

Semantic Localization in TerraSwarm

Ben Zhang, Edward A. Lee

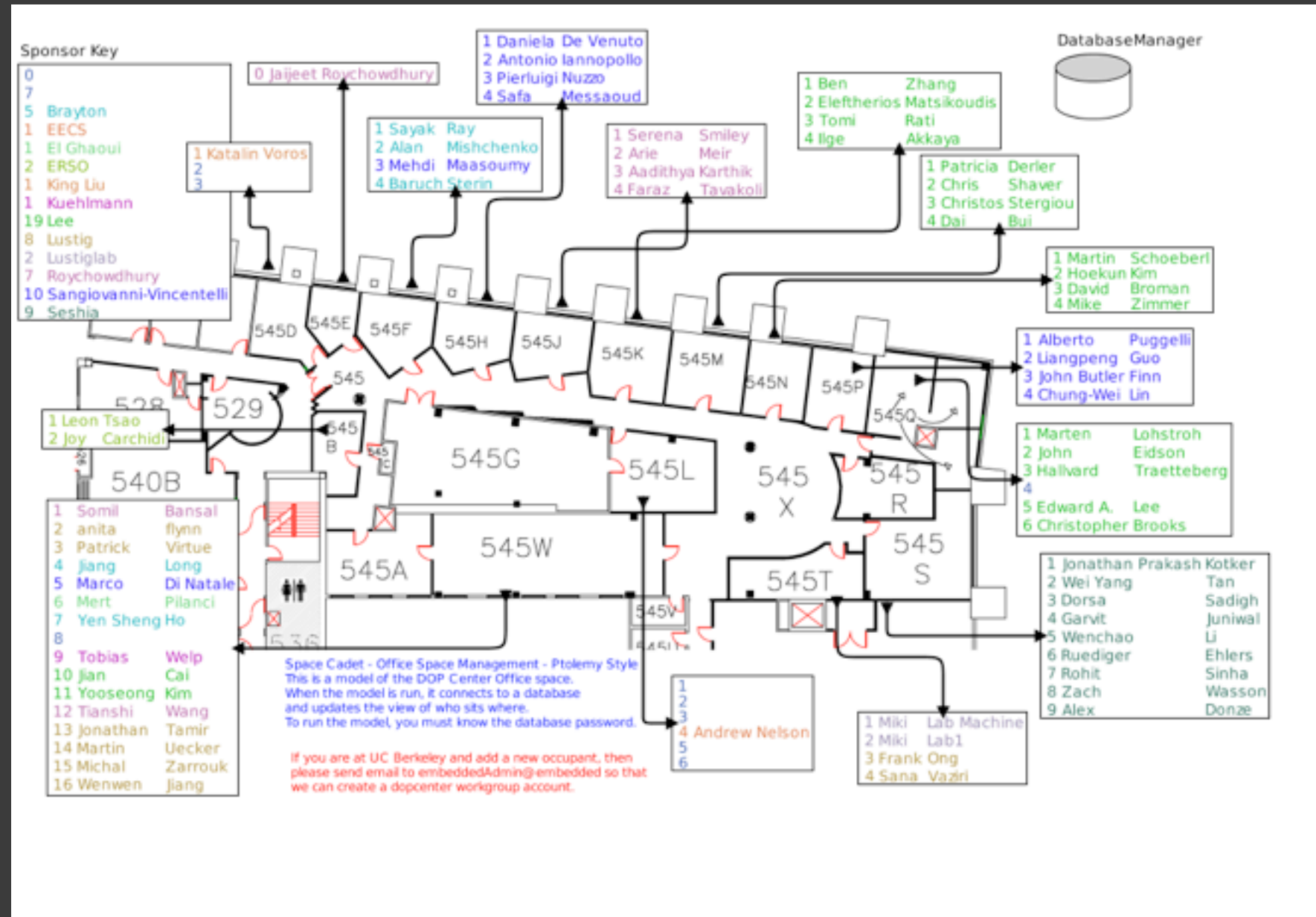
In collaboration with

Zachary Hargreaves, Hokeun Kim (EE149 Project)

