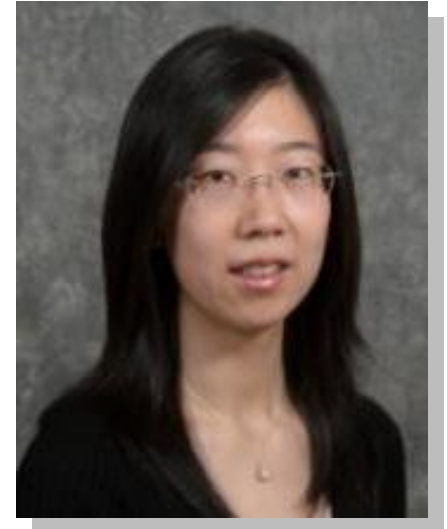




CoCo Seminar Series Fall 2015

Function Allocation in Human-Automation Systems: The Case of Space Teleoperation

Dr. Huiyang Li
Systems Science and Industrial Engineering
Binghamton University



Wednesday October 14th, 2015
8:30-9:30am at Engineering Building R-3
(SSIE Conference Room)

The implementation of automation technologies in complex domains, such as space operations, aviation, and medicine, poses significant challenges for designers. Proper allocation of tasks and functions to human operators and their automated system is critical and needs to be based on a thorough analysis of automation properties and capabilities. In addition, past experience has shown that fixed designs where tasks and functions are assigned on an a-priori basis often lead to unbalanced workload and poor joint-system performance. To better support human-automation collaboration, my research systematically examines the performance effects of level of automation in support of different stages of information processing during routine operations and in case of automation failures through simulation studies. This research also implements and compares the effectiveness of three dynamic function allocation schemes: adaptive (system-controlled), adaptable (user-controlled), and a hybrid approach where the default mode is adaptive but operators are able to override system selections. The research was conducted in the context of space teleoperation, in particular operation of the robotic arm on the International Space Station. The findings of this research inform the design of effective context-sensitive function allocation schemes and associated interfaces. This work can be expected to increase the safety and efficiency of operations in a wide range of domains through improved automation design.

Dr. Huiyang Li is an Assistant Professor of Systems Science and Industrial Engineering at Binghamton University. Her research interests are in human factors and cognitive ergonomics, cognitive systems engineering, and human computer interaction.

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