Call-for-Paper of Workshop: Artificial Intelligence in Astronomy

Organized by Prof. Ping Guo

Theme:

Astronomy, which is already at the forefront of Big Data science with exponentially growing data volumes and data rates, is now entering the petascale or even terascale regime at optical, infrared and radio wavelengths. This fact necessitates a focus on automated and intelligential techniques and methodologies that can "understand" certain tasks in astronomy research and automatically mine large astronomical data sets for scientific discoveries. One way of performing such tasks is through the use of Artificial Intelligence (AI) technologies. Recently, deep neural networks have taken the world of artificial intelligence by storm. These AI machines now routinely outperform humans in tasks ranging from object recognition to playing the ancient game of Go. It is believed that AI is reinventing the study of modern astronomy. This is because of two separate factors. The first is the fact that large scale astronomical data have become available thanks to the advent of astronomical instruments and observation technology. The second includes improvements in software and hardware technologies, such as deep learning, one-shot learning and high performance computing. However, researchers including computer scientists, data scientists and astronomers have yet to communicate effectively across specialties, to assimilate their achievements, and to consult with cross-disciplinary experts.

We therefore aim to provide AI-based innovative solutions for astronomy. Accordingly, this workshop aims to address the recent theoretical and practical developments, as well as the empirical studies, of Artificial Intelligence in Astronomy. We are seeking papers that present new research contributions on theories, models and algorithms, and applications of artificial intelligence in astronomy. Topics of interests include, but are not limited to:

- Classification, regression and clustering for astronomical data;
- Deep learning in astronomy;
- Time series analysis and image processing in astronomy;
- Visualization for astronomical data;
- Anomaly detection in astronomy
- Bayesian Learning for gravitational wave data analysis
- Feature selection and feature learning for astronomical data
- Learning algorithms for astronomical data

Submission Guidelines

This workshop will include invited talks, tutorials and research papers. Submitted research papers will group into a special session in CIS'16 and should follow CIS'16 paper submission guideline. That is, the submission of a research paper implies that the paper is original and has not been submitted to elsewhere for possible publication. All submissions will be blindly reviewed by experts in the field based on originality, significance, quality and clarity. Authors must not reveal any author information in the submitted paper(s), otherwise the paper(s) will

be rejected immediately without going through the reviewing process. Authors should use the Latex style files or MS-Word templates to format their papers. The length of a submitted paper should not exceed 5 pages in the two-column format of Conference Publishing Services (CPS). The accepted papers will be included in the conference proceedings published by the CPS, and be further submitted to the indexing companies for possible indexing, including EI and ISTP.

For more detailed submission information, please refer to the CIS'16 homepage at: http://cis-lab.org .

Important Dates

- Paper submission due date: July 15, 2016
- Notification of paper acceptance: August 20, 2016
- Camera-ready paper submission due date: September 1, 2016