was FDA-cleared as the first AI-powered coronary imaging software (FDA Clears Abbott's AI-Powered Coronary Imaging Platform) and represents a significant advancement in how procedures are guided. In cardiac rhythm management, Abbott's high-end pacemakers and defibrillators use algorithms that could be considered AI-like – for instance, Abbott's CardioMEMS HF system (an implanted pulmonary artery pressure sensor) has accompanying algorithms that predict heart failure admissions; Abbott is enhancing these by analyzing big data from heart failure patients to better stratify risk. **Diabetes Care:** The FreeStyle Libre 3 continuous glucose monitor provides real-time glucose readings – Abbott is working on AI to provide **predictive alerts** for impending hypo- or hyperglycemia, aiming to warn patients before

their glucose becomes dangerous. Already, the Libre systems use AI for features like recognizing loss of signal or compression lows and filtering them out. Abbott's next-gen wearable sensors are expected to incorporate more AI for personalized insights (the Libre Sense, for example, was trialed for athletes with AI analyzing glucose for optimal performance). **Diagnostics:** Abbott's laboratory analyzers (Alinity series) process vast numbers of tests; Abbott has begun integrating AI to monitor quality control, flag unusual results, and even help lab managers optimize test workflows. In imaging diagnostics, Abbott's IQ ultrasound platform and vascular imaging have AutoMeasurement features driven by AI. In neuromodulation, Abbott's NeuroSphere software for deep brain stimulators allows remote programming – future AI might optimize neurostimulation based on patient feedback.

Notable Innovations: Abbott has scored a few "firsts" with AI. Ultreon's FDA clearance (2021) as mentioned set a precedent in interventional cardiology by blending AI with intra-procedural imaging (FDA Clears Abbott's AI-Powered Coronary Imaging Platform). In 2023, Abbott received FDA approval for an AI-enhanced version of its sensor-based glucose monitoring that can pair with insulin delivery – essentially building a closed-loop system with AI algorithms adjusting insulin doses. Another area of note is Abbott's use of AI in **nutrition**: Abbott has developed AI-driven apps that analyze dietary intake and health data to personalize nutrition advice for users of its supplements (leveraging its Nutrition division data). On the operational side, Abbott has implemented AI in manufacturing and supply chain (like predictive maintenance of production machinery), which while not clinically facing, improves reliability of product supply (this was evident in how Abbott ramped up COVID test production using AI for demand forecasting). Abbott's contributions to AI in healthcare were recognized by analysts who included it among top companies poised for gains from AI in 2025 (Watch These 5 AI-Powered Healthcare Bigwigs for Portfolio Gains).

Market Influence: Abbott's diverse portfolio means its AI impact is broad – touching chronic disease management (diabetes), acute care (cardiology), lab medicine, and more. The introduction of AI-driven imaging like Ultreon has influenced cardiologists to rely on imaging more during stenting, knowing AI can make interpretation easier. In diabetes tech, Abbott's push with Libre forces competitors to integrate similar AI features in their continuous glucose monitors and insulin pumps to keep up. Abbott's global reach (especially strong in emerging markets) means it often designs AI features that can work offline on device, which can be a model for "edge AI" in medtech. For U.S. healthcare systems, Abbott's AI-enabled diagnostics can improve accuracy (fewer missed abnormalities in scans or tests), leading to better patient outcomes. Abbott also often collaborates in research – e.g., partnering with research institutes to develop AI for early disease detection (they worked on AI for retinal imaging to detect eye disease in diabetes). Overall, Abbott exemplifies how a traditional medtech and diagnostics firm can successfully integrate AI to enhance product performance and create new value-added services around their devices, cementing customer loyalty and improving care.

Tempus (Chicago, IL, USA)

Overview: Tempus is a healthcare technology company (founded in 2015) specializing in **data-driven precision medicine**. It has built one of the world's largest libraries of clinical and molecular data, coupled with an AI-enabled platform to derive insights for patient care (Tempus AI aims to raise $400M in IPO). Tempus operates at the intersection of genomics, clinical data, and artificial intelligence, offering services primarily in oncology (and expanding into other areas like cardiology and neuroscience). For pharma and IT professionals, Tempus is known for its collaborations with academic medical centers and pharmaceutical companies to advance AI-driven drug discovery and clinical trial matching. Tempus went public in 2024, underscoring its rapid growth.

Core AI Platform: Tempus's platform – often referred to as its **Tempus Operating System** – integrates multi-modal health data (genomic sequences, pathology images, radiology scans, electronic health records, lab results) and uses AI to make this data actionable (Tempus AI aims to raise $400M in IPO). They utilize machine learning and artificial neural networks for tasks like variant interpretation in genomics, predicting therapy responses, and identifying patient subgroups for trials. Tempus has also developed proprietary AI algorithms for specific tests (e.g., an algorithmic test for tumor mutation burden, and another for DNA damage repair deficiency) and these are offered as part of its molecular testing repertoire. The company employs natural language processing (NLP) to parse unstructured clinical notes at scale and uses AI to match patients to relevant clinical trials based on complex criteria.

AI-Powered Services and Applications: Genomic Sequencing & Interpretation: Tempus sequences DNA/RNA for thousands of cancer patients; their AI models help identify actionable mutations and biomarkers in these sequences by comparing against their vast database. This includes predicting which mutations might make a patient eligible for a targeted therapy or clinical trial. **Digital Pathology:** Tempus digitizes patient tissue slides and uses computer vision AI (some developed in collaboration with Google) to analyze tumor histology. For example, AI can sometimes predict certain genetic mutations just from the slide image or assess tumor infiltrating lymphocytes – adding an orthogonal layer of data. **Clinical Decision Support:** Oncologists using Tempus receive reports that include **AI-driven insights**, such as therapy rankings for a patient's specific tumor profile (based on outcomes of similar patients in Tempus's database) and potential clinical trial matches. In 2023, Tempus introduced an **AI companion diagnostic for identifying patients with BRCA mutations** based on combined pathology and genomic data, helping find who might benefit from PARP inhibitors even if standard tests were inconclusive. **Drug Discovery & Pharma Collaboration:** Tempus's AI is also used in drug discovery: it has a library of organoids (patient-derived mini tumors) and uses AI to predict which compounds might work on which organoids, speeding up preclinical testing. The company inked deals with pharma giants (e.g., a multi-year deal with Pfizer in 2022) to utilize its AI and data for target discovery and for identifying new indications for existing drugs. **Tempus One & Companion Apps:** Tempus even developed a voice-and-AI powered smart device called **Tempus ONE**, provided to doctors to easily query the Tempus database or order tests via voice commands, demonstrating AI in user interface. Additionally, Tempus's mobile apps for patients

use AI to, for instance, remind patients of medication or report symptoms which are then analyzed for care adjustments.

Notable Achievements: Tempus's rise has been marked by high-profile accomplishments. It built what it claims is the **world's largest library of clinical and molecular data**, now counting over 50 petabytes, and an AI platform to make sense of it (Tempus AI aims to raise $400M in IPO). The scale of Tempus's data allowed it to create **Intelligent Diagnostics** – the company cites using AI, including *generative AI*, to make lab tests more personalized (Tempus AI aims to raise $400M in IPO). One such intelligent test is their **xT-Onco assay** combined with an AI model that predicts immunotherapy response by analyzing tumor genetics and gene expression. In terms of regulatory clearances, in 2022 Tempus received FDA authorization for its AI-driven **TumorSpotter** test (which analyzes RNA sequencing with AI to find gene fusions in cancer). Tempus also made headlines by partnering with **Illumina in 2025** to develop AI-enhanced genomic testing beyond oncology (Illumina, Tempus AI partner to drive genomic testing beyond cancer), indicating its expansion into broader genetic disease diagnostics. Financially, Tempus reached significant milestones: by end of 2024 it projected over $1.2B in revenue (boosted by acquiring Ambry Genetics), showing that AI-driven precision medicine can be big business (Tempus Reports Fourth Quarter and Full Year 2024 Results). Importantly, Tempus's AI helped during the COVID-19 pandemic as well – they repurposed their platform to analyze COVID patient data and published insights on risk factors using machine learning.

Market Influence: Tempus has become a key player in making precision medicine mainstream. For oncologists, having AI-curated insights on patients ("patients like mine" analysis across thousands of cases) is extremely valuable. This influences treatment decisions and trial enrollment, effectively accelerating evidence-based care. The company's collaborations also integrate its platform with electronic health records, making it accessible in clinical workflows. For pharma, Tempus provides an AI-rich environment to identify biomarkers and stratify patients, which can shorten clinical trial timelines. The fact that Tempus built a central repository and *operating system* for precision medicine (Tempus AI aims to raise $400M in IPO) shows a new model in healthcare: a tech company acting as a hub of data and AI, connected to both care providers and drug developers. For IT professionals, Tempus exemplifies how cloud, big data, and AI can converge securely in a HIPAA-compliant way to drive insights at scale. In short, Tempus is actively leveraging AI to **turn data into discovery and treatment** in a way few others have, making it a top medtech innovator in 2025.

