



TEXAS TECH UNIVERSITY  
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Computer Science

## Visualizing Relationships in Massive and Dynamic Data

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Mechanical Engineering Bldg., Room 223

### **Abstract:**

Mining and visualizing huge databases has become a daunting task for many application domains such as astronomy, medicine, geology, oceanography, and crime prevention. In this talk, I introduce a new technique for exploring the relationships between variables in huge databases using visual features. These visual features aim to characterize the data distributions within a scatterplot (a plot of the values of variable X versus the corresponding values of variable Y). Working directly with these measures, we located unusual correlations between variables in time series. For large datasets of thousands of dimensions, we use these measures to cluster and display only exemplars (about 30 of them) in a force-directed layout. This provides a comprehensive overview of a high-dimensional dataset. Lastly, we extend this work to handle pixels in images. During the talk, I will demonstrate my applications on real-world data such as detecting events impacting the US unemployment rates over the past 20 years or clustering half million of SETI waterfall plots.

I will also cover more recent research in visualizing dynamic relationships between entities in complex networks. To highlight the benefits of my visualization technique, I will demonstrate its application to various datasets, including a dataset showing conflicting evidences within biomedical literature of protein interactions and collocated emerging topics obtained from political blogs in the recent years.

### **Bio:**

Tuan Nhon Dang is currently a Postdoctoral Researcher in information visualization at [Electronic Visualization Laboratory, Department of Computer Science, University of Illinois at Chicago](#). He received his M.Sc. degree in Computer Science at University of Illinois at Chicago, a M.Sc. degree in Computing Systems at Politecnico di Milano, Italy in 2009 and a Ph.D. from the University of Illinois at Chicago in 2014. During his Ph.D. and postdoc, he published 11 peer-reviewed articles as a first author. His research interests are in visual analytics and big data visualization.