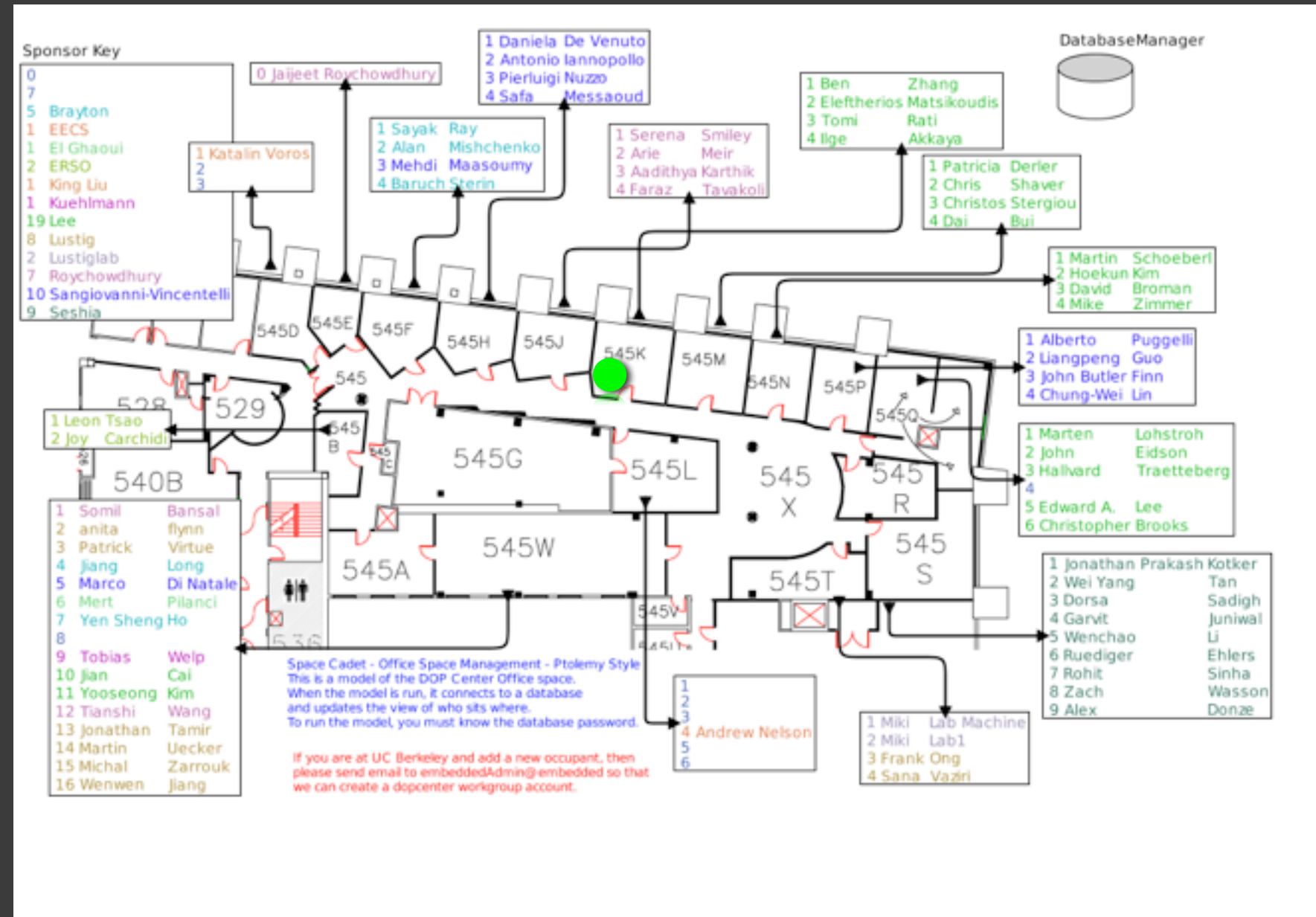
Kaifei Chen, Karthik Reddy Vadde (CS262A Project)