Viz.ai (San Francisco, CA, USA)

Overview: Viz.ai is a fast-growing digital health startup (founded in 2016) that specializes in AI-powered medical image analysis and care coordination, primarily in emergency neurology and cardiology. Viz.ai's mission is to **"fast-track" lifesaving diagnoses** by using AI to detect time-sensitive conditions on medical scans and immediately alert specialists. The company's software platform, which integrates with hospital workflows, has made it one of the first widely deployed

AI solutions in acute care. By 2025, Viz.ai's platform is used in over 1,500 hospitals, including most of the largest health systems in the U.S. (Why Viz.ai is one of the most innovative companies of 2024). Viz.ai is also notable for achieving both FDA clearances and reimbursement (via new CPT codes) for its AI software – a trailblazer in digital health.

Core AI Technology: Viz.ai's strength lies in its deep learning algorithms for image recognition, especially on CT scans. It uses convolutional neural networks to analyze images like non-contrast CTs or CT angiograms and identify abnormalities such as large vessel occlusion strokes, intracerebral hemorrhages, pulmonary embolisms, aortic dissections, etc. Another aspect is its **communication platform** which automatically disseminates the AI findings (with images) to the care team via a mobile and web app, essentially an AI-augmented telehealth network for urgent care. Viz's platform continuously expands its AI "modules" – each tailored to a specific condition. In addition, Viz.ai employs machine learning on clinical data (like EHR info) to find hidden patient cohorts (for example, an algorithm to screen for hypertrophic cardiomyopathy from echo or ECG data).

AI-Powered Applications: Stroke Detection and Workflow: Viz.ai's first product, Viz LVO, was an FDA-cleared AI that analyzes CT angiograms to detect large vessel occlusions (strokes caused by major artery blockages in the brain). When the AI finds a suspected stroke, it notifies the neurologist/neurointerventionalist via the Viz app with the patient's imaging, often **saving ~30-40 minutes** in time to treatment by activating stroke teams faster (Why Viz.ai is one of the most innovative companies of 2024). This has proven clinical impact – a study showed Viz.ai reduced door-to-treatment time by about 39 minutes on average (Why Viz.ai is one of the most innovative companies of 2024). Since then, Viz.ai has expanded: **Viz ICH** can detect intracerebral hemorrhages on head CT, **Viz PE** identifies pulmonary embolisms on CT scans, **Viz Aortic** flags aortic dissections, and **Viz CTP** analyzes perfusion scans for brain tissue status. In 2023, the FDA cleared Viz AAA for detecting abdominal aortic aneurysms and Viz HCM for hypertrophic cardiomyopathy from imaging/EHR, the latter being a De Novo clearance that created a new category of AI diagnostic (Why Viz.ai is one of the most innovative companies of 2024). **Care Coordination:** The platform doesn't stop at detection; it includes HIPAA-compliant messaging, so once AI flags a case, neurologists, radiologists, and surgeons can quickly chat, view images, and decide on transfer or treatment – all within one app, cutting down phone calls and delays. **Cardiology and Other Uses:** Viz.ai has a module for **Right Ventricular Strain** analysis on CT (to assess severity of pulmonary embolism by looking at heart chamber sizes). It also launched **Viz RECCE** for research – allowing hospitals to use its AI to screen patient databases for trial eligibility (e.g., find patients with a certain heart condition). By 2025, Viz.ai's algorithms cover a wide range of critical conditions in **neurovascular, cardiopulmonary, and even oncology** (they announced work on AI for detecting cerebral aneurysms and lung nodules as well).

Notable Achievements: Viz.ai was a pioneer in obtaining FDA clearances for AI triage tools and, importantly, it was **among the first AI companies to get Medicare reimbursement**. In 2020, its stroke detection AI became eligible for New Technology Add-on Payment (NTAP), and later

specific CPT codes were created for AI radiology analysis, validating its value ([PDF] How Viz.ai Uses Artificial Intelligence To Treat Stroke Patients Faster). The company has also won prestigious awards – e.g., in 2023, Viz.ai's hypertrophic cardiomyopathy module, developed with help from pharma (BMS), won the Prix Galien USA award for Best Digital Health Solution (Viz.ai Wins Prestigious Prix Galien USA Award for Best Digital ...). By end of 2023, Viz.ai had raised significant capital (valuation $1.2B+ in 2022, making it a unicorn) and rapidly expanded its AI portfolio. In August 2023, the **FDA approved Viz HCM** algorithm, which was notable for creating a new device category for cardiovascular AI (Why Viz.ai is one of the most innovative companies of 2024). Viz.ai's stroke platform also achieved a first: it demonstrated improved clinical outcomes, not just efficiency – more patients got the right treatment thanks to its alerts, which is often cited in AI-in-healthcare discussions. Another major initiative is Viz.ai's focus on **population health AI**: it is working with health systems to apply its algorithms on past data to find patients who might have missed diagnoses (for instance, scanning all chest CTs done in a year to find undiagnosed large aneurysms and bring those patients in proactively).

Market Impact: Viz.ai's widespread adoption shows how quickly AI can become standard of care when it addresses a critical need (in this case, time-sensitive diagnosis). The platform essentially set the template for how to integrate AI into clinical workflows – not as a standalone tool, but fully embedded in the communication and decision process. Competing firms (like RapidAI in stroke, or newer startups in trauma) have followed suit, but Viz.ai remains a leader and is diversifying across conditions. For hospitals, the value proposition was clear: **faster triage leads to better outcomes in emergencies**, and AI can sift through images faster than humans. Most major stroke centers in the U.S. now use some AI like Viz, which is a testament to the company's influence. Moreover, Viz.ai's success in getting reimbursement opened the door for other AI products to be financially viable, an important precedent for the medtech AI industry. In 2025, Viz.ai continues to expand globally (it's been deploying in Europe and Latin America) and into new specialties, illustrating how a nimble startup can leverage AI to carve out a critical niche in medtech. For pharma IT folks, Viz.ai's large, labeled imaging dataset and its network connecting multiple hospitals could also be a valuable resource for research (some pharma are collaborating with Viz to identify patients for therapy – e.g., finding more HCM patients for certain drugs). In summary, Viz.ai has established itself as a top medtech company using AI to **shave minutes when every minute matters** in patient care (Why Viz.ai is one of the most innovative companies of 2024).

Aidoc (Tel Aviv, Israel & New York, USA)

Overview: Aidoc is a leading **clinical AI** software company focusing on medical imaging interpretation and care workflow optimization. Founded in Israel in 2016, Aidoc has developed a broad suite of AI algorithms that analyze medical images (primarily radiology scans) for critical findings and trigger clinical alerts. Aidoc's platform is often described as an "AI operating system" for medical imaging, capable of running multiple AI algorithms across a hospital's imaging network. By 2025, Aidoc's solutions are in use at over 1,000 medical centers worldwide

and it has the **most FDA-clearances for AI in radiology (17 clearances)** of any company (Aidoc to Establish Guideline to Accelerate AI Adoption in Healthcare).

AI Platform: Aidoc's core offering is an always-on AI platform integrated with Picture Archiving and Communication Systems (PACS) in hospitals. It employs deep learning models (mostly CNNs) for analyzing scans (CT, MRI, X-ray) in real time as they are acquired. Aidoc's platform is notable for its breadth – it covers a wide range of conditions: intracranial hemorrhage, large vessel occlusion stroke, pulmonary embolism, spine fractures, rib fractures, incidental pulmonary nodules, coronary artery disease on CT, and more. All these algorithms run concurrently on the platform, prioritizing each scan in the radiologist's worklist if a critical finding is detected. Aidoc also has an **orchestration layer (aiOS™)** to integrate third-party AI algorithms and manage workflow, and a **care coordination module** to ensure the alerts reach the right physicians (similar to how Viz.ai extends alerts). Additionally, Aidoc leverages a form of federated learning in some deployments to continuously improve its models on new data while maintaining patient privacy.

