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## AI-Guided Milestone | Watson Options | The Unmatched

By The Imaging Wire (<https://www.theimagingwire.com/author/admin-jake/>), February 22, 2021

**"Fear of AI is a decadent, first-world problem."**

UPenn Prof. Saurabh Jha (<https://www.youtube.com/watch?v=W1U3agSDldw&feature=youtu.be>) during his keynote speech at the recently-posted Michigan AI 2020 Symposium.

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- [Riverain Technologies](http://www.riveraintech.com/) (<http://www.riveraintech.com/>) – Offering artificial intelligence tools dedicated to the early, efficient detection of lung disease.
- [Siemens Healthineers](https://www.siemens-healthineers.com/en-us/medical-imaging/diagnostic-imaging) (<https://www.siemens-healthineers.com/en-us/medical-imaging/diagnostic-imaging>) – Shaping the digital transformation of imaging to improve patient care.
- [Zebra Medical Vision](https://www.zebra-med.com/) (<https://www.zebra-med.com/>) – Transforming patient care with the power of AI.

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## The Imaging Wire

### An AI-Guided Ultrasound Milestone

We've heard a lot about AI-guidance's potential to expand ultrasound to less experienced users, and a [new study in JAMA Cardiology](https://jamanetwork.com/journals/jamacardiology/fullarticle/2776714) (<https://jamanetwork.com/journals/jamacardiology/fullarticle/2776714>) just provided scientific evidence to support these claims.

- **The Study** – The researchers had eight nurses (w/ 1hr of basic US training) perform a 10-view echocardiogram protocol on 30 patients (240 patients total) using Caption Health's Caption Guidance software installed on a Terson ultrasound. They then had a team of trained sonographers perform the same scans without AI guidance, and assigned five blinded experts to review both the sonographer and AI-guided scans.
- **The Results** – The expert reviewers found that the AI-guided nurses produced "diagnostic quality" scans on the vast majority of left ventricular size (98.8%), left ventricular function (98.8%), right ventricular size (92.5%), and pericardial effusion presence (98.8%) assessments (the four primary assessments). The nurses and trained sonographers' scans also "were not significantly different" when identifying normal and abnormal size/function (90.6% to 96.6% agreement rates).
- **The Takeaway** – This study shows that ultrasound novices can perform quality echocardiography assessments with the help of AI guidance (at least for these four main assessments), which is a solid milestone considering that's exactly what AI-guided ultrasound technology is intended to do. It could also prove to be a key milestone in ultrasound's expansion to frontline clinicians.

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- **Making a Better Mammogram:** Breast imaging startup, Imagine Scientific, [unveiled a new monochromatic X-ray source technology](https://physicworld.com/a/monochromatic-x-ray-source-could-make-mammograms-safer/) (<https://physicworld.com/a/monochromatic-x-ray-source-could-make-mammograms-safer/>) that they say can produce high-quality images, with 85% less radiation, and higher sensitivity than current mammography X-ray sources, without compression. The prototype combines two X-ray emission processes to generate more focused monochromatic X-ray beams, allowing the quality and dosage improvements over multi-wavelength X-ray emission beams, and making it a potential alternative to the X-ray tubes used in current DM and DBT mammography systems. Imagine Scientific suggests that its tech could bring similar improvements to other X-ray modalities too.
- **IBM Exploring Watson Health Options:** After a decade of big bets and [public challenges](https://www.theimagingwire.com/2018/08/20/tech-giants-pledge-molecular-neuroimaging-ibm-speaks-up/) (<https://www.theimagingwire.com/2018/08/20/tech-giants-pledge-molecular-neuroimaging-ibm-speaks-up/>), IBM is [exploring selling its Watson Health division](https://www.wsj.com/articles/ibm-explodes-sale-of-ibm-watson-health-11615696770) (<https://www.wsj.com/articles/ibm-explodes-sale-of-ibm-watson-health-11615696770>) (including Merge) as part of its increased focus on its cloud business. IBM is reportedly evaluating a number of options including selling to a PE firm or another industry player, although it's unknown how much IBM is looking to make from the division that brings in about \$1B annually and reportedly isn't profitable.
- **NJH's Incidental Improvements:** Denver's National Jewish Health [improved its incidental lung nodule follow-up rates](https://www.iacr.org/article/S1546-1440(21)00113-7/fulltext) ([https://www.iacr.org/article/S1546-1440\(21\)00113-7/fulltext](https://www.iacr.org/article/S1546-1440(21)00113-7/fulltext)) after adopting a system that combines standardized "tracker" phrases, radiology report follow-up recommendations, and a computerized registry that reminds patients and providers to follow up. After launching the system in 2011 (sample = 410 before adoption, 626 after) NJH increased its ratio of CT reports that include follow-up guidance (30% to 94%), reduced its ratio of reports that were missing follow-up timelines or recommended follow-ups beyond 24 months (48% to 31%), and increased its patients' on-time follow rates (46% to 55%).

