To: College of Engineering Faculty

The College of Engineering is seeking proposals that simultaneously focus on A) advancements of Artificial Intelligence (AI)/Machine Learning (ML) methods and B) their application to data-driven engineering research problems. As such, the proposal must be submitted jointly by 2 Co-PI's, one contributing expertise in the area of AI/ML and the other contributing the data and domain-specific expertise. At least one Co-PI must be from the College of Engineering. Selected projects must be new projects or computational/data-driven expansions of existing funded research projects. Interdisciplinary and cross-college projects are encouraged.

The current funding is anticipated to support three awards.

Responsive proposals will:

- Be jointly submitted by two Co-PI's, forming a single coherent proposal
- Address important domain-specific questions that also use and advance AI/ML impact in those domains.
- Address essential questions in Engineering research using data-driven approaches that employ AI/ML expertise as an enabling strategy
- Offer tangible improvements to theoretical or practical aspects of AI/ML
- Confirm existing access to sufficient data necessary to demonstrate (or start demonstrating) feasibility of addressing the identified central premise of the proposed research
- Describe the goals of the application/project-oriented portion of the project by clearly listing input variables (X) and the response or outcome variables (Y)
- Be willing to invest effort in building a new interdisciplinary team
- Be a research project that will lead to a significant new avenue of research that has ML/AI as a foundational component. Research that is not currently supported by external peer-reviewed funding should include realistic plans for preparing and submitting a mature award that provides three to five years of extramurally-funded independent support (NIH, NSF, DoE, or similar). Existing research projects that are currently supported by external peer-reviewed funding must describe how this work will provide avenues for significant funding expansion of the ongoing research enterprise.
- Provide a plan for an engineering-oriented interdisciplinary research proposal within 12 months of receiving this pilot funding.
- At least one Co-PI must be from the College of Engineering.

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. This award corresponds to approximately ten weeks of expert ML/data-analytics support at 25% effort and the necessary computational resources, regulation conformance expertise, data sharing expertise, and administrative support from the IIAI initiative (approximately a $15,000 value). The IIAI resources will focus on achieving the results for the application-oriented portion of the project to be used as preliminary data in the ensuing grant proposal. The AI/ML co-PI will contribute an expert write-up of the needed methodology for the research proposal. The IIAI will consult with awardees to plan for longer-term collaborations that will ensure the sustainability of the project.

Applicants are required to review concepts with M. Sonka (milan-sonka@uiowa.edu), Director of IIAI 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 College of Engineering 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. Description of available data to facilitate the proposed research
4. Specific aims + Statement of AI/ML and Engineering Relevance; should include a description of the strategies to advance AI/ML technology/theory and a brief, conceptual description of the predictor or input variables (X) and the response or outcome variables (Y) used in the application part of the project
5. Specifics on how improvements of the AI/ML technology/theory and use of IIAI computational resources will advance the research
6. Current support for the project (if any)
7. Plans to receive extramural funding

Timeline:

- 9/10/2022
  - Email a brief statement of intent to M. Sonka (milan-sonka@uiowa.edu)
  - This email should include a draft document briefly outlining items 1, 3, 5 of the proposal above
- 9/12– 9/23/2022
  - Scheduled meetings of each team with IIAI to discuss the proposed research
- 10/7/2022
  - Proposal submission (2 pages max.)
- 10/10– 10/21/2022
  - Internal review of proposals, recommendation to CoE leadership
- 10/26/2022
  - Selection of projects to be funded
- 10/31/2022
  - Announcement of up to 3 projects to be funded