

# “Beyond Who and What: Answering How? and Why? by Modeling Large Graphs”



Thursday, January 21, 2016

3:00pm-4:00pm, IS Building, 3rd floor  
*135 North Bellefield Ave Pittsburgh, PA*

Can we model how fraudsters work to distinguish them from normal users? Can we predict not just which movie a person will like, but also why? How can we find when a student will become confused or where patients in a hospital system are getting infected? How can we effectively model large attributed graphs of complex interactions?

In this talk we will focus on user behavior modeling through understanding heterogeneous graphs. Online, users interact not just with each other in social networks, but also with the world around them. These interactions often include insightful contextual information, such as the time or location of the interaction and ratings or reviews about the interaction. We demonstrate that through modeling these large heterogeneous graphs and their rich contextual information, we can improve both anomaly detection and prediction algorithms. By modeling how fraudsters work, our anomaly detection algorithms can better differentiate fraudsters from honest users; by carefully modeling user ratings and reviews, we can predict not just which item a user would like but also why. Additionally, we will demonstrate that by understanding the structure of these models we can build flexible platforms for scalable modeling of large graphs. Finally, we will discuss the future of graph modeling, covering new exciting applications, novel modeling approaches and upcoming challenges in scalable machine learning.

Alex  
Beutel

**Bio:** Alex Beutel is a PhD candidate at Carnegie Mellon University in the Computer Science Department. He previously received his BS from Duke University in Computer Science and Physics. His primary interest is in modeling large graphs, with his PhD thesis focused on large-scale user behavior modeling, covering recommendation systems, fraud detection and scalable machine learning. Beyond his research at CMU, Alex has worked on large-scale user behavior modeling at Facebook, Google, and Microsoft.