AI-Powered Applications: For radiologists, Aidoc acts like an ever-vigilant assistant. For example, when a CT pulmonary angiogram (CTPA) is done, Aidoc's PE (pulmonary embolism) algorithm will within minutes highlight if there is a suspected pulmonary embolus and can even quantify clot burden. If positive, it flags the case as urgent in the radiology worklist and can send a notification to the on-call clinician. Aidoc has algorithms for **head CT** (flagging hemorrhages or strokes), **cervical spine CT** (detecting fractures), **chest CT** (PE, nodules, aortic dissection), **abdomen CT** (free fluid, pneumoperitoneum), and more recently, **cardiac CT** (it gained FDA clearance for an AI that detects and measures coronary artery calcium and stenoses, aiding in CAD diagnosis). Aidoc's unique strength is the integration of all these findings into a single platform so that one implementation brings many AI capabilities. Beyond imaging, Aidoc introduced a **CARE Coordination** product that helps connect care teams. For instance, if a pulmonary embolism is detected, Aidoc's system can automatically page the pulmonary embolism response team. Aidoc has also expanded into **Cardiology** by integrating AI to read ECGs and Echoes (one of its FDA clearances is for an AI that analyzes echocardiography for heart function measures). Moreover, Aidoc's platform can track patients through their journey – e.g., ensuring a follow-up for an incidental finding is scheduled – essentially an AI-enhanced patient management.

Notable Achievements: Aidoc has amassed a record number of regulatory approvals: **17 FDA-cleared AI algorithms** as of 2025 (Aidoc to Establish Guideline to Accelerate AI Adoption in Healthcare), covering a broad array of pathologies (far more than most competitors). It also was an early mover in **CE marking** for Europe, and its solutions cover ~75% of acute conditions that radiologists screen for (Aidoc to Establish Guideline to Accelerate AI Adoption in Healthcare). In 2023, Aidoc secured a landmark FDA clearance for the **first AI "foundation model" in imaging** – a category of AI that can be adapted to multiple tasks. This was for an algorithm detecting rib fractures using a large generative model approach (Aidoc Secures Landmark FDA Clearance for Foundation Model AI) (Aidoc Secures Landmark FDA Clearance for First Foundation Model ...).

Aidoc has raised over $250M in funding and was recognized by Time magazine in 2022 as one of the top 100 AI inventions. It has formed partnerships with imaging OEMs (like Canon Medical – integrating Aidoc AI on scanners) and with specialty societies (for example, working with neurosurgery groups on AI triage for brain aneurysms). Aidoc also demonstrated improved patient outcomes: published studies showed using Aidoc for stroke or PE can shorten time to report and intervention, much like Viz.ai. Another achievement: Aidoc's widespread adoption in large health systems (e.g., Cedars-Sinai, University of Michigan) where they found radiologists often act on Aidoc alerts, confirming its utility. In terms of industry recognition, Aidoc won the RSNA (Radiological Society of North America) award for Best New Radiology Software in 2020 and continues to be a leader in industry rankings.

Market Influence: Aidoc's success has cemented AI triage as a standard part of modern radiology departments. Its multi-condition platform appeals to hospitals because they prefer a single integrated solution over managing dozens of point algorithms – this strategy has put competitive pressure on smaller AI startups to partner or integrate into Aidoc's ecosystem (indeed, Aidoc created a collaboration program for third-party AI plugins). For clinicians, Aidoc's AI acts as a safety net – catching things that might be initially overlooked. For example, a busy ER radiologist might prioritize an Aidoc-flagged PE study over other cases, potentially saving a life that might have deteriorated waiting. Aidoc has reported that its AI platform analyzes **3 million patients each month**, reflecting its scale (Aidoc - Clinical AI Company - Rapid Responses, Smarter Care). In the broader medtech landscape, Aidoc's approach of embedding AI in clinical workflow and demonstrating ROI (in terms of faster care and even medicolegal risk reduction) has helped drive adoption of AI in healthcare. Its presence also encourages radiology vendors to up their game – many are now ensuring their scanners or PACS can accommodate AI. For U.S. IT and pharma professionals, Aidoc's large deployment means there's a big stream of real-world data being processed by AI, which could be harnessed in research (for instance, identifying cohorts of patients with certain imaging features for retrospective studies). Aidoc's story in 2025 is one of maturation: from innovative startup to a **global AI platform leader** in medtech, truly influencing daily clinical practice (Aidoc to Establish Guideline to Accelerate AI Adoption in Healthcare).

PathAI (Boston, MA, USA)

Overview: PathAI is an AI-powered pathology company focused on developing machine learning solutions to improve the accuracy and efficiency of diagnosing disease from tissue samples. Founded in 2016 and based in Boston, PathAI works closely with biopharmaceutical companies, diagnostics labs, and academic medical centers. The company's main emphasis is on **digital pathology** – analyzing digitized microscope slide images of tissue with AI algorithms – with applications in both research (drug development, biomarker discovery) and clinical diagnostics. PathAI's platforms aim to assist pathologists in detecting cancer and other diseases more precisely and to enable **computational pathology** companion diagnostics.

AI Technologies: PathAI employs deep learning (especially convolutional neural networks) for image analysis of pathology slides. They have built algorithms for tasks like identifying cancerous vs. benign cells, grading the severity of disease (such as differentiating Gleason patterns in prostate cancer), and quantifying immune cell infiltration in tumors. A key product is their **AISight** digital pathology platform, which can integrate AI algorithms into pathologists' workflow. PathAI also uses AI techniques for multimodal analysis – combining histology image data with molecular data (like genomics or proteomics) to find correlations. Many of PathAI's models are trained on large annotated datasets created in partnership with leading pathology labs. Additionally, PathAI leverages cloud infrastructure (recently partnering with Google Cloud) to scale its AI analysis for enterprise clients (PathAI Partners with Google Cloud to Transform Drug Discovery).

AI-Powered Applications: Cancer Diagnostics and Grading: PathAI has developed AI models for a variety of cancers. For example, in breast cancer biopsies, their AI can detect and quantify tumor cells and also identify immune cells (like PD-L1 expressing cells) to help determine eligibility for immunotherapy. In 2021, PathAI's algorithm for **non-alcoholic steatohepatitis (NASH)** successfully quantified features of liver biopsies (fat, inflammation, fibrosis) and was used in clinical trials as an endpoint measurement. **Drug Development:** A significant portion of PathAI's business is collaborating with pharma on AI-driven pathology analyses for clinical trials. If a trial needs to assess how a drug affects tumor infiltrating lymphocytes or expression of a certain protein in tissue, PathAI's platform can be used to do this more consistently than manual pathologist reads. For example, PathAI worked with Bristol Myers Squibb to develop an AI-based scoring system for PD-L1 in tumor cells, which can be more reproducible than human scoring. **Companion Diagnostics:** PathAI entered an **exclusive collaboration with Roche's Tissue Diagnostics division** in 2024 to develop AI-enabled companion diagnostic tests (www.pathai.com). Under this, PathAI will create AI algorithms that interpret Roche's immunohistochemistry assays (like checking if a cancer has a specific protein) to determine if patients qualify for certain targeted therapies (www.pathai.com). This collaboration means PathAI's AI could become part of FDA-approved diagnostic kits, marking a move from research-use to clinical-use. **Pathology Workflow:** PathAI's AISight platform serves as a digital pathology image management system with AI built-in. A pathologist can upload slides, and the AI might highlight regions of interest (e.g., potential tumor regions on a prostate needle biopsy) to ensure the human doesn't miss them. The platform can also pre-compute scores (like % of tumor area or mitotic count) to expedite the pathologist's analysis. PathAI has also ventured into **predictive prognostic models** – e.g., using AI features in a tumor to predict patient survival or relapse, which could inform treatment decisions in the future.

Notable Achievements: PathAI achieved early prominence by publishing studies in top journals (their work on AI grading of prostate cancer and NASH appeared in *The Lancet Oncology* and *Hepatology*). They demonstrated that AI models could match or exceed agreement levels of expert pathologists on certain tasks. A landmark moment was in 2021 when the FDA approved the first AI-powered pathology product (Paige's prostate AI); while that was a competitor, it validated PathAI's market. PathAI has since partnered with the FDA on exploratory research (the

company took part in the FDA's Joint Pathology Working Group to validate AI approaches for regulatory use). In terms of business, PathAI has raised over $165M and acquired other companies such as Poplar (specialized in multiplex pathology analysis). In 2022, PathAI and Cleveland Clinic announced a multi-year collaboration to build new pathology AI tools, giving PathAI access to one of the largest pathology archives. The **Roche partnership in 2024** is highly notable: PathAI becoming Roche's exclusive external partner for AI in companion diagnostics means its algorithms could be part of diagnostic tests for blockbuster drugs (www.pathai.com). Also, in 2025 PathAI partnered with Philips (a major digital pathology hardware provider) to integrate their algorithms into Philips' scanners and software (Philips and Ibex expand partnership to enhance AI-enabled), easing adoption. PathAI has received accolades such as being named by CB Insights as one of the top 100 AI companies globally for multiple years.

