

We are partnering with the College of Engineering to develop Artificial Intelligence/Machine Learning (AI/ML) projects. As you all know, these techniques will have great impact on our specialty in the years to come. The potential use of AI/ML in radiology research includes data driven basic, clinical and population research. Our aim is to facilitate development of new and enhance existing interdisciplinary collaborations in radiology research that can benefit from novel aspects enabled by incorporating AI and machine learning.

This partnership involves a call for proposals for specific pilot projects that require Artificial Intelligence/Machine Learning (AI/ML) expertise and dedicated AI/ML computational resources. Selected projects may be new projects or AI/ML expansions of existing funded research projects. These projects will be relatively small scale, proof-of-principle, studies to generate preliminary data. These data would ideally be used to apply for external funding for the subsequent larger study.

Responsive proposals will:

- address important questions in radiologic research using data-driven approaches
 - 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 obtain radiomic medical image descriptors of potential cancer lesions as well as their malignancy-assessing biopsy (X) to train a system to determine whether a lesion is benign or malignant (Y)" or "We aim to use descriptors of aneurysmal morphology and blood perfusion of the wall (X) to predict speed of progression (Y)."
 - be willing to invest effort in building a new interdisciplinary team
- 1) Faculty 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 radiology research proposal within 12 months after receiving pilot funding.
 - 2) Fellow research projects need to include a realistic plan how the proposed research will lead to submission of an external funding request to support future years of the fellowship.

It is anticipated that 1 Faculty Research Award per year (supported by \$10,000 to IIAI) and 3 Fellow research Education Awards (supported by \$5,000 to IIAI each) will be made during this round. These funds will go to the Iowa Initiative for Artificial Intelligence (IIAI) to directly support the time, effort, and computing resources necessary for the research project.

Applicants are required to review concepts with M. Sonka (milan-sonka@uiowa.edu), Director of IIAI and/or Girish Bathla (girish-bathla@uiowa.edu) – and obtain their input and sign-off, prior to application. An internal peer-review committee will be identified to review proposals and make recommendations concerning funding of submitted proposals to Radiology 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 (maximum 2 pages) addressing the following:

- 1) Project Title
- 2) Investigators
- 3) Specific aims + Statement of Radiology relevance
- 4) Current support for the project (if any)

- 5) Preliminary data (if any), description of available data to facilitate the proposed research
- 6) Description of needs to obtain/use IIAI services (expertise, computational resources)
- 7) Specifics on how involvement of the IIAI expertise/use of computational resources will advance the research
- 8) Plans to receive extramural funding (faculty research) or plans to apply for extramural fellowship support (fellows)

Timeline:

- 12/15/2020
 - Email a brief statement of intent to M. Sonka (milan-sonka@uiowa.edu) and Girish Bathla (girish-bathla@uiowa.edu)
 - This email should include a draft document briefly outlining items 1, 3, 5 of the proposal above
- 12/15/2020 – 1/20/2021
 - Scheduled meetings of each team with IIAI to discuss the proposed research
- 1/31/2021
 - Proposal submission (2 pages max.)
- 2/1– 2/15/2021
 - Internal review of proposals, recommendation to Radiology leadership
- 2/20/2021
 - Selection of projects to be funded
- 2/21/2021
 - Announcement of up to 1 faculty and up to 3 fellow projects to be funded