Semantic Localization

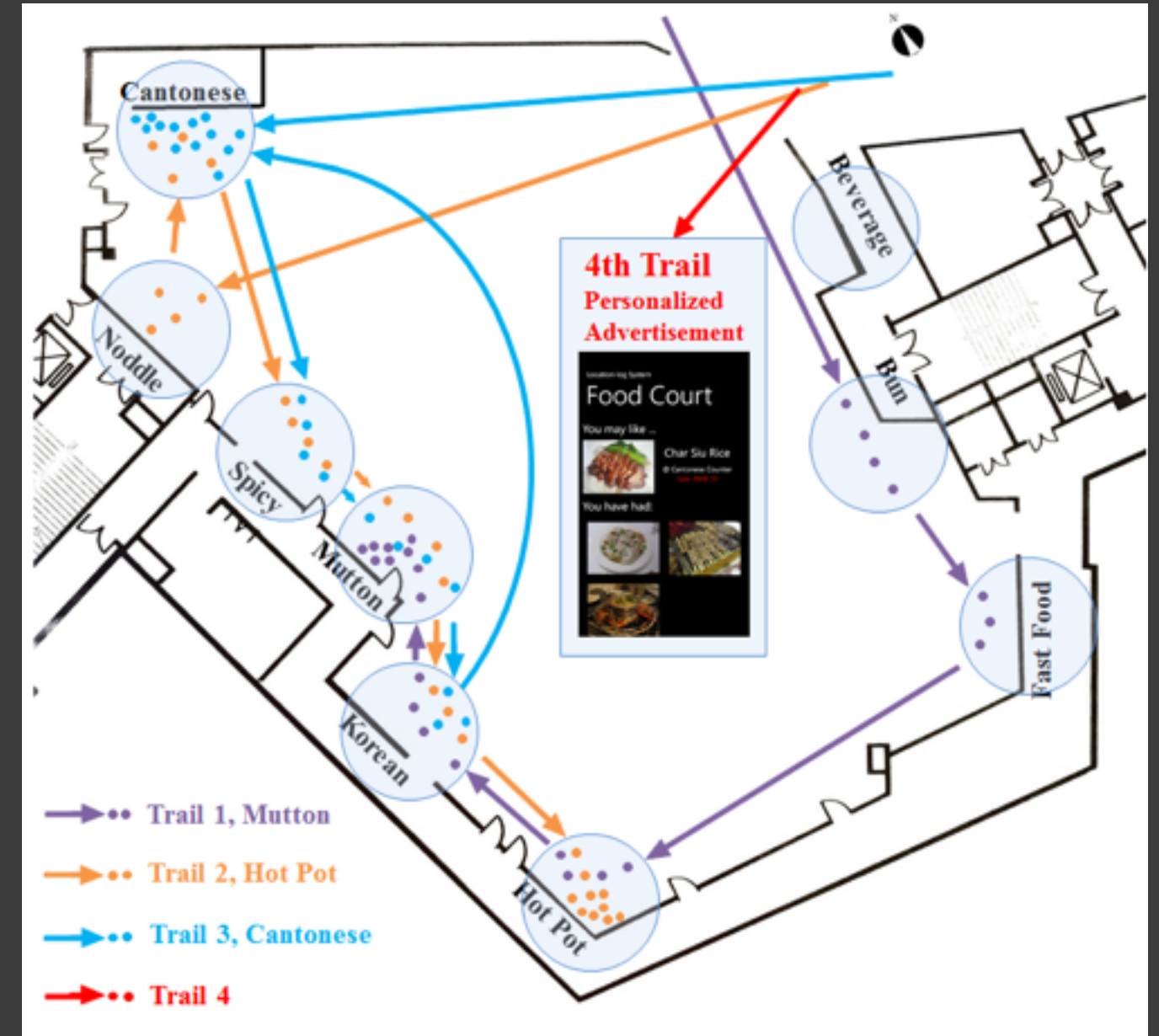
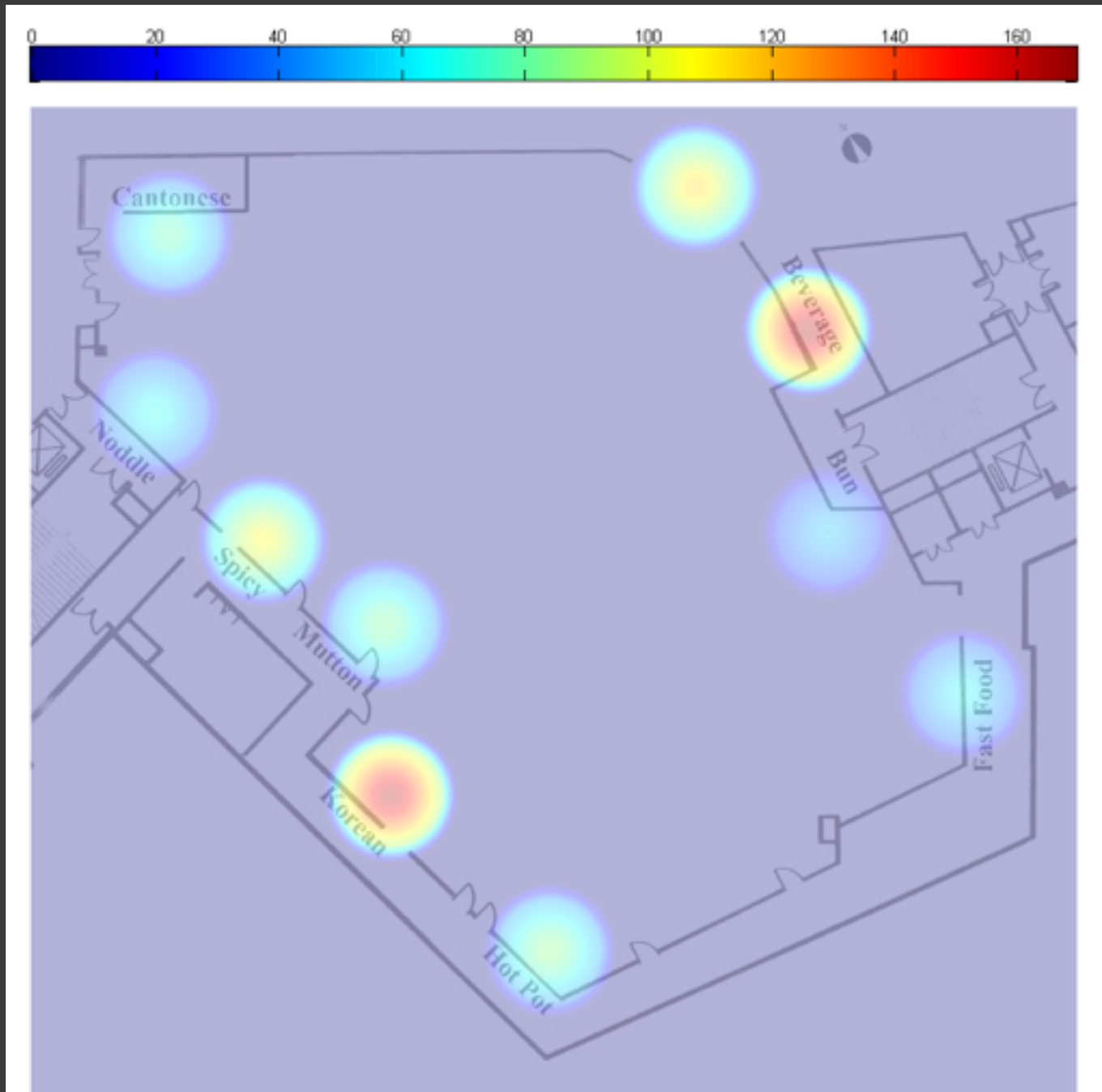
- Geo-localization (3D coordinates)
- Room-level localization
- Semantic localization



