PURDUE UNIVERSITY

School of Industrial Engineering
COLLEGE OF ENGINEERING

INDUSTRIAL ENGINEERING DISTINGUISHED LECTURE SERIES

Gregory Hager

Mandell Bellmore Professor of Computer Science
Johns Hopkins University

JOHNS HOPKINS UNIVERSITY

Toward Intelligent Machines That Learn to Augment People

April 4, 2018 | 2:30 – 3:30 pm | Purdue Memorial Union, West Faculty Lounge
Reception to Follow

ABSTRACT

Over the past decade, we've seen a tidal shift from a traditional view of robots as a means of automation toward robots as a means of augmentation and enhancement – enhancement of productivity, enhancement of life quality, or enhancement of ability. These are all areas where, for the complementary human roles, teaching, training, and mentorship is an important factor – in a small manufacturer we train factory floor workers; in a care facility a care-giver learns to accommodate a patient's deficits; and in an operating room, a surgeon trains residents and fellows.

In this talk, I will explore the complementary ideas of developing robots that learn from people, and systems that perform automated coaching so that humans can learn from robots. I will illustrate these ideas with concrete examples from collaborative robots for manufacturing, healthcare, and automated driving. In particular, I'll describe our recent work on task and motion planning which uses learning-based methods to ground symbolic representations and learn policies that implement the corresponding actions, and I will describe recent developments in automated assessment and coaching in surgery. I'll close with a few thoughts about the broader implications of this work as we develop systems that need to operate collaboratively and synergistically with human trainees and co-workers.

BIO

Gregory D. Hager is the Mandell Bellmore Professor of Computer Science at Johns Hopkins University and Founding Director of the Malone Center for Engineering in Healthcare. Professor Hager's research interests include collaborative and vision-based robotics, time-series analysis of image data, and medical applications of image analysis and robotics. He has published over 300 articles and books in these areas. He is a fellow of the IEEE and of the ACM for his contributions to Vision-Based Robotics and a Fellow of the MICCAI Society and AIMBE for his contributions to imaging and his work on the analysis of surgical technical skill. In 2014, he was awarded a Hans Fischer Fellowship in the Institute of Advanced Study of the Technical University of Munich where he also holds an appointment in Computer Science. Professor Hager is the founding CEO of Clear Guide Medical, and a co-founder of Ready Robotics.