U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

The Building Adapter: Automatic Mapping of Commercial Buildings for Scalable Building Analytics

Computer Science, University of Virginia

Hongning Wang - Assistant Professor, Kamin Whitehouse – Commonwealth Associate Professor, Madhur Behl - Assistant Professor

{hw5x, whitehouse, madhur.behl}@virginia.edu

Team

Hongning Wang

Over eight years of experience on data mining, machine learning, and information retrieval, with a special emphasis on human-centric knowledge discovery.

Kamin Whitehouse

Over a decade on developing techniques in various fields, including occupancy sensing, smart buildings, safety-critical wireless communication, etc.

Madhur Behl

Over eight years of finding analytical and practical solutions to problems of modeling, control, simulation, operation, safety, and implementation of CPS.

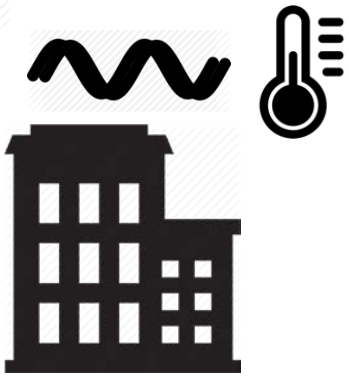
The Problem (The Need/Challenge)

The costly process of creating a match between a building's sensor data streams and the inputs of a building analytics engine needs to be automated, in order to enable buildings analytics at scale.

Manual mapping!

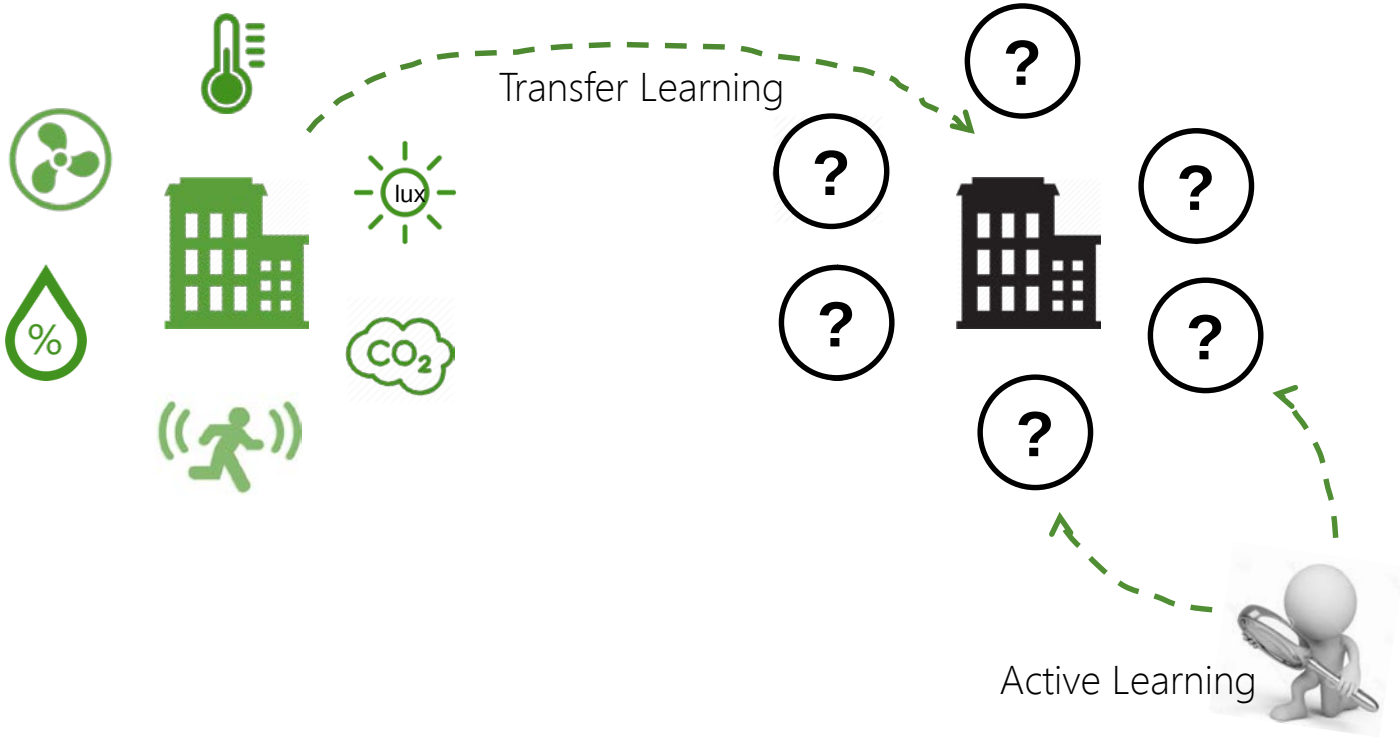
Zone TMP 2 RMI204

Zone: 2
Loc.: 204
Type: Temp.



Microsoft's 88 Acres project: 125 buildings took 2 years

The Solution



Advantage, Differentiation, and Impact

- Building analytics can reduce energy consumption by 8% or more , for a 2030 primary energy savings technical potential of 0.464 Quads.
- Our technique combines the complementary strengths of transferring knowledge from already labeled buildings and exploiting the local uniqueness of each building.
- The technique could potentially enable a vendor to apply building analytics to 90% of buildings with no manual mapping, and to 10% of buildings with a 90% reduction in manual mapping.
- Develop a Technical Advisory Panel to receive feedback on our research progress, disseminate research achievements, and acquire and create new benchmark data sets.
- Create a Wireframe Framework for open evaluation.

Thank You

Computer Science, University of Virginia
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Kamin Whitehouse – Commonwealth Associate Professor
Madhur Behl – Assistant Professor
434-982-2228, hw5x, whitehouse, madhur.behl@virginia.edu