

NIPS 2013 Workshop on Advances in Machine Learning for Sensorimotor Control Call for Papers

When/Where: A one day (Dec. 9th or 10th) workshop at NIPS, Lake Tahoe, Nevada, USA

Web: <http://acl.mit.edu/amlsc/nips13-Workshop/Main.html>

Description:

Various sensorimotor frameworks have been effective at controlling physical and biological systems, but many techniques rely on pre-specified models to derive useful policies. Advances in machine learning, including non-parametric Bayesian modeling/inference and reinforcement learning allow systems to learn better models and policies from data. However, incorporating modern machine learning techniques into sensorimotor control systems can be challenging due to the learner's underlying assumptions, the need to model uncertainty, and the scale of such problems. This workshop will bring together researchers from machine learning, control, and neuroscience that bridge this gap between effective planning systems and machine learning to produce better sensorimotor control. Domains of interest include autonomous robots and vehicles, as well as complex real world systems, such as neural control or healthcare where actions may take place over a longer timescale.

Relevant Topics:

- Integrating machine learning and planning/control
- Scaling machine learning techniques for real physical and biological systems
- Dealing with uncertainty in planning and control
- Exploration/Exploitation tradeoffs
- Machine learning for high frequency data
- Porting successful supervised or unsupervised learning techniques to sensorimotor control
- Leveraging expert knowledge, demonstrations or priors in learning and planning
- Safety and risk sensitivity in planning and learning
- Modeling, planning, and control under uncertainty in biological systems
- Transferring biological insights to mechanical systems
- Engineering insights with a biological explanation
- Shared lessons between control, neuroscience, and reinforcement learning

Submission Details:

Authors are encouraged to submit their related work to the workshop by 9th of October 11:59 PM PDT (UTC -7 hours) in NIPS format. Submissions should be a maximum of 8 pages with an extra page for references, though shorter papers are welcome as well. Submissions do not need to be anonymous. Papers can be submitted through the EasyChair website <https://www.easychair.org/conferences/?conf=amlsc13>

Important Dates:

Submission - 9 October 2013 11:59 PM PDT (UTC -7 hours)

Notification - 23 October 2013

Workshop – 9th or 10th December 2013

Organizers: Thomas Walsh, Alborz Geramifard, Marc Deisenroth, Jonathan How, Jan Peters

Contact: Questions can be sent to Thomas Walsh [twalsh AT mit.edu]