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BROWN

## Drew Bagnell Carnegie Mellon University

### “People, Machine Learning and Robotics: Interplay and Interaction”



**Wednesday, February 11, 2015**  
**12:00 – 1:30 pm**  
**Barus and Holley Room 190**

My talk will focus on theoretical and algorithmic ideas in machine learning and their origin in problems of robotics. Much of my talk will focus on no-regret online learning methods in machine learning and the critical role of interaction for learning in robotics.

I will highlight the tremendous impact robotics has had in identifying key learning problems and suggesting algorithmic techniques; additionally, I'll consider the remarkable tools that have been developed within AI and learning to address hard robotics problems. I'll discuss a variety of machine learning techniques of increasing sophistication from the most familiar classification problems, to structured prediction, and to imitation learning. I will also address how to make reinforcement learning and learning control practical in robotics.

Throughout I'll consider the interaction between people and robotics, particularly in enabling robots to learn skills from people, learning to forecast people's intentions, and learning to help humans accomplish tasks that would otherwise be difficult or impossible. We will look at case studies in activity forecasting of drivers and pedestrians, imitation learning of robotic locomotion and rough-terrain navigation, and applications to improving brain-computer interfaces. These case studies highlight key challenges in applying AI and learning algorithms in practical settings.

**J. A. (Drew) Bagnell** is an associate professor at Carnegie Mellon University's Robotics Institute, National Robotics Engineering Center and Machine Learning Department. His interests in artificial intelligence range from algorithmic and basic theoretical development to delivering fielded learning-based systems. Bagnell directs the Learning, AI, and Robotics Laboratory (LAIRLab) within the Robotics Institute. He also serves as the director of the Robotics Institute Summer Scholars program, a summer research experience in robotics for undergraduates throughout the world. Bagnell and his group have received research awards in both the robotics and machine learning communities including at the International Conference on Machine Learning, Robotics Science and Systems, and International Conference on Robotics and Automation. His current projects focus on machine learning for dexterous manipulation, decision making under uncertainty, ground and aerial vehicle control, robot perception and computer vision. Prior to joining the faculty, Bagnell received his doctorate as an NSF Graduate Fellow at Carnegie Mellon in 2004 and completed undergraduate studies with highest honors in electrical engineering at the University of Florida.

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*For more information on this talk and the HCRI Speaker Series, contact [hcri@brown.edu](mailto:hcri@brown.edu) or visit [hcri.brown.edu](http://hcri.brown.edu).*