Questions and Answers re: 2019 AI Horizons Scholars Program

The call for 2019 AIHN Scholars has been released and circulated, a copy is available at the end of this Q/A page if needed.

*Reminder:* To apply for the program, a student must fill out the [AI Horizons Scholars Application form](#).

1. **What is the purpose of this program?**
   - IBM and Rensselaer have embarked on a multi-year joint project to work together to develop and transition new technologies in Artificial Intelligence and Machine Learning and in the application of these powerful technologies to important problems of interest to researchers at both organizations. The specific purpose of the scholars program is to provide funding for interested graduate students who will be working with an advisor at Rensselaer, as usual, but will also spend time working with researchers at an IBM research site (typically IBM Yorktown Heights or IBM Cambridge).

2. **What support is offered to the AI Horizons Scholars?**
   - Students will be provided with tuition and stipend for all the time they are participating in the program. Additional funding for living expenses will be provided during the two terms they spend at IBM research facilities.

3. **How long does the funding last?**
   - We intend to support scholars up to their fourth year at Rensselaer (so a student receiving the scholarship at the end of the first year would be eligible for three years of funding, at the end of their second year they’d be eligible for two years, etc.) Funding will need to be renewed year to year depending on student success.
academically, satisfactory interaction with IBM researchers, and availability of funding.

4. Do students need to identify an IBM researcher to work with at the time of application?
   - While it is not required, it is beneficial if the student can identify either an IBM research group doing related work or a specific IBM researcher. If no researcher is named, we will work to identify an appropriate contact at IBM for the work. If a researcher or group is identified, please be sure to include the name and/or a link to the research or group as part of the statement entitled "What do you hope to gain from the AI Horizons Scholars Experience?"

5. Can students in current IBM-funded programs at Rensselaer apply?
   - Absolutely, but make sure the project lead is aware of the application. CISL and HEALS students should contact Dr. Su or Dr. Hendler, respectively.

6. Who can apply?
   - See the program announcement below for details.

7. Is there anything else applicants should do?
   - Applications are due by Feb 15th, this is a hard deadline. You will need to upload a copy of your transcript (graduate transcript required, undergraduate transcript recommended), a copy of your curriculum vitae, and a letter from your advisor - so have these in hand when you are ready to fill out the form. Please check the form in advance to make sure you have all the information you need at the time of filling out the form.
Launch of the AI Horizons Scholar Program

Rensselaer Polytechnic Institute and IBM Research are proud to announce the launch of the AI Horizons Scholars program. This unique program provides funding to RPI graduate students while pursuing their degree and conducting leading-edge, collaborative research with AI researchers at IBM. Selected students will have an IBM Research mentor assigned throughout their tenure as a Scholar, and will be guaranteed 2 full semesters of in-residence research at an IBM Research Lab to work with their mentor on research that is intended to be towards their dissertation.

A key goal of the program is for the Scholars, collaboratively with their RPI advisors and IBM mentors, is to publish research towards their dissertation in top AI conferences. The program also provides support for continued collaborative research when the student is not in-residence at IBM by supporting shorter visits (e.g., 2 weeks) to IBM Research by the Scholar, and potentially their RPI advisor, to further their collaborative research project.

Students are encouraged to apply during their first year of graduate studies, and in-residence semesters are expected to start after students complete their early degree requirements (course work and qualifying exams) at RPI. Students receive yearly benefits for up to 4 years, assuming students continue to make satisfactory progress on their degree. During this inaugural year, students who are in their 2nd or 3rd year of graduate studies may also apply. All RPI graduate students who meet the program criteria below are encouraged to apply. This includes, but is not limited to, students who are already engaged in joint projects with IBM Research, such as AIRC, HEALS, and CISL.

We seek nominations from outstanding candidates that meet the following criteria:

Required:

- High-performing research student at RPI working toward their Ph. D., as evidenced by course work and their advisor’s recommendation.
- Computer programming and debugging skills, with one or more general purpose programming languages such as Python, Java, or C/C++.
- Solid math skills and ability to solve analytical problems using rigorous and quantitative approaches.

Preferred:

- Engaged in or are planning a Ph.D. thesis with a focus in AI or Machine Learning.
• Evidence of an AI focus, such as classes and/or projects in AI, machine learning, deep learning, computer vision, natural language processing, robotics, applied mathematics, optimization, and/or courses focused on data dexterity.
• Have worked with machine learning tools and frameworks such as: Keras, TensorFlow, PyTorch, Torch, Caffe, etc.

To apply for the Scholars program, interested students will:

• Work with their faculty advisors to express your interest and determine jointly if the Scholars program is a good fit for the student and the student’s academic progression.
• Write a research statement (up to 1000 words) that describes their proposed research topic. Areas and methods of interest include but not limited to:
  o Deep learning, including novel architectures with attention and memory
  o Neuro-symbolic networks and approaches
  o Generative models and disentangled representation learning, and emerging approaches such as GANs, VAEs, and GMMNs
  o Reinforcement learning
  o AI-assisted scientific discovery (e.g., material/drug/protein structure design) leveraging above methods, such as machine learning, neuro-symbolic AI, generative models, and related
  o Advanced AI methods for cybersecurity
  o Automated causal structure learning from observational data
  o Software systems to design, train, debug, and manage AI models
  o Interpretability, fairness, accountability of machine learning models
  o Automatic generation and optimization for AI/ML workloads
• Complete the [AI Horizons Scholars Application form](#) before February 15th.

Students interested in applying for the AI Horizons Scholars program must submit applications before February 15, 2019 and the selections are expected to be announced in early March. The first group of AI Horizons Scholars are expected to spend their first in-residence semester in either Summer or Fall of 2019. Requests for residencies in the Spring of 2019 will be considered on an exception basis.

Questions about the AI Horizons Scholars program may be directed to Jack Huang (HUANGJ7@rpi.edu).