



# *Distinguished* LECTURE SERIES

## **HUMAN-CENTERED ARTIFICIAL INTELLIGENCE: DESIGNING NEXT GENERATION USER EXPERIENCES**



RESPONSIBILITY

COMPREHENSIBLE  
PREDICTABLE  
CONTROLLABLE

*Presented by:*

**Ben Shneiderman**

Department of Computer Science & Human-  
Computer Interaction Lab, University of Maryland  
*Sponsored by ONR 34*  
*Warfighter Performance Department*

**DESIGN PRINCIPLES  
FOR POWERFUL TOOLS**

PARTICIPATION  
AT SCALE

DIRECT  
MANIPULATION

FRONTIER  
THINKING

TRUST  
SAFETY

SELF-EFFICACY & SOCIETAL BENEFITS  
MORE PEOPLE, MORE CREATIVE, MORE OF THE TIME

**SEP 17  
2019  
11 AM**  
IN THE JUNKER CENTER

Office of Naval Research  
875 N. Randolph St., Arlington, Virginia  
Bobby Junker Executive Conference Center  
14<sup>th</sup> Floor

# Human-Centered Artificial Intelligence: Designing Next Generation User Experiences

---

The next generation of user experiences will produce 1000-fold improvements in human capabilities. These new tools will amplify, augment, enhance, and empower people, just as the Web, email, search, navigation, digital photography, and many other applications have already done. Rather than emphasize autonomous machines and humanoid robots as team partners, these new tools will produce comprehensible, predictable, and controllable applications that promote self-efficacy, human responsibility, and social participation at scale. The goal is to ensure human control, while increasing the level of automation.

Improved designs depend on understanding the ways that people employ Frontier Thinking, pushing beyond the limits of existing knowledge to deal with poorly-defined tasks and goals, consequential situations, and incomplete, inconsistent, or incorrect data. Since the goal is to find solutions that are better than previous ones, machine learning and other artificial intelligence methods based on training data from past decisions have less value.

Since Frontier Thinkers are solving novel problems, they need to (1) explore data in powerful new ways; (2) manipulate models to understand the implications of their decisions; and (3) combine existing ideas to create something new. Frontier Thinking tools will also provide easy access to activity logs and facilitate collaboration with colleagues. People will be at the center of activity, supported by potent tools, as they creatively take on new challenges with appropriate confidence.

## ABOUT

### Ben Shneiderman

---

Ben Shneiderman (<http://www.cs.umd.edu/~ben>) is a Distinguished University Professor in the Department of Computer Science, Founding Director (1983-2000) of the Human-Computer Interaction Laboratory (<http://hcil.umd.edu>), and a Member of the UM Institute for Advanced Computer Studies (UMIACS) at the University of Maryland. He is a Fellow of the AAAS, ACM, IEEE, and NAI, and a Member of the National Academy of Engineering, in recognition of his pioneering contributions to human-computer interaction and information visualization. His widely-used contributions include the clickable highlighted web-links, high-precision touchscreen keyboards for mobile devices, and tagging for photos. Shneiderman's information visualization innovations include dynamic query sliders for Spotfire, development of treemaps

for viewing hierarchical data, novel network visualizations for NodeXL, and event sequence analysis for electronic health records.

Ben is the co-author with Catherine Plaisant of *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (6th ed., 2016). He co-authored *Readings in Information Visualization: Using Vision to Think* (1999) and *Analyzing Social Media Networks with NodeXL* (2nd edition, 2019). His book *Leonardo's Laptop* (MIT Press) won the IEEE book award for Distinguished Literary Contribution. *The New ABCs of Research: Achieving Breakthrough Collaborations* (Oxford, 2016) describes how research can produce higher impacts.