

OSU DEPARTMENT OF INTEGRATED SYSTEMS ENGINEERING

COGNITIVE SYSTEMS ENGINEERING

Ohio State University hosts the oldest university program in Cognitive Systems Engineering (CSE). Since 1982, the Department of Integrated Systems Engineering has offered both undergraduate and graduate concentrations in CSE and, within the Cognitive Systems Engineering Laboratory, has conducted research focused on the intersection of people, technology and work in the design of complex systems.

Scope. Cognitive Systems Engineering at OSU provides an integrative perspective linking technology and the insights provided by the cognitive sciences to human-centered design within a broader systems perspective. This includes the design of advanced technological systems to support not only individual work, but also teamwork and larger distributed work systems encompassing coordination and collaboration across multiple roles and organizations.

Approach. To accomplish this, we take a highly interdisciplinary approach to the integration of technologies such as computer graphics and multimedia displays, artificial intelligence, data mining, information retrieval, sensing, and robotics with insights provided by the social sciences dealing with decision making and problem solving, perception, learning and memory, attention and group dynamics.

Our contributions to the basic science of CSE are concerned with understanding how new system designs influence the emergence of joint cognitive systems as a result of the adaptive interactions of people and technologies. To ensure that this research focuses on the important leverage points impacted by new approaches to system design, we study the impact of design concepts and innovations on the performances of skilled practitioners in existing and envisioned future systems.

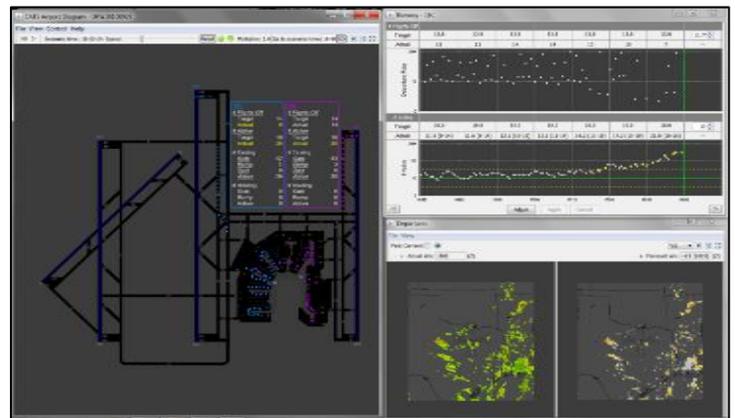


Research Focus Areas

- Interactive Critiquing
- Design-Induced Errors
- Distributed Work Systems
- Intelligent Tutoring Systems
- Continuous Adaptive Planning
- Instructional Design and Tutoring
- Making Brittle Technologies Useful

Research Contexts

- Robotics
- Cybersecurity
- Military Planning
- Cockpit Automation
- Immunohematology
- Airline Operations Control
- Air Traffic Flow Management
- Airport Surface Management
- Intensive Care (Health Care Management)



Concentration Faculty: Philip Smith (ISE), David Woods (ISE), Alex Morison (ISE)

Affiliated Faculty: Rich Jagacinski (Psych), James Todd (Psych)