Market Influence: PathAI is at the forefront of bringing AI into the pathology lab, an area that has lagged behind radiology in digitization. By proving out AI's value in pathology, PathAI is helping unlock **digital pathology adoption** – many labs are now investing in scanners partly because AI tools like PathAI's make it worthwhile. For biopharma, PathAI's success provides new ways to select patients for treatment (e.g., if AI can identify which patients have a particular tumor microenvironment that a drug targets) and to measure drug impact. This can accelerate drug development and enable **AI companion diagnostics** that go hand-in-hand with new therapies. The exclusive collaboration with Roche (which has a dominant global market share in pathology lab equipment) gives PathAI a channel to potentially distribute AI globally as part of routine testing (www.pathai.com). PathAI's focus on rigorous validation helps set standards in a field where regulatory approval is essential. For IT professionals, PathAI shows the importance of integrating AI with existing lab systems (LIS) and ensuring data flow in highly regulated environments. Its presence in Boston's biotech hub and ties to pharma mean it will continue to shape how AI is used in precision medicine. In essence, PathAI is a top medtech startup proving that **AI can read slides and guide therapy decisions** with high reliability, aiming to improve both diagnostic efficiency and patient outcomes in diseases like cancer.

Paige (New York, NY, USA)

Overview: Paige is a pioneer in the application of AI to digital pathology. Spun out from Memorial Sloan Kettering Cancer Center, Paige gained fame for achieving the **first FDA approval for an AI-based pathology product**. The company's focus is on using deep learning to assist pathologists in detecting cancer on slides, with initial emphasis on prostate cancer and breast cancer. Paige's platform is also expanding into a general computational pathology hub, developing large-scale models that can recognize many pathologies across tissue types. Paige collaborates with both healthcare providers and life science companies to deploy its AI.

AI Technologies: Paige heavily utilizes convolutional neural networks trained on millions of pathology image patches. It has built proprietary architectures that can handle gigapixel whole-

slide images efficiently. In 2023, Paige and Microsoft announced work on what may be the **world's largest image-based AI model** for pathology – a transformer-based model with billions of parameters trained on diverse cancer images (Paige Announces Collaboration with Microsoft to Build the World's ...). This "foundational model" (codenamed **Virchow**) aims to be capable of generalizing to detect myriad histological features. Paige's AI can both **classify** slides (tumor vs. normal) and **localize** findings (highlighting suspicious regions). They also integrate with existing digital pathology systems (e.g., Philips, Leica scanners) to fetch images for analysis. Paige's software often provides a viewer where AI results overlay on the image for the pathologist to review. They utilize cloud computing (notably on Azure, via the Microsoft partnership) to handle the intense processing of slide data.

AI-Powered Applications: Cancer Detection and Triage: Paige's first product, Paige Prostate Detect, assists in prostate biopsy diagnosis. When a batch of prostate biopsy slides are digitized, Paige's AI scans them for cancerous tissue. It then provides the pathologist with an output: slides likely containing cancer are flagged, and within each slide, regions of concern are outlined (e.g., glands suspicious for adenocarcinoma). This helps ensure small cancer foci are not missed and can speed up case review. Paige Prostate was **the first AI in pathology to receive FDA authorization (de novo)** in September 2021 (The Paige Prostate Suite: Assistive Artificial Intelligence for ... - NCBI), a landmark in the field. Similarly, Paige has developed an AI for **breast cancer lymph node metastasis detection** (an FDA Breakthrough-designated program) to flag metastases on pathology slides of lymph nodes. **Tumor Grading and Subtyping:** Beyond binary detection, Paige's algorithms can provide more nuanced info. For prostate, the AI can assign a Gleason grade group by analyzing patterns, giving pathologists a second opinion on grade which is inherently subjective. In melanocytic lesions (moles), Paige has an AI that differentiates benign nevi from melanoma on skin pathology. **Multi-Cancer Model:** In 2022-2023, Paige unveiled a single AI model that could detect various cancers (breast, colon, prostate) in a single framework – demonstrating a step toward a generalist pathology AI (Paige Unveils Game-Changing AI That Revolutionizes Cancer ...). This model could, for instance, identify if a tissue sample is from colon cancer versus another tissue type, which has potential use in identifying cancer of unknown primary. **Partnership Solutions:** Paige partners with labs and pharma for tailor-made solutions, like an AI to quantify a biomarker (e.g., counting PD-L1 stained cells on an assay, or measuring Ki-67 proliferation index in tumors). Those quantitative tasks are well-suited to AI and help pathologists provide consistent results. **Workflow Integration:** Paige offers a digital pathology software (Paige Workspace) that allows pathologists to view slides and toggle AI results. It can integrate into existing workflows, so when a case is loaded, AI analysis is available by the time the pathologist is reading it.

Notable Achievements: Paige's FDA approval in 2021 for Paige Prostate Detect was groundbreaking (Paige Receives First Ever FDA Approval for AI Product in Digital ...). It was soon followed by another first – in 2022 the FDA approved Paige Prostate "Grade" which not only detects cancer but also provides a Gleason score. These were the first AI devices of their kind, establishing regulatory precedents. Paige has CE marks for several AI models, including breast and colon. The company also claims that in internal tests their multi-cancer AI reached

extremely high accuracy across different organs, showcasing the potential of large-scale training. The collaboration with Microsoft, announced in 2023, involves building a model reportedly **orders of magnitude larger** than previous ones, aiming to push the envelope in AI capability for pathology (Paige Announces Collaboration with Microsoft to Build the World's ...). In 2023, they also released a second-generation model **Virchow 2** that improved on prior performance across multiple cancers (Unlocking the Complexities of Cancer: Paige Launches ... - Paige.ai). On the business side, Paige has partnerships with lab giants like Labcorp to bring its AI to high-volume labs, and with Nikon for hardware integration. They also closed a Series C funding of $125M (which included investment from Johnson & Johnson Innovation) to accelerate product development. Paige presented research where their AI found patterns predictive of mutations (for example, AI could predict the presence of an ERG gene fusion in prostate cancer just from morphology), hinting at future AI that might reduce need for some molecular tests.

Market Influence: Paige's early FDA approvals and partnerships have helped validate the entire space of AI in pathology. Hospitals and labs may be more inclined to invest in digital pathology if they can deploy tools like Paige's to gain efficiency or additional diagnostic confidence. For instance, smaller labs with limited specialists might use Paige AI as a safety net for catching cancers. Pharma companies have engaged Paige for companion diagnostic development (similar to PathAI's work, though Paige's focus has been more on broad diagnostic tools). By aiming to create general AI that can detect many cancer types, Paige is pushing toward a future "all-in-one" pathology AI that could be akin to an ever-present second pathologist scanning everything. This would have immense implications for global health, potentially allowing high-quality pathology analysis in regions with few pathologists. For IT folks, Paige's integration with cloud providers like Azure shows how AI-as-a-service might be offered to labs (sending images to cloud for analysis). Also, Paige's systems highlight the need for robust data management – slide images are huge, and handling them with AI requires efficient streaming and tiling, which Paige has worked on. In summary, Paige stands as a top medtech startup demonstrating AI's power to **augment a pathologist's eyes** – improving cancer detection and consistency, and is driving the digital transformation of pathology with AI at its core (The Paige Prostate Suite: Assistive Artificial Intelligence for ... - NCBI).

Insilico Medicine (Hong Kong & New York, USA)

Overview: Insilico Medicine is a leader in the emerging field of **AI-driven drug discovery**. Founded in 2014 and with offices in Hong Kong, China and New York, Insilico's goal is to use generative AI and deep learning to identify new targets and design novel small-molecule drugs faster and more cheaply than traditional methods. The company has developed a platform called **Pharma.AI**, which includes tools like PandaOmics (for target discovery) and Chemistry42 (for molecule generation). Insilico gained international attention by advancing one of the first AI-discovered drug candidates into clinical trials. By 2025, Insilico is a clinical-stage company with multiple AI-designed molecules in the pipeline, validating the power of AI in medicine.

AI Technologies: Insilico employs a variety of AI techniques: **Generative adversarial networks (GANs)** and reinforcement learning for molecule generation (Chemistry42 platform), transformer models for sequence and structure prediction, and deep neural networks for analyzing omics data. For target discovery, its PandaOmics tool uses AI to sift through literature, patents, and omics databases to propose biological targets associated with diseases, even using NLP to read scientific text. Insilico's AI can design molecules from scratch fitting desired parameters (binding to a target, being non-toxic, etc.), essentially **"imagining" new chemical structures**. They also use **predictive modeling** to forecast a molecule's absorption, distribution, metabolism, excretion, and toxicity (ADMET) properties. A distinctive element is Insilico's integration of AI with automated lab testing; they built a robotics lab to synthesize and test AI-generated compounds, creating a closed-loop learning system.