- **China's AI Leadership:** Harvard Business Review [detailed China's recent emergence as a global AI leader](https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai) (<https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai>), surpassing the U.S. in both AI research papers and patents, and appearing "poised" for AI business leadership (particularly w/ voice and image recognition). However, the article suggests that China's AI accomplishments have been inflated by the country's AI-friendly regulations and open data sharing practices, and China's actual technological capabilities and production of "truly original ideas" are not as strong as some might assume.
- **LC Screening Evidence:** [Initial results](https://www.theguardian.com/society/2021/feb/14/ct-scan-catches-70-of-lung-cancers-at-early-stage-nhs-study-finds) (<https://www.theguardian.com/society/2021/feb/14/ct-scan-catches-70-of-lung-cancers-at-early-stage-nhs-study-finds>) from the NHS' SUMMIT study (n = 12.1k patients; 55-78yrs) suggest that making lung cancer CT screenings a standard procedure for current and ex-smokers significantly increases early-stage cancer detections (70% detected at stage 1-2 vs. 30% w/ current methods). This could reduce the UK's lung cancer mortality rates by 25% for men and 30%-40% for women, which is enough to prompt calls for the country to adopt a national lung cancer screening program.
- **United Imaging & Vizient:** United Imaging and Vizient [launched an alliance](https://www.prnewswire.com/news-releases/united-imaging-announces-agreement-with-vizient-for-computed-tomography-systems-301230560.html) (<https://www.prnewswire.com/news-releases/united-imaging-announces-agreement-with-vizient-for-computed-tomography-systems-301230560.html>) that will make UIH's CT portfolio available to United members at special contracted rates. This alliance comes just two months after UIH launched a similar CT/PET/MRI partnership with Intalere (<https://www.intalere.com/newsroom/id/1532/intalere-members-to-benefit-through-new-agreement-with-united-imaging>).
- **Dental X-Ray Cancers:** A [new study](https://www.oooojournal.net/article/S2212-4403(21)00074-2/fulltext) ([https://www.oooojournal.net/article/S2212-4403\(21\)00074-2/fulltext](https://www.oooojournal.net/article/S2212-4403(21)00074-2/fulltext)) out of Ohio State estimated that dental X-ray exams caused 967 cancers in 2019, which could be reduced to 237 cancers if dentists used rectangular collimation (vs. full-mouth and cone beam CT examinations) and adopted new selection criteria. Noting that only 1% of reviewed dentist offices use collimators or Informed Consent for radiography, this would require significant change.
- **Intraoperative XPCI-CT:** A UCL and St Bartholomew's Hospital research team [unveiled a new intraoperative imaging technique](https://www.nature.com/articles/s41598-021-83350-w) (<https://www.nature.com/articles/s41598-021-83350-w>) that could evaluate breast conserving surgery margins for cancerous tissues 2.5-times more effectively than the current X-ray-based tissue evaluation method. The new X-Ray Phase Contrast CT imaging technique (XPCI-CT) provides surgeons with a 3D image of extracted tissues (wide local excisions, WLEs) during the surgery, eliminating WLE histopathology tests' multi-day turnaround times and reducing second surgeries to remove remaining cancerous tissue (potentially also by 2.5x). The researchers are bullish on XPCI-CT, suggesting that this study should pave the way for clinical use and potential expansions to other surgeries (intestinal, esophageal, and prostatic).
