# Han Li LEED AP BD+C, EIT

Education

- MS in Building Performance and Diagnostics, Carnegie Mellon University
- BS in Mechanical Engineering, Tongji University

Experience

- Master intern at PNNL
- Graduate research assistant at CMU
- Teaching assistant and guest lecturer at CMU

### Publications

- A systematic classification of HVAC systems
- BAS alarm management for operation and maintenance decision making

### Skills & Interests

- Whole building performance analysis
- Mechanical system design

# Contents

# Projects at CMU

- Master's thesis
- Building performance modeling project
- CFD course project I
- Building controls & diagnostics project
- Post occupancy evaluation
- Geographic information system

# Projects at Tongji

- Bachelor's thesis
- CFD course project II

#### Master's Thesis– Identify Significant Alarms from BAS and Evaluate Their Impacts

- Developed a data-mining framework for alarm management  $\bullet$
- Alarms are classified and prioritized •



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Thermal condition alarms by space type (2010 - 2016)



# **Building Performance Modeling– Mellon Arena**

- Built geometry model in DesignBuilder®
- Conducted parametric analysis
- Compared two HVAC scenarios







## **CFD in Computer Room Air Conditioning**

- Developed a 2D Navier-Stokes Solver for Computer Room Air Conditioner
- Compared our solver with ANSYS Fluent<sup>®</sup>



t = 0.2s



t = 5s



## **Building Controls and Diagnostics**

- Developed a fuzzy control logic for ventilation fan speed control
- Developed a Matlab/Simulink + EnergyPlus co-simulation logic for a steam humidifier



#### Post Occupancy Evaluation– Work as a graduate research assistant

- Conducted IEQ measurements in site-visits
- Analyzed collected data and proposed recommendations



## **Geographic Information System**

- Proficiently use ArcGIS in spatial data analysis
- Able to present results with different types of maps



Sources: 1. Allegheny County Health Department (2010) 2. U.S Census Bureau (2009)

Source: US Census

#### Bachelor's Thesis-- HVAC system design for an office building in Beijing



#### CFD in built environment-- Comparison of 4 room ventilation scenarios



Four ventilation scenarios





Mesh: Structural + Unstructured



#### Velocity Field

#### **Temperature Field**

# Thanks!

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