To: Psychiatry Faculty and Research Staff

The Department of Psychiatry is seeking proposals for neuroscience research projects that aim to incorporate machine learning (ML) approaches in the analysis and interpretation of project data. The award will provide computational expertise and resources through the Iowa Initiative for Artificial intelligence (IIAI, www.iiai.uiowa.edu) to directly support the selected research projects. Selected projects may be new projects or computational expansions of existing funded research projects.

Responsive proposals will:

- address important questions in neuroscience or psychiatric research using data-driven approaches
    - data types amenable to machine learning include: neuroimaging, electrophysiology, DNA or RNA sequencing, high-throughput molecular screens, audio and video recordings, high-throughput microscopy, actigraphy, eye tracking, social media, electronic medical records, large-scale epidemiological data, and potentially others
- be based on access to sufficient data to answer (or start answering) such questions
- seek machine learning expertise as an enabling strategy
- describe the predictors or input variables (X) and the response or outcome variables (Y)
    - for example: "We aim to use audio recordings of patients (X) to predict C-SSRS scores (Y)." or "We aim to use calcium imaging (X) to predict expression of immediate early genes (Y)."
- be willing to invest effort in building a new interdisciplinary team

Research projects that are not currently supported by external peer-reviewed funding should include realistic plans for preparing and submitting a large (R01 or similar sized) extramurally-funded neuroscience research proposal within 12 months after receiving pilot funding.

Awards will amount to the equivalent of $15,000 in support from the IIAI. This corresponds to about 10 weeks of expert support at 25% effort and the requisite computational resources to achieve results adequate as preliminary data in a grant proposal. It will also include an expert write-up of the needed methodology for an R01-equivalent proposal. The IIAI will consult with awardees to plan for longer-term collaborations that will ensure the sustainability of the project. It is anticipated that up to 2 awards will be made during this round.

Applicants are required to review concepts with M. Sonka (milan-sonka@uiowa.edu), Director of IIAI, and Jake Michaelson (jacob-michaelson@uiowa.edu), Division Director of Computational and Molecular Psychiatry, who will make the recommendation for a full submission. An internal peer-review committee will be identified to review proposals and make recommendations concerning funding to the Department of Psychiatry leadership.

The proposal submission has 3 phases – see the timeline below … emailing a statement of intent, discussing your plans with IIAI, and submitting a brief proposal (2 pages maximum) addressing the following:

1. Project Title
2. Investigators
3. Specific aims + Statement of Neuroscience Relevance; should include a brief, conceptual description of the predictor or input variables (X) and the response or outcome variables (Y)
4. Current support for the project (if any)
5. Preliminary data (if any), description of available data to facilitate the proposed research
6. Specifics on how involvement of the IIAI expertise/use of computational resources will advance the research
7. Plans to receive extramural funding

Timeline:

- 2/24/2023
    - Email a brief statement of intent to M. Sonka (milan-sonka@uiowa.edu) and Jake Michaelson (jacob-michaelson@uiowa.edu)
    - This email should include a draft document briefly outlining items 1, 3, 5 of the proposal above
- 2/27 – 3/10/2023
    - Scheduled meetings of each team with at least Jake and Milan to discuss the proposed research
- 4/1/2023
    - Proposal submission (2 pages max)
- 4/2 – 4/10/2023
    - Internal review of proposals, recommendation to Dept. Psychiatry leadership
- 4/14/2023
    - Selection of projects to be funded by Psychiatry leadership
- 4/15/2023
    - Announcement of up to 2 projects to be funded