

# KEYNOTE TALK

Wednesday, October 5, 2022 at 1:30pm

## Human-AI Interaction in Visual Analytics: Designing for the “Two Black Boxes” Problem

Chris North  
Virginia Tech  
USA

**Abstract:** Human-AI interaction plays a crucial role in visual analytics, enabling analysts to use AI to help analyze data. In support of this goal, explainable-AI visualizations seek to unmask the underlying details of black box AI learning algorithms, enabling human analysts to understand algorithmic state and results. However, to truly enable human-AI interaction, we will argue that there exists a second black box representing the cognitive process of the user, containing information which must be communicated to the algorithm. Using this “Two Black Boxes” problem as motivation, we propose a design philosophy for human-AI interaction. We discuss usability challenges associated with each phase of communication between the pair of cooperatively-learning entities and the benefits that emerge from opening the black boxes of human and AI for data analysis tasks.



**Speaker Bio-Sketch:** Dr. Chris North is a Professor of Computer Science at Virginia Tech in Blacksburg, VA, USA. He is Associate Director of the Sanghani Center for AI and Data Analytics (<https://sanghani.cs.vt.edu>), and leads the Visual Analytics research group (<http://infovis.cs.vt.edu>). He has served as General Co-Chair of IEEE VIS, and as Papers Co-Chair of the IEEE Information Visualization (InfoVis) and IEEE Visual Analytics Science and Technology (VAST) Conferences. He co-founded the Workshop on Machine Learning from User Interactions (<https://learningfromusersworkshop.github.io>). He served on editorial boards of IEEE Transactions on Visualization and Computer Graphics (TVCG) and the Information Visualization journal. He was awarded over \$15M in grants, and co-authored over 125 peer-reviewed publications (<http://scholar.google.com/citations?user=yBZ7vtkAAAAJ>). As a leader in data science education at Virginia Tech, he founded the Graduate Certificate in Data Analytics and co-organized the Computation Modeling and Data Analytics undergraduate major. His research and education agenda seeks to enable effective human-AI interaction for big data analysis.