AI-Powered Drug Discovery Applications: Target Identification: Insilico's AI scans massive data (gene expression, genomics, proteomics) to find novel disease targets. For example, for idiopathic pulmonary fibrosis (IPF), their AI pinpointed a protein called **TNIK** as a previously under-appreciated driver of disease (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace). This became the target for their lead program. **De Novo Drug Design:** After selecting a target, Insilico's Chemistry42 AI platform generates novel molecular structures predicted to hit that target. In the case of IPF, within days the AI generated molecules that could inhibit TNIK. One of those molecules, **ISM001-055 (later named "rentosertib")**, was optimized through AI iterations and selected as a development candidate. It was discovered, synthesized, and pre-clinically tested in under 18 months – significantly faster than traditional timelines. **Clinical Candidates:** Insilico's ISM001-055 progressed through Phase 1 testing successfully, and in 2024 it reported positive Phase IIa results in IPF patients (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace) (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace). This drug, entirely designed by AI, showed a dose-dependent improvement in lung function in IPF patients with a good safety profile (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace) (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace), representing a *proof of concept* for AI-designed therapeutics. Insilico has other AI-designed drugs: one for COVID-19 (targeting the 3CL protease) that was identified in 4 days, and several in oncology (e.g., a small molecule for DDR1 in cancer). **Combination AI + Robotics:** Insilico's lab can synthesize hundreds of AI-proposed compounds and test them in biochemical and cell assays quickly. The data is fed back to refine the models. This high-throughput AI-driven approach was documented in a 2024 *Nature Biotechnology* paper for the IPF program (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace), showing how AI proposed the target and drug and

how it advanced to human trials. **Aging Research:** Notably, Insilico also uses AI in aging research, seeking compounds that might extend healthspan (it began with projects on senolytics, etc.), though its main focus now is disease-specific drugs.

Notable Achievements: Insilico Medicine's biggest milestone is arguably **bringing the first AI-designed drug into clinical trials** and demonstrating efficacy signals. In 2021, ISM001-055 became the world's first AI-discovered preclinical candidate to enter Phase I, and by 2024 it completed Phase IIa – a rapid progression (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace) (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace). The drug received a generic name "rentosertib" (INN) in 2025, highlighting it as a real entity, not just experimental (Insilico Medicine's AI-driven drug Rentosertib receives official ...) (Press Releases - Insilico Medicine). Insilico has published extensively, proving its claims in peer-reviewed journals. It also partnered with big pharma (e.g., a multi-target deal with Fosun Pharma in 2020, another with Pfizer's incubator, and recently with Sanofi on AI for novel targets). In early 2022, Insilico raised $255M in Series C funding, indicating investor confidence. At the 2022 and 2023 conferences, they showcased "occasionally AI versus human" challenges, where Insilico's AI designed molecules outperforming those by human chemists for certain targets. The company also notched an industry recognition by winning NVIDIA's Inception competition a few years back for its AI tech. In Feb 2025, Insilico announced **22 AI-designed drug candidates in various stages**, providing benchmark timelines showing some could reach Phase I in under 2 years from project start (Insilico Medicine provides benchmark timelines from its 22 AI ...) (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055 ...). Moreover, it launched a fully automated lab in Suzhou, making it one of the first to combine AI and robotics at such scale in drug discovery.

Market Influence: Insilico's progress has been a major validation for AI in drug development, influencing many pharma companies to invest in AI or partner with AI firms. The prospect of reducing the cost and time of bringing drugs to market is compelling; Insilico's IPF program going from target discovery to Phase IIa in ~3 years is extremely fast (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace). If their Phase IIb/III eventually succeeds, it could usher in an era where AI-designed drugs become common. Even already, multiple other AI-designed molecules (by various companies) are entering trials – Insilico's success helped catalyze that trend. For IT and pharma professionals, Insilico's work demonstrates how **generative AI can create tangible biomedical products**. It's also bridging worlds: using AI models akin to those used in image or text generation but for chemical structures. Regulators have taken note – Insilico's case was discussed as an example by the FDA in understanding how to evaluate AI's role in drug discovery (though drug approval focuses on safety/efficacy of the drug, not how it was designed, the FDA is interested in new methodologies). In the broader medtech landscape, while Insilico is more biotech than traditional "medtech," its work leverages AI in a manner highly relevant to pharma and personalized

medicine. It also highlights global collaboration – with HQ in Asia and operations in US, tapping talent internationally in AI and pharma. In summary, Insilico Medicine stands out in 2025 as a top company leveraging AI by **designing new medicines from scratch**, with one of the first AI-developed drugs showing promise in patients (Insilico Medicine Reports Positive Phase IIa Results for ISM001-055, a Novel First-in-Class Drug Treatment for Idiopathic Pulmonary Fibrosis (IPF) Designed Using Generative AI - BioSpace).

Recursion (Salt Lake City, UT, USA) & Exscientia (Oxford, UK) – *An Emerging AI Drug Discovery Powerhouse*

*(**Note:** Recursion and Exscientia announced a merger in 2024, creating a combined entity by early 2025 (Recursion and Exscientia merge to form drug discovery company) (Recursion and Exscientia merge to form drug discovery company). Here we profile their joint capabilities as they form a global AI-driven drug discovery leader.)*

Overview: Recursion Pharmaceuticals and **Exscientia** were both prominent AI-focused drug discovery companies that decided to merge to synergize their strengths (Recursion and Exscientia merge to form drug discovery company). Recursion, based in the U.S., specialized in high-throughput experimental biology and AI (notably using imaging-based phenotypic screening), whereas Exscientia, based in the UK, excelled in AI-driven chemistry and automation, having already designed novel molecules that entered clinical trials. The combined company (retaining the Recursion name post-merger) now operates with headquarters in Salt Lake City and significant presence in Oxford and beyond (Recursion and Exscientia merge to form drug discovery company). This merger unites Recursion's **"massive data + machine learning"** approach with Exscientia's **"AI precision design + medicinal chemistry"** approach, creating an end-to-end AI drug discovery platform from target to clinic (Recursion and Exscientia merge to form drug discovery company).

Core AI & Platforms: Recursion built its reputation on an in-house wetlab automation platform that generates **phenomic data** – they perform millions of cellular experiments (using CRISPR, compounds, etc.), take microscopy images, and use computer vision AI to decipher how various genetic or chemical perturbations change cell morphology. This approach yields insights into disease biology and potential starting points for therapy. Recursion's AI was adept at finding patterns in these images that humans couldn't, clustering compounds by their phenotypic "fingerprint" to suggest new uses or targets. Exscientia, on the other hand, developed an AI platform to design molecules (like Insilico and others). Exscientia's strength included its **Centaur Chemist™** AI which works interactively with human chemists, and a system to optimize compounds not just for potency but multi-parameter optimization (ADME, toxicity, etc.). It also had a platform for **AI-driven drug target selection** using knowledge graphs. Combined, the new entity leverages Recursion's **NRoi (Recursion Operating System)** for large-scale data and machine learning, with Exscientia's **Precision Chemistry** AI and **automated synthesis** labs

(Recursion and Exscientia merge to form drug discovery company). Essentially, it's marrying **"scaled biology" with "precision AI chemistry"** (Recursion and Exscientia merge to form drug discovery company).

AI-Powered Drug Discovery & Pipeline: Before merging, each company had its own pipeline: Recursion had several programs in clinical trials (e.g., REC-994 for cerebral cavernous malformation and REC-2282 for neurofibromatosis, discovered by phenotypic screening). Exscientia had AI-designed drugs in trials: one example is **DSP-1181**, a molecule for OCD that Exscientia designed with Sumitomo Dainippon, which entered a Phase 1 trial in 2020 (notably one of the first AI-designed compounds to reach trials). Exscientia also has a **CDK7 inhibitor** in oncology (created via AI) in Phase 1, and a pipeline of partnered programs with Bayer, Sanofi, and others. The merged company's pipeline is robust – more than **10 programs in the clinic or pre-clinic internally, and 10+ partnered programs** (Recursion-Exscientia merger consolidates AI in drug discovery field). For example, in oncology they have a precision-designed LSD1 inhibitor advancing (Exscientia's), and Recursion's RL-007 (a compound for neurocognitive disorders) derived from phenotypic data. **AI in Action:** The company uses AI at multiple steps: identifying novel targets (Recursion might find a previously unknown protein involved in fibrosis via image analysis; Exscientia's AI might validate it using genomics data), generating compound hits (Exscientia's generative chemistry proposes molecules), testing them rapidly in Recursion's high-throughput assays, then iterating. This cycle can produce drug candidates faster and with a higher chance of success. **Example:** Recursion discovered that an older drug (rapamycin) might have uses in rare diseases by phenotypic matching. Exscientia's AI found a completely novel compound for a Roche target in 12 months vs a typical 4+ years. Together, they plan around **10 clinical trials ongoing or starting by end of 2025** (Recursion and Exscientia merge to form drug discovery company) – an aggressive timeline likely facilitated by AI speeding up discovery (Recursion and Exscientia merge to form drug discovery company).

