

# ***Ph.D. Final Oral Defense***

***Friday, April 6, 2018***

***1160 Sweeney Hall at 2:30 PM***

***Hoda Gholami***

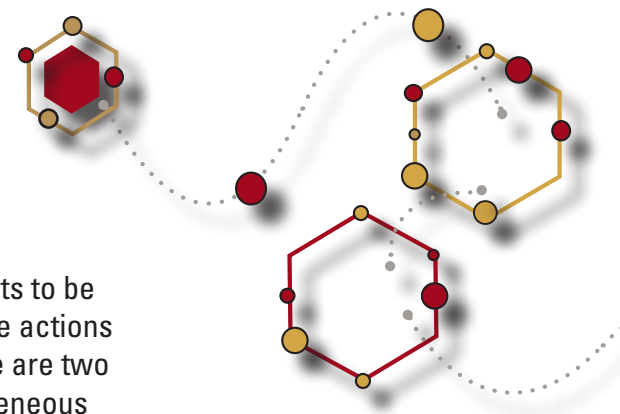
## ***A Data-driven Situation-aware Framework for Predictive Analysis in Smart Environments***

In the era of Internet of Things (IoT), it is vital for smart environments to be able to efficiently provide effective predictions of user's situations and take actions in a proactive manner to achieve the highest performance. However, there are two main challenges. First, the sensor environment is equipped with a heterogeneous set of data sources including hardware and software sensors, and oftentimes complex humans as sensors, too. These sensors generate a huge amount of raw data. In order to extract knowledge and do predictive analysis, it is necessary that the raw sensor data be cleaned, understood, analyzed, and interpreted. Second challenge refers to predictive modeling.

Traditional predictive models predict situations that are likely to happen in the near future by keeping and analyzing the history of past user's situations. Traditional predictive analysis approaches have become less effective because of the massive amount of data that both affects data processing efficiency and complicates the data semantics. In this study, we propose a data-driven, situation-aware framework for predictive analysis in smart environments that addresses the above challenges.

***Major Professor:***

**Carl Chang**



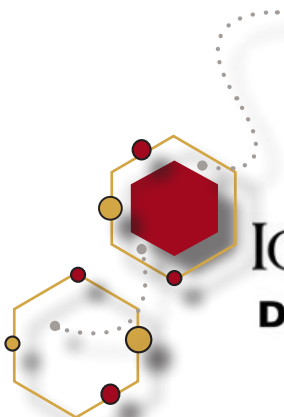
***Committee Members:***

***Pavankumar Aduri***

***Samik Basu***

***Jin Tian***

***Margrett Jennifer***



**IOWA STATE UNIVERSITY**  
**Department of Computer Science**

[www.cs.iastate.edu](http://www.cs.iastate.edu)