



**JAMEEL
CLINIC**
FOR MACHINE LEARNING IN HEALTH

Overview

The recent decade witnessed significant developments in clinical AI technologies. These advancements include all the areas of clinical care, ranging from risk assessment and diagnostics, to treatment personalization and prediction of treatment outcomes. If implemented in clinical practice, these new technologies can save lives and improve quality of care while controlling its costs.

However, translation of these technologies to hospitals has been lagging behind. For most of these powerful tools, we still need to understand how to best integrate them into the existing clinical pipelines to improve patient outcomes. This research has to be done in close collaboration with clinicians who will be ultimate users of the tools. Another important aspect of safe clinical AI deployment relates to its ability to robustly handle different patient populations, clinical settings, etc. We have already seen multiple cases where AI tools developed on one population were unable to scale up to other demographics, leading to inequitable outcomes in patient care. The only way to address this concern is by broadly testing AI tools across many hospitals that represent diverse demographics and clinical facilities.

In summary, the ultimate goal of this effort is threefold:

1. Develop procedures for safe and effective deployment of AI tools in specific clinical contexts
2. Broadly test AI tools to ensure equitable health outcomes
3. Refine tool development to optimize their clinical utility

In collaboration with Wellcome Trust, we are engaging with inaugural hospitals to establish a multiyear collaboration. This network of hospitals will have free of charge access to a repository of cutting-edge AI tools as they become mature enough to integrate into the clinical pipeline. These tools will cover a wide range of clinical applications, and the hospitals can decide which of those tools are of interest for clinical implementation. On the MIT side, we are committed to facilitate all stages of deployment, from IT help to educating physicians about clinical AI. Through this research process, we expect to collect critical feedback on adoption, usability and usefulness of these algorithms in actual clinical settings.

To accelerate global outreach of clinical AI technology, we are working with hospitals in developing countries and are committed to supporting deployment and educating physicians to make these hospitals AI-ready.

What we will provide to hospitals:

- Access to a repository of clinical AI tools across multiple therapeutic areas, including corresponding software and documentation
- Backline support to hospital's IT organization during deployment and use
- Infrastructure for reporting feedback to MIT
- Access to educational clinical AI resources developed at Jameel Clinic at MIT
- Participation in conferences and seminars organized by Jameel Clinic at MIT
- Opportunity to build collaborations and co-author research publications with MIT faculty and students

What we need from participating hospitals:

We are expecting that hospitals participating in this research will be willing to incorporate AI tools into their clinical research and study their impact on patient care. Since the same AI tools can be utilized in many different ways depending on the local context, we assume our collaborators will identify ways to customize the tools to their own hospital environments. As part of the clinical deployment, we will be studying the utility of these tools in the clinical pipeline and assess their impact on patient care. We do not expect that every hospital will try all the available tools, so we will let the clinical participants decide which models are most appropriate for their needs.

Specifically, we expect the following from our hospital collaborators :

- Engagement from clinicians who will utilize the models and provide feedback (as specified below)
- Compliance with patient-related regulations (e.g., IRB) in your institution
- Project coordinator to serve as liaison between the MIT team and your hospital
- IT support to facilitate deployment, first line user support to clinicians on tool utilization

Collected feedback will depend on a specific clinical AI model and its utilization in a hospital. Jointly with clinicians, MIT researchers will determine appropriate forms of feedback and provide an interface for its collection. Examples of feedback include statistics on usability, error rate, and user comments. As part of the project, MIT team will not have access to patient data, and only require aggregate statistics about the population.

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