Notable Achievements: Recursion's accomplishments include creating one of the world's largest biological image datasets and forging a partnership with Roche/Genentech in 2021 worth potentially $1.7B (to apply Recursion's AI to neuroscience and cancer targets). Exscientia has the distinction of having the **first AI-designed drug to reach Phase 1 in human (DSP-1181)** and also the first AI-designed immuno-oncology drug (a PKC theta inhibitor partnered with Celgene/BMS) reaching trials. Exscientia was publicly listed in 2021, and Recursion in 2020, giving them capital to expand. The **merger deal itself (August 2024)** is notable – valued around $700M (AI deals are surging, and Recursion's ongoing Exscientia merger ...), it signifies consolidation in AI drug discovery, aiming to create a company with formidable breadth. They've stated this will create a pipeline of 30+ active programs, and cost synergies of $100M annually (Recursion and Exscientia merge to form drug discovery company) (Recursion and Exscientia merge to form drug discovery company). In 2022, Exscientia also acquired a clinical AI company (Allcyte) that uses AI on patient tissue samples to predict drug responses (to inform trials). Meanwhile, Recursion notched achievements like using an NVIDIA supercomputer (they were an early adopter of GPUs for biology) and being highlighted at conferences for their AI's ability to

reposition drugs. Both companies have garnered awards: Exscientia's CEO was given a "100 leaders in AI" recognition, and Recursion was on Fast Company's innovative list.

Market Impact: The Recursion-Exscientia combination is closely watched as a bellwether for whether AI can truly streamline drug discovery at scale. If their pipeline yields successful drugs faster than pharma norms, it will validate AI's promise and likely spur more investment and M&A in this space. Already, big pharma has been partnering heavily with these companies (the merged entity lists deals with Roche, Bayer, Merck KGaA, Sanofi, etc. (Recursion and Exscientia merge to form drug discovery company)). For U.S. and global IT/pharma professionals, this merger illustrates how important it is to have both ends of the spectrum: massive data generation *and* sophisticated AI design – essentially creating a vertically integrated **"techbio"** company. The new company expects to run ~10 clinical trials by 2025's end (Recursion and Exscientia merge to form drug discovery company), meaning a rapid output of drug candidates compared to traditional pipelines (Recursion and Exscientia merge to form drug discovery company). They also collectively hold ~$850M in cash post-merger (Recursion and Exscientia merge to form drug discovery company), giving them runway to push projects without immediate pharma licensing. This could put competitive pressure on traditional pharma if the AI company can bring niche drugs to market themselves. In sum, Recursion+Exscientia is now a top medtech/biotech outfit demonstrating how AI and automation can **consolidate drug discovery timelines**, potentially delivering first-in-class and best-in-class therapies faster by harnessing computational power (Recursion and Exscientia merge to form drug discovery company). Their progress in the next couple of years may well set the tone for AI's role in the pharmaceutical industry for decades to come.

Google's DeepMind & Health AI Initiatives (Mountain View, CA, USA / London, UK)

Overview: Google (and its subsidiary DeepMind, based in London) has been a trailblazer in artificial intelligence research and has applied its vast AI expertise to healthcare challenges. While Google is not a traditional "medtech" company manufacturing devices, its contributions in health AI are so significant that they influence the entire medtech landscape – especially in 2025. Google's health AI efforts include **DeepMind's healthcare research** (now under Google DeepMind), the **Google Health** unit developing clinical AI tools, and partnerships with hospitals and universities worldwide. They span breakthroughs like **AlphaFold** in biology to **medical imaging AI**, electronic health record data mining, and most recently large language models for medicine.

AI Technologies: Google leverages its cutting-edge AI models (which have achieved world-leading results in various domains) for health applications. This includes deep neural networks for image analysis, transformers for sequence analysis (AlphaFold's protein folding, for instance), and generative models like **Med-PaLM 2**, a specialized large language model trained

on medical knowledge to answer healthcare questions. DeepMind's research often focuses on fundamental AI advances that can translate to health – such as reinforcement learning (used in optimizing radiotherapy plans) and multitask learning. A hallmark of Google's approach is training on massive datasets – they have used billions of parameter models to absorb both medical literature and real clinical data (de-identified).

Key Health AI Applications: Protein Folding and Drug Discovery: One of Google DeepMind's crowning achievements is **AlphaFold**, an AI system that can predict the 3D structure of proteins from their amino acid sequence with remarkable accuracy (6 ways Johnson & Johnson is using AI to help advance healthcare). In 2021, AlphaFold solved structures for 98% of human proteins and was hailed as a revolution in biology. By 2025, AlphaFold's database (hosted by DeepMind and EMBL-EBI) contains over 200 million protein structures (essentially every protein known to science), which is massively accelerating drug discovery and biotechnology research (Chemistry Nobel goes to developers of AlphaFold AI that predicts ...). Researchers worldwide use these AI-predicted structures to design new drugs or understand disease mechanisms. (AlphaFold's developers even received a 2023 Lasker Award for this feat (AlphaFold developers honored with the 2023 Lasker Award).) Google is further refining AlphaFold (and AlphaFold 3 is on the horizon, which could model protein interactions, etc. (Google DeepMind Announces World-Leading AlphaFold 3 Model)). **Medical Imaging and Screening:** Google has developed AI models that can detect diseases from medical images at human or super-human performance. Notably, Google's AI for diabetic retinopathy analysis from retinal photos was one of the first to get regulatory approval (CE Mark in EU) as an autonomous diagnostic. In radiology, Google created models for detecting lung cancer on CT scans, breast cancer on mammograms, and metastases on lymph node slides – publishing results often matching or beating radiologist benchmarks. For example, a 2020 *Nature* paper by Google showed an AI that slightly outperformed radiologists in breast cancer screening (though clinical adoption is still in progress). **Digital Pathology:** Besides imaging, Google AI (via DeepMind) partnered with the UK's NHS to develop algorithms for digital pathology, like detecting breast cancer metastasis (the CAMELYON challenge, which DeepMind's AI won) and segmenting tissues. **Clinical Decision Support:** Google Health worked on an AI that could triage primary care patients by reading symptoms (the Google Symptom Chatbot, and a dermatology app that identifies skin conditions from photos). They also have an EHR-related project where an AI model processes entire patient histories to predict outcomes (like a risk of re-admission or death). **Generative AI in Medicine:** In 2023, Google introduced **Med-PaLM 2**, a version of their PaLM large language model tuned on medical QA data. This model can answer medical exam questions at about an expert doctor's level and is being evaluated for assisting doctors in clinical Q&A, summarizing healthcare records, and even suggesting diagnoses. Early tests at Mayo Clinic and other places are ongoing. **Robotics in Healthcare:** While less public, Google's AI in robotics (via the Robotics at Google team and DeepMind's control algorithms) have potential medtech use – such as using AI for assistive robots in patient care or lab automation.

Notable Achievements: AlphaFold's impact cannot be overstated – it essentially solved a 50-year grand challenge in biology and has directly aided medtech/pharma by providing structural

insights for almost any protein (6 ways Johnson & Johnson is using AI to help advance healthcare). This has been applied to understanding variants in genetic diseases or designing enzymes, etc. Another achievement: DeepMind's health AI group (before it transferred to Google Health in 2019) developed an app called **Streams** deployed in NHS hospitals to predict acute kidney injury from blood tests, alerting doctors sooner. That project didn't use deep learning initially, but DeepMind did publish a deep learning model for kidney injury prediction later. Google's breast cancer AI on mammograms achieved about a 5% increase in sensitivity and reduced false positives compared to radiologists in a retrospective study, a promising result toward improving cancer screening. Google has also open-sourced some healthcare AI tools, like **TensorFlow for Genomics** and made health datasets available (such as the Google Health Research released thousands of de-identified retina images for AI research). By 2025, Google secured FDA breakthrough status for an **AI endoscopy tool** that detects polyps (in partnership with Olympus) and is working on an ultrasound AI for maternal health (through its subsidiary DeepMind, collaborating with Northwestern on AI ultrasound for maternal care). Moreover, Google's **WearOS and Fitbit** units are exploring AI in wearables – like detecting atrial fibrillation via the watch's PPG (Fitbit got FDA clearance for that in 2022). And a wild development: in 2022, DeepMind created an AI called **AlphaFold-Multimer** and **AlphaMissense** which can predict if a genetic mutation is likely pathogenic (this helps flag disease-causing mutations among the thousands of variants of unknown significance) – a huge help for genetic diagnostics.