DOPpresence

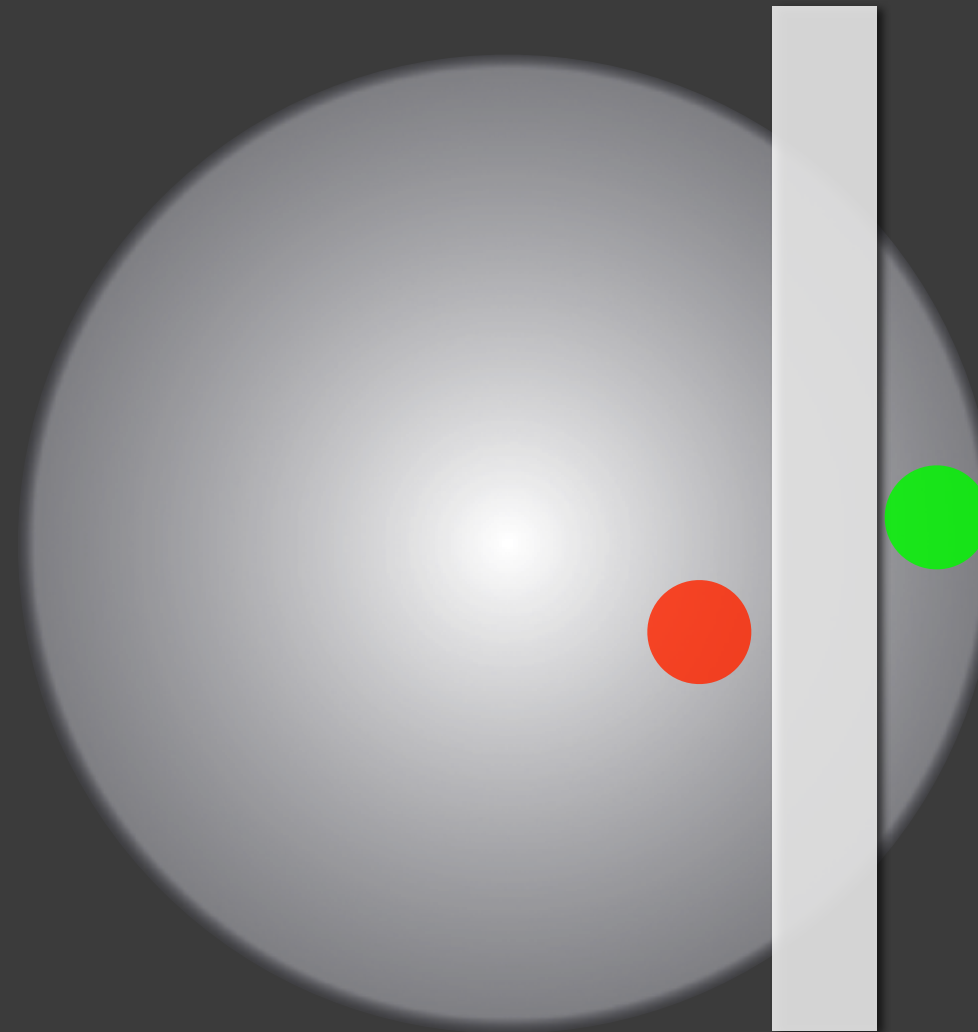


DOPpresence