- **Fujifilm & Hitachi's Acquisition Milestone:** After a lengthy COVID-related delay, Fujifilm and Hitachi [reached an "absorption-type company split agreement"](https://www.hitachihealthcare.com/sites/default/files/2019-12/20191218_Press%20Release.pdf) ([https://www.hitachihealthcare.com/sites/default/files/2019-12/20191218\\_Press%20Release.pdf](https://www.hitachihealthcare.com/sites/default/files/2019-12/20191218_Press%20Release.pdf)) that will lead to Hitachi transferring its imaging business (including CT, MRI, Ultrasound, X-ray, EMR) to Fujifilm for about \$1B on March 31, well below the acquisition's original \$1.6B price tag. Integrating these companies is going to take a while, but this is still a major step towards giving Fujifilm a top-tier product portfolio and market share.
- **BAC Variations:** A [new Academic Radiology study](https://www.sciencedirect.com/science/article/abs/pii/S1076633221000362#) (<https://www.sciencedirect.com/science/article/abs/pii/S1076633221000362#>) (n = 598 ACR members) revealed relatively wide variations in how radiologists report and perceive breast arterial calcifications (BAC), suggesting a lack of standards and consensus. Although 66% of radiologists agree that BAC is a cardiovascular risk factor and 87% include BAC in at least some of their reports, only 41% report BAC 'always' or 'most of the time' (these are usually more experienced rads), just 42% make BAC-related recommendations, 23% include a BAC grade, and 1% provide a BAC score.
- **RSIP's Cardiac CT Module:** [RSIP Vision unveiled](https://www.healthcareglobal.com/technology-and-ai/3/rsip-vision-launches-ai-tool-coronary-assessment) (<https://www.healthcareglobal.com/technology-and-ai/3/rsip-vision-launches-ai-tool-coronary-assessment>) a new artery analysis and intervention planning module that combines deep learning and computer vision with cardiac CT scans to create a 3D model of a patient's coronary arteries and help physicians better visualize and measure artery structure. The vendor-neutral module is available to medical device and solutions manufacturers.
- **DBT Effective, Still Has Disparities:** A [new JACR study](https://www.jacr.org/article/S1546-1440(21)00006-5/fulltext) ([https://www.jacr.org/article/S1546-1440\(21\)00006-5/fulltext](https://www.jacr.org/article/S1546-1440(21)00006-5/fulltext)) (n = 63 U.S. imaging facilities, 385.5k women) found that White women were more likely to receive ≥2 breast cancer screenings between 2015 and 2019 (63.7% White, 57% Black, 51.6% Asian), while Asian women were more likely to be screened with DBT+DM technology (60.5% White, 44.4% Black, 63.1% Asian) and start screening at a younger age (57.2yrs White, 57.3yrs Black, 55.2yrs Asian). All racial groups had improved outcomes with DBT screenings compared to DM, including lower recall rates (8.74 vs 10.06), higher cancer detection rates (4.73 vs 4.60), and higher positive predictive values (5.29 vs 4.45).
- **MRI Safe with Abandoned CIED Leads:** A [JAMA Network study](https://jamanetwork.com/journals/jamacardiology/article-abstract/2776350) (<https://jamanetwork.com/journals/jamacardiology/article-abstract/2776350>) found that MRI exams pose low risks to patients with abandoned cardiac implantable electronic device (CIED) leads, adding to the growing argument against limiting MRI use with these patients. The cohort study (n = 139 patients, 200 1.5T MRIs of different body regions) found no serious adverse events, although five patients experienced temporary lead sensing decreases and one patient experienced subjective sternal heating.
- **The Chronically Unmatched:** [The New York Times detailed](https://www.nytimes.com/2021/02/19/health/medical-school-residency-doctors.html) (<https://www.nytimes.com/2021/02/19/health/medical-school-residency-doctors.html>) how supply and demand issues (more med school graduates, not enough residency slots) are "leaving thousands of young doctors chronically unmatched" and with hefty loans. The article estimates there are 10k "chronically unmatched" doctors in the U.S., including a disproportionate number of unmatched doctors who went to medical school abroad (61% match rate).