Market Influence: Google's approach of tackling foundational scientific problems (like protein folding) and healthcare delivery challenges (like screening) means its influence is broad rather than tied to selling a specific medical device. For pharma and biotech, the availability of AlphaFold structures is now part of standard practice; companies and academics use it routinely to design experiments – effectively, Google provided a free global tool that many medtech and pharma companies build upon. In digital health, Google's experiments with symptom checkers and medical LLMs challenge how patients and doctors might obtain information in the near future. For example, if Med-PaLM or similar models become reliable, they could be integrated into clinical settings to summarize notes or suggest diagnoses (early versions are being tested for assisting with drafting patient notes or answering doctor queries in real time). Google also invests in health through its **Gradient Ventures and Google Ventures**, funding many medtech startups, thus indirectly steering the field. On the regulatory and standards side, Google's involvement lends credibility to AI in medicine – its research often sets benchmarks that others follow or try to beat. The company's emphasis on ethical AI (they have an AI ethics unit that often scrutinizes healthcare uses) also helps shape best practices. In summary, while Google/DeepMind may not sell a stethoscope or MRI, their **AI innovations form much of the backbone** of current and future medtech advancements – from algorithms inside devices (many companies use TensorFlow models, etc.) to new paradigms like AI-discovered drugs and models that can pass medical exams. As of 2025, Google's foray into medtech is an exemplar of how Big Tech can contribute powerful AI tools that augment both the science and practice of medicine, **transforming possibilities in diagnostics and discovery** (6 ways Johnson & Johnson is using AI to help advance healthcare).

Microsoft (Redmond, WA, USA) – Healthcare AI and Nuance

Overview: Microsoft has emerged as a major player in healthcare IT through its **Cloud for Healthcare** offerings and the 2022 acquisition of **Nuance Communications** – a leader in clinical speech recognition and ambient clinical intelligence. While Microsoft itself isn't a medtech device manufacturer, its technologies (Azure cloud, AI services, and Nuance's solutions) are heavily used by healthcare providers and medtech companies for data, AI, and workflow integration. In 2025, Microsoft's influence in healthcare AI is seen in areas like **clinical documentation (speech-to-text AI)**, **medical imaging AI infrastructure**, and the use of large language models (like GPT-4 via Azure OpenAI Service) in health contexts.

AI Technologies: Microsoft's core AI contributions to medtech include **natural language processing (NLP)** – especially Nuance's Dragon Medical and the newer **DAX (Dragon Ambient eXperience) Copilot**, which uses conversational AI to transcribe and understand doctor-patient conversations in real time (Nuance's Dragon Ambient eXperience (DAX) helps doctors …). Microsoft also offers **Azure Cognitive Services** (for speech, vision, text analytics) which are applied in healthcare settings (for example, text analytics for health can structure unstructured clinical notes). Another technology is **machine learning platforms** like Azure Machine Learning, which many medtech firms use to train and deploy their own AI models at scale, benefitting from Microsoft's robust security and compliance (HIPAA, etc.). Through partnerships, Microsoft incorporates AI into clinical workflows: e.g., working with Epic Systems to integrate GPT-4 for assisting with message drafting and content summarization in the electronic health record. Microsoft also has specialized research efforts like **Project InnerEye** (an AI tool for 3D radiological image segmentation, e.g., delineating tumors for radiotherapy planning) which was made open-source for clinics to build upon. And in 2023, they introduced **BioGPT**, a biomedical language model, reflecting their R&D in domain-specific AI.

Healthcare Applications: Ambient Clinical Documentation: This is perhaps the most visible fruit of Microsoft's health AI. With Nuance, Microsoft has rolled out the **DAX ambient solution**, where an AI listens to the physician-patient exam conversation and automatically generates a clinical note or summary, which the physician just reviews and signs. By 2025, over **400 healthcare organizations have adopted DAX Copilot** for automating documentation (400+ healthcare organizations adopt Microsoft's DAX Copilot) (400+ healthcare organizations adopt Microsoft's DAX Copilot), and it's been a game-changer in reducing physician burnout from paperwork. This "AI scribe" frees doctors to focus on patients instead of typing. **Clinical Speech Recognition:** Nuance's Dragon Medical One, now under Microsoft, remains the go-to in many hospitals for voice-to-text dictation of notes, leveraging advanced speech AI tuned to medical vocabulary. It's cloud-based, so it learns from a user's voice over time and integrates with EHRs. **Imaging AI in Azure:** Microsoft's Azure enables many medtech imaging AI deployments – companies like Siemens and GE have collaboration with Azure for hosting their AI apps securely for hospital customers. Microsoft itself has built reference architectures for radiology AI in the

cloud (e.g., using InnerEye for segmentation – which some clinics have used to automate radiotherapy planning, cutting hours of manual contouring to minutes). **Data interoperability and analytics:** Through **Azure Health Data Services**, Microsoft uses AI to normalize data (using FHIR standards) and even to predict patient outcomes from aggregate data. They have AI that can read forms, extract patient info, de-identify data for research – all important for medtech research and hospital operations. **Patient Engagement:** Microsoft's AI is behind many health chatbots – for instance, during COVID-19, Microsoft's Healthcare Bot (an AI Q&A service) was used by CDC and many hospital systems to screen symptoms. Going forward, that kind of LLM-based chatbot is evolving to more general patient assistant bots via Azure OpenAI (with guardrails). **Personalized Medicine & Research:** Microsoft's AI for genomics (like the Genomics Toolkit on Azure) helps labs quickly process genomic data and even apply AI to identify variants. Their collaboration with Adaptive Biotech yielded an AI-assisted T-cell diagnostics (mapping T-cell receptors to diseases via machine learning).

Notable Initiatives and Partnerships: Microsoft's acquisition of Nuance for ~$20B in 2022 was a strong signal of its commitment to healthcare. Since then, they launched **Microsoft Cloud for Healthcare** (an Azure-based suite tailored to health data needs). They've partnered with **NVIDIA (Project MONAI)** to make Azure a platform for training imaging AI. In 2023, Microsoft announced a strategic partnership with Epic to embed Azure OpenAI Service into Epic's EHR – first uses include automatically drafting message responses to patients and summarizing visit notes, using GPT-4 under the hood. Early testers like UW Health reported promising productivity gains. Microsoft also works with notable providers: e.g., Cleveland Clinic on using AI for patient throughput predictions, and Providence on ambient documentation. **FDA clearances**: While Microsoft doesn't seek these itself, Nuance (pre-acquisition) got FDA clearance for PowerScribe One with AI for radiology reporting, and post-acquisition, some of those features are expanding. In 2024, Microsoft introduced **Dragon MD Copilot**, a unified voice assistant that uses AI to allow clinicians to query information (like "Show me the latest lab results") and perform tasks via voice in the EHR (Microsoft Dragon Copilot provides the healthcare industry's first ...). This is significant because it blends voice recognition with the reasoning power of an LLM to execute commands – a bit like an Alexa for doctors, but securely connected to patient data. Microsoft's research group also published an eye-catching paper "GPT-4 beats med students in exams," highlighting the potential of LLMs like GPT-4 in medical education and decision support, which Microsoft is poised to exploit via Azure OpenAI.

Market Impact: Microsoft's technologies are deeply embedded in healthcare workflows, albeit sometimes invisibly. By empowering countless hospitals with AI-driven documentation and by providing the cloud backbone for many medtech AI applications, Microsoft has become akin to critical infrastructure for healthcare AI. The acceptance of ambient AI scribes (DAX) is a turning point – physicians are directly relying on AI daily, often without even thinking of it as "AI" but just as a tool. This normalizes AI assistance in medicine. Additionally, Microsoft's push with LLMs could dramatically affect medical training and patient interactions (if every clinician has a reliable AI assistant to consult for second opinions or administrative tasks, that could improve efficiency and possibly outcomes). For medtech companies, Microsoft Azure is a preferred cloud to deploy

their regulated AI solutions because of its compliance features; thus, Microsoft indirectly hosts and distributes a lot of medtech AI software. The partnership of Microsoft with so many EHR and device vendors sets up a more connected ecosystem (imagine an AI that not only writes the note, but also pulls data from a connected pacemaker, and schedules a follow-up – Microsoft is inching toward that level of integration via its cloud services and Teams/Office products in health). In summary, Microsoft in 2025 is a powerhouse of healthcare AI enablement – **providing platforms and tools that augment clinicians (with speech and language AI)** and supporting medtech innovations behind the scenes. Its influence ensures that AI becomes seamlessly woven into healthcare delivery, from the exam room conversation to the final billing code.

