2024 NSF-Sponsored Online Training Program on Deep Learning Systems in Advanced GPU Cyberinfrastructure (DL-GPU)

With the recent advancements in artificial intelligence, deep learning systems and applications have become a driving force in multiple transdisciplinary domains. While this evolution has been largely supported by the rapid improvements in advanced GPU cyberinfrastructure, comprehensive training materials are generally absent that combine application-driven deep learning techniques with the implementation of such techniques using the GPU cyberinfrastructure. To fill in this gap, DL-GPU training program provides three-week online training on the key skills, approaches, and tools to design, implement, and execute leadership-class deep learning systems in advanced GPU cyberinfrastructure. This training program includes a set of interdisciplinary cutting-edge training sessions offered by six faculty members from five disciplines in four research universities. With a focus on the latest innovations in GPU-based deep learning systems and applications, this training program fosters a community of the next-generation cyberinfrastructure users and contributors, who can use, develop, and improve advanced GPU cyberinfrastructure for their deep learning research. Such training efforts enhance the knowledge of the deep learning and GPU cyberinfrastructure workforce, and subsequently contribute to the solutions of important scientific and societal problems.

The interdisciplinary online training program aims at enabling participants, including undergraduate seniors/juniors and graduate students, to improve their multidisciplinary skillsets, extend their academic research portfolios, develop their remote collaboration capacities, and significantly strengthen their career competitiveness. To achieve this goal, the training program includes 1) a set of hands-on lecture modules that provide trainees with comprehensive knowledge and skills on the full stack of deep learning systems in advanced GPU cyberinfrastructure, 2) a series of invited talks on advanced GPU cyberinfrastructure, deep learning systems, and related applications given by renowned scientists from academic and industrial research institutes, and 3) remote open-ended interdisciplinary collaborative projects that apply techniques introduced in lectures into practice. The training program is expected to develop a future research workforce in deep learning systems and applications and to broaden the adoption of advanced GPU cyberinfrastructure in research and education.

IMPORTANT DATES:
- Application due: April 12, 2024
- Notification of acceptance: April 19, 2024
- Virtual event of DL-GPU training program: May 13 - June 1, 2024

APPLICATION ELIGIBILITY:
1) Being a U.S. citizen, permanent resident, or holding a legal identity (e.g., F-1) in the U.S.;
2) Being a full-time student at a U.S. university in Summer 2024 (with higher priority) or having been admitted by the graduate school of a U.S. university to be a full-time student in Fall 2024;
3) Must be fully available during the training program;
4) Broadband access to high-speed internet for online lectures, exercises, and discussions during the training program;
5) Familiarity with Python programming and deep neural networks;
6) All the transcripts with a minimum GPA of 3.0 and the current transcript with a minimum GPA of 3.5 for student applicants;

7) For interdisciplinary collaboration, this training program is oriented for applicants with computer science and engineering (CSE) major and non-CSE major (e.g. geoscience and mechanical engineering);
8) For diversity, equity, and inclusion, underrepresented groups are strongly encouraged to apply.

REQUIREMENTS ON PARTICIPANTS:
1) Fully attend the DL-GPU training program (no tuition).
2) Each three-student project team is required to complete one paper of 10 pages by August 2, 2024, and refine it until the acceptance of its submission. The paper target depends on the specific research problem in the training program project and is determined by team advisors, including but not limited to IEEE Big Data 2024 and a workshop in conjunction with ACM Supercomputing Conference 2024.

BENEFITS:
1) $400 will be paid to each participant whose project-based paper is accepted by the submission target. An extra $1,800 will be paid to each 3-student project team whose paper is accepted by the submission target, but its distribution depends on the project contribution of each participant.
2) Registration fee reimbursement for remote paper presentation.

HOW TO APPLY:
Please send your email, titled "DL-GPU training program application", with the following materials attached, to Dr. Tong Shu at tong.shu@unt.edu .
1) Curriculum Vitae (CV), including education/work experience, project and/or publication experience (if available), and a GitHub link showing the source code (strongly recommended)
2) All the transcripts (from B.S. to the present)
3) Statement of purposes (SoP) with no more than one page
4) The home country and a specific legal identity in the U.S. must be pointed out in CV and SoP.
5) A reference letter from the applicant's supervisor is strongly recommended.

SYLLABUS: