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NIBIB Medical Imaging Workshop: Continuing Academy DxCP Initiative Momentum

On November 5, the National Institute of Biomedical Imaging and Bioengineering (NIBIB) hosted a workshop on “**Accelerating Clinical Adoption of Machine Intelligence Applications in Medical Imaging.**” Participants included the Academy and multiple imaging societies, including AAPM, ACR, RSNA, SIIM and the SIR, as well as government agencies. Participants discussed public-private collaboration to address the expressed needs of the medical imaging community for advancing related machine intelligence systems by accelerating foundational and transactional research to develop critically validated applications that improve patient management and clinical outcomes.

This workshop is part of the ongoing momentum and collaboration between the imaging societies and NIBIB leadership, a result of the ongoing efforts facilitated by the Academy’s Diagnostic Cockpit (DxCP) initiative.

Throughout this workshop, a crucial first-step identified for this collaboration would be to aggregate trustworthy large medical image datasets, creating a repository at a secure site, neutral to disparate interests, and with a low barrier to access. Fortunately, the availability of Radiology DICOM standards makes the technical aspects of transmitting and aggregating imaging data relatively straightforward. Each society and federal agency illustrated their successes, failures and potential contributions to various aspects of these efforts.

The expected results would create a secure, trusted, accessible network around a large, diverse repository of medical images to provide (FAIR) opportunities for multidisciplinary team-based collaboration on advancing and accelerating machine intelligence applications from clever concepts to validated clinical practice.

This pre-commercial sandbox could serve to de-risk investment by industry, while possibly also functioning as a trusted early standardized test-bed for certification/accreditation for regulatory agencies.

The Academy will host a meeting on December 4th, with our industry partners and NIBIB leadership to continue this discussion with them.

By supplementing the imaging data for selected high-impact use cases with additional clinical data, including medical records, pathology, omics, etc., we would show in-depth beginning-to-end effects for selected key clinical problems aimed at improving patient outcomes, and truly revolutionize the practice of clinical medicine and enhancing initiatives such as *All of Us*. Successful templates could be re-purposed for future applications. Indicators of success would be the wide real-world adoption of validated MI methods and clinical applications created through this collaborative effort and continued new R&D collaborations through this ecosystem. The next steps from the meeting were to refine the proposal, define realistic expectations and project scope, select initial and long-term goals, establish milestones, organize logistics such as required facilities, equipment, human resources, timelines and budgets, and request volunteers.

In addition to Academy staff, the following Academy member societies participated:

- The Academy: Vice President Mitch Schnall, MD, PhD
- RSNA: Curt Langlotz, MD, PhD, David Mendelson, MD
- ACR: Bill Thorwarth, MD, Bibb Allen, MD and Mike Tilkin, PhD
- AAPM: Cynthia McCullough, PhD and Paul Kinahan, PhD
- SIIM: Paul Nagy, PhD,
- The SIR Foundation: Gordon McLennan, MD

The Academy is grateful to the NIBIB for hosting and facilitating this important workshop and for the continued opportunity to maintain momentum.