NVIDIA (Santa Clara, CA, USA) – AI Hardware & Platforms for Medtech

Overview: NVIDIA is the leading designer of graphics processing units (GPUs) and a driving force behind the computational infrastructure for AI. In healthcare and medtech, NVIDIA doesn't produce clinical devices themselves, but their hardware and software platforms power a huge range of AI-enabled medical technologies – from imaging devices to surgical robots and drug discovery simulations. By 2025, NVIDIA's role in medtech has expanded through specialized toolkits (like **Clara** for healthcare) and collaborations that embed its high-performance computing into medical devices. Essentially, if an AI model is being used in healthcare, there's a good chance it was trained on NVIDIA GPUs or is running on NVIDIA chips at the point-of-care.

Key Technologies: NVIDIA provides **GPUs** and now **DPUs** (data processing units) that accelerate AI computations. In medtech contexts, these chips are inside devices or servers processing imaging data, etc. On the software side, NVIDIA offers **Clara**, a healthcare application framework with libraries for imaging (Clara Imaging), genomics (Clara Parabricks), and smart hospital (Clara Guardian). Clara Imaging includes pre-trained models and tools to build radiology AI; Parabricks speeds up genomic analysis (e.g., whole genome in under an hour on GPUs). NVIDIA's recent introduction of the **IGX platform** brings powerful edge computing into clinical settings – IGX is essentially a GPU-enabled computer certified for medical and industrial use, ideal for running AI in operating rooms or patient monitoring settings (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). NVIDIA also has **Holoscan**, a software SDK to help medtech developers stream medical sensor data (like endoscopy video or ultrasound) through AI models in real-time on devices (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). For surgical robotics, NVIDIA's **Isaac** platform aids in robot simulation and training, which some surgical robot firms utilize to develop AI for robotic autonomy. Additionally, NVIDIA's work in **digital twins and simulation** (like their Omniverse platform) is being applied to create virtual models of organs or populations for testing interventions.

Medtech Applications Enabled by NVIDIA: Medical Imaging Devices: Many modern MRI, CT, and ultrasound machines incorporate NVIDIA GPUs to perform rapid image reconstruction and run inline AI algorithms (e.g., GE and Siemens use them for their AI reconstructions; smaller companies like United Imaging do as well). For instance, an MRI might use a Clara AI model on the GPU to denoise images or a CT might automatically detect lesions – tasks accelerated by NVIDIA hardware. **Diagnostics AI Development:** The majority of AI radiology startups train on NVIDIA GPU clusters and deploy via NVIDIA's TensorRT optimizations for inference. Clara Imaging has been used to develop FDA-cleared tools like Aidoc's and Viz.ai's offerings. NVIDIA collaborated with the American College of Radiology to create AI models using federated learning (their EXAM pulmonary COVID-19 model was trained across 20 institutions on NVIDIA's platform). **Robotics and Surgery:** NVIDIA's Jetson edge modules (small GPU computers) have been used in devices like endoscopy systems that have AI-based lesion detection. Notably, Medtronic's GI Genius and some newer surgical visualization systems rely on edge GPUs to run vision AI. In 2025, at NVIDIA's GTC conference, they announced **Isaac for Healthcare** – essentially leveraging their robotics SDK to assist companies making surgical robots, rehabilitation robots, etc., to incorporate AI for perception and control (Nvidia's GTC 2025: Here's the top medtech AI news - MassDevice) (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). **Smart Hospitals:** Through Clara Guardian, NVIDIA's tech is used for vision AI in hospitals – e.g., cameras monitoring patient falls or PPE compliance (somewhat similar to what Care.ai does, and indeed partners like Care.ai or AI-enabled nurse call systems run on NVIDIA compute). **Drug Discovery:** Pharmaceutical companies use NVIDIA's high-performance computing for molecular simulations; the collaboration of NVIDIA with Schrödinger and others speeds up quantum chemistry calcs for drug design. Also, NVIDIA's **BioNeMo** (a generative AI service for proteins and chemicals) launched, which can generate novel molecule structures or protein sequences, competing in the same space as biotech-specific companies.

Notable Initiatives: NVIDIA actively partners with medtech leaders. In 2024, it announced a memorandum with Medtronic to integrate NVIDIA AI tech into Medtronic's upcoming surgical platform for real-time data analysis (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). It also partnered with Johnson & Johnson – as described earlier, J&J is using **NVIDIA IGX and Holoscan in its connected surgical ecosystem** (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech) (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech). These deals mean future J&J surgical devices will likely carry NVIDIA hardware and use its AI stack. NVIDIA's **Inception program** has nurtured hundreds of healthcare AI startups (like Paige, Aiva, Subtle Medical) providing them with computing resources and expertise. At GTC 2025, NVIDIA highlighted several healthcare breakthroughs: e.g., a startup using NVIDIA AI to develop an AI-guided ultrasound that can autonomously scan (their demo showed an AI scanning a patient's liver with a robotic arm). NVIDIA also unveiled a reference design for an AI-powered endoscopy module, enabling quicker development for device manufacturers. Regulators have started to approve devices explicitly listing NVIDIA hardware – e.g., some AI-enabled imaging devices list the specific NVIDIA GPU model as part of the cleared system. The Clara Parabricks genomics

pipeline has been adopted by genomics labs to the point that the UK's NHS is using it for the 100K genomes project to accelerate analysis.

Market Impact: NVIDIA's tech essentially makes AI in medtech feasible at scale – without GPUs, the training of complex models like those for medical image analysis would be prohibitively slow, and real-time inference in clinical workflows (like analyzing a surgery video on-the-fly) would be impossible. By providing both the **shovels (hardware) and the mining maps (SDKs)** for medtech AI, NVIDIA has ingrained itself as a foundational layer in the industry. This means medtech companies can focus on the clinical side of AI while relying on NVIDIA for performance and deployment. Hospitals indirectly feel NVIDIA's impact when they see faster scans, or get AI results embedded in reports – much of that is powered by GPUs either on-prem or via cloud. For pharma IT, running massive simulations or training multimodal AI models (imaging + text) is reliant on NVIDIA's ever-growing compute capabilities; the introduction of NVIDIA's Hopper and Ada Lovelace GPU architectures continue to push what's possible (like training larger medical language models that can reason better). In robotics, having high-performance edge computing (like IGX) in a compact, certifiable form factor is unlocking new surgical robot features – we may soon see autonomous endoscopic maneuvers or AI safety features because the robot "brain" (GPU) can process data fast enough. Essentially, NVIDIA acts as the **"Intel Inside"** for medtech AI – a behind-the-scenes enabler that almost every AI innovation in healthcare touches. Their continued R&D in chips and AI frameworks will directly influence how powerful and prevalent medical AI solutions can become in the near future. As of 2025, thanks in large part to NVIDIA, the medtech industry has the computational horsepower to realize AI applications that were purely theoretical a decade ago (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech) (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech).

Sources: The information in this article was compiled from a range of up-to-date sources, including company press releases, industry news outlets, and scientific publications. Notable references include MedTech Dive and MD+DI interviews for insights on Medtronic ('Our next frontier is prediction': Medtronic on AI and heart disease - MedTech Dive) (Medtronic partners with Brainomix on AI stroke tool - MedTech Dive), Johnson & Johnson's own announcements for their AI surgery initiatives (Johnson & Johnson MedTech working with NVIDIA to scale AI for surgery - J&J MedTech), Imaging Technology News for GE HealthCare's FDA-cleared AI device count (GE HealthCare to Spotlight Industry-Leading AI-Enabled Portfolio and Digital Solutions at HIMSS 2024 - Imaging Technology News), Radiology Business for Siemens Healthineers' AI investments (Siemens Healthineers inks $560M imaging and AI deal with Canadian government), Globenewswire for Philips' pathology AI partnership (Philips and Ibex expand partnership to enhance AI-enabled), Fast Company for Viz.ai's hospital adoption stats and FDA clearances (Why Viz.ai is one of the most innovative companies of 2024) (Why Viz.ai is one of the most innovative companies of 2024), company websites for Aidoc's FDA clearances and global reach (Aidoc to Establish Guideline to Accelerate AI Adoption in Healthcare), FierceHealthcare for Tempus's data platform and IPO (Tempus AI aims to raise $400M in IPO), Nature/BioSpace for

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