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## The Resource Wire

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- Learn how Beirut's emergency physicians [used their point-of-care ultrasound systems](https://www.gchealthcare.com/article/from-shockwaves-to-soundwaves-gc-healthcare-ultrasound-tech-boosts-beirut-hospital-after-devastating-explosion?utm_source=imaging-wire&utm_medium=article&utm_campaign=USC-AD-2021-Reg-ImagingWire_RW) ([https://www.gchealthcare.com/article/from-shockwaves-to-soundwaves-gc-healthcare-ultrasound-tech-boosts-beirut-hospital-after-devastating-explosion?utm\\_source=imaging-wire&utm\\_medium=article&utm\\_campaign=USC-AD-2021-Reg-ImagingWire\\_RW](https://www.gchealthcare.com/article/from-shockwaves-to-soundwaves-gc-healthcare-ultrasound-tech-boosts-beirut-hospital-after-devastating-explosion?utm_source=imaging-wire&utm_medium=article&utm_campaign=USC-AD-2021-Reg-ImagingWire_RW)) to triage and treat patients injured in last year's massive Port of Beirut explosion.
- Check out [how Zebra Med's Chest Solution prioritizes chest X-ray worklists](https://www.zebra-med.com/chest-solution) (<https://www.zebra-med.com/chest-solution>), while providing specific insights into each study.
- It says a lot when a solution works so well for a radiology department that they decide to perform a study to quantify its benefits. [In this Imaging Wire Q&A](https://www.theimagingwire.com/2020/06/25/imaging-wire-q-a-quantifying-riverain-technologies-clearread-ct/) (<https://www.theimagingwire.com/2020/06/25/imaging-wire-q-a-quantifying-riverain-technologies-clearread-ct/>), University Hospital of Zurich's Thomas Frauenfelder discusses his experience and study on Riverain Technologies ClearRead CT.
- [Learn how Novarad's new CryptoChart solution](https://www.novarad.net/cryptochart) (<https://www.novarad.net/cryptochart>) gives radiology departments a simple and affordable way to ditch the disk, and the headaches and costs that come with them.
- Learn how Aaviccenna.AI's LVO detection and triage algorithm (available via Arterys) [improves large vessel occlusion treatment decisions and clinical outcomes](https://d111eljb5o7h84.cloudfront.net/attachments/357ceecf24deee08fea71f017e9b0fe6/82b1e4e1/soun2020.pdf) (<https://d111eljb5o7h84.cloudfront.net/attachments/357ceecf24deee08fea71f017e9b0fe6/82b1e4e1/soun2020.pdf>).
- Explore how Siemens Healthineers' c.cam cardiac camera [fits in your existing space](https://www.siemens-healthineers.com/en-us/molecular-imaging/spect-and-spect-ct/c-cam-augmented-reality?stc=ushc205565) (<https://www.siemens-healthineers.com/en-us/molecular-imaging/spect-and-spect-ct/c-cam-augmented-reality?stc=ushc205565>) using its augmented reality app.
- [This Bayer Radiology case study](https://www.radiologysolutions.bayer.com/sites/g/files/kmftvc641/files/2019-11/Certegra%20PST%20Software%20for%20Abdomen%20Contrast%20Enhanced%20Abdominal%20CT.pdf) (<https://www.radiologysolutions.bayer.com/sites/g/files/kmftvc641/files/2019-11/Certegra%20PST%20Software%20for%20Abdomen%20Contrast%20Enhanced%20Abdominal%20CT.pdf>) details how its Certegra PST Software automates contrast enhanced abdominal CT injection protocols based on patient characteristics and contrast concentration.
- Learn how Hemet Global Medical Center improved efficiencies, safety, and security [when it moved to the Nuance PowerShare Network and ditched the disk](https://www.nuance.com/content/dam/nuance/en-us/collateral/healthcare/case-study/cs-hemet-global-medical-center-powershare-en-us.pdf) (<https://www.nuance.com/content/dam/nuance/en-us/collateral/healthcare/case-study/cs-hemet-global-medical-center-powershare-en-us.pdf>)

- [Watch this recorded webinar \(https://info.hapusa.com/2021-mpfs-updates-webinar-video-slides-1n2utm\\_campaign=The%20Imaging%20Wire%202021%20Sponsorship&utm\\_source=The%20Imaging%20Wire&utm\\_medium=2021%20MPFS%20Updates%20Webinar%20Recording%20Slides%20G](https://info.hapusa.com/2021-mpfs-updates-webinar-video-slides-1n2utm_campaign=The%20Imaging%20Wire%202021%20Sponsorship&utm_source=The%20Imaging%20Wire&utm_medium=2021%20MPFS%20Updates%20Webinar%20Recording%20Slides%20G) from Healthcare Administrative Partners where they examine how the 2021 Medicare Physician Fee Schedule (MPFS) and Quality Payment Program (QPP) final rules will impact radiologists.
- It's clear that structured reporting is a must for CVIS platforms, but they aren't all created equal. [This Hitachi article \(https://www.hitachihealthcare.com/data-driven-decisions-lead-better-outcomes?utm\\_source=tiw&utm\\_medium=tiw-newsletter&utm\\_campaign=jfdblogdata\)](https://www.hitachihealthcare.com/data-driven-decisions-lead-better-outcomes?utm_source=tiw&utm_medium=tiw-newsletter&utm_campaign=jfdblogdata) reveals what physicians and sonographers view as the "non-negotiable" CVIS structured reporting features.

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