THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

Visual Analytics and Sensemaking

ISE 5760

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Students learn about information visualization techniques that help people analyze massive amounts of digital data to combat overload and aid sensemaking with applications in retail and financial decision making, logistics, information systems, manufacturing, healthcare, energy and smart grids, cybersecurity and social networks.

Prerequisites and Co-requisites:
Prereq: Jr, Sr, or Grad standing.

Course Goals / Objectives:
- Students will learn the key concepts in visual analytics and how to use them to combat data overload.
- Students will learn the cognitive components of analytical process.
- Students will learn the basic techniques for using visualizations to aid sensemaking and other cognitive components in analytical process.
- Students will know basic vulnerabilities that can lead to shallow, narrow, erroneous analyses and will be able to critique an analysis based on the definition of what is sufficient rigor.
- Students will be know how to communicate analytical results including uncertainty and risk visually to policy or decision makers.
- Students will be able to test whether new computer and visualization tools support good analytic process and reduce the vulnerability to shallow/narrow analysis.
- Students will design visualizations that reveal patterns in large data bases.

Course Topics:
- What is data overload and why is it a persistent problem How do people avoid overload when perceiving natural scenes Cases of computer displays making overload worse
- Representation aiding Representation effect Aiding performance through visualization
- Digital media and visualization Digital media and symbols Analog vs. digital representations
- Basic techniques for representation aiding Visualizing relationships Frames of reference Data in context Highlighting events and contrasts
- Integrated and Pattern-based Visualizations Robot handler; mission problem holder Human robot ratio Case: Rescue robots
- Navigating Computer Displays Keyhole effect, Visual momentum Longshot displays Multiple perspectives
- Integration Review of fundamental principles Escaping data overload

Designation:
Elective