ABC Robotics and Industrial Engineering & Management Department Seminar

Date: February 20, 2020

Location: Building 16 room 150

Time: 13:00 – 15:00

Speaker: Professor Ellen Bass, College of Computing & Infomatics, Drexel University, Philadelphia , PA, USA

Title of talk: An approach to function allocation: bridging the gap between task analysis and function allocation recommendations

Abstract:

Automation is a key enabler to support human operators in many domains. Function allocation is a process which examines a list of functions that the human-machine system needs to execute in order to achieve operational requirements, and determines whether the human, machine (i.e., automation), or some combination should implement each function. Because function allocation has key implications on safety and performance, it is important to be able to determine function allocation strategies for domains of interest. Currently however there is a gap between how systems engineers think about function allocation and the tasks to be supported. Also there is currently no standard for assessing recommended function allocation strategies. Some human factors descriptions of function allocation can be too abstract or conceptual to guide specific design decisions. Sometimes only response times and subjective measures have been used to evaluate the strategies. Thus, it is important to consider the set of measures for comparing function allocation strategies. This seminar will present a taxonomy to support assignment of function allocation strategies as well as highlight an approach to bridge the gap between function allocation and task analysis.

Bio:
Ellen Bass has over thirty years of human-centered systems engineering research and design experience in air transportation, healthcare, meteorology and other domains. The focus of her research is to develop theories of human performance, quantitative modeling methodologies, and associated experimental designs that can be used to evaluate human-automation interaction and human-human collaboration in the context of total system performance. The outcomes of the research can be used in the systems engineering process: to inform system requirements, procedures, display designs and training interventions and to support system evaluation.

- Dr. Bass's research contributions can be decomposed into four synergistic areas:
- • Characterizing human judgment and decision making
- • Modeling human judgment when supported by information automation
- • Computational models of human-human and human-automation interaction

- ○ ♣ These computational models are instantiated via mathematical formulations, simulation, and formal verification methods
- • Design and evaluation of interventions to improve human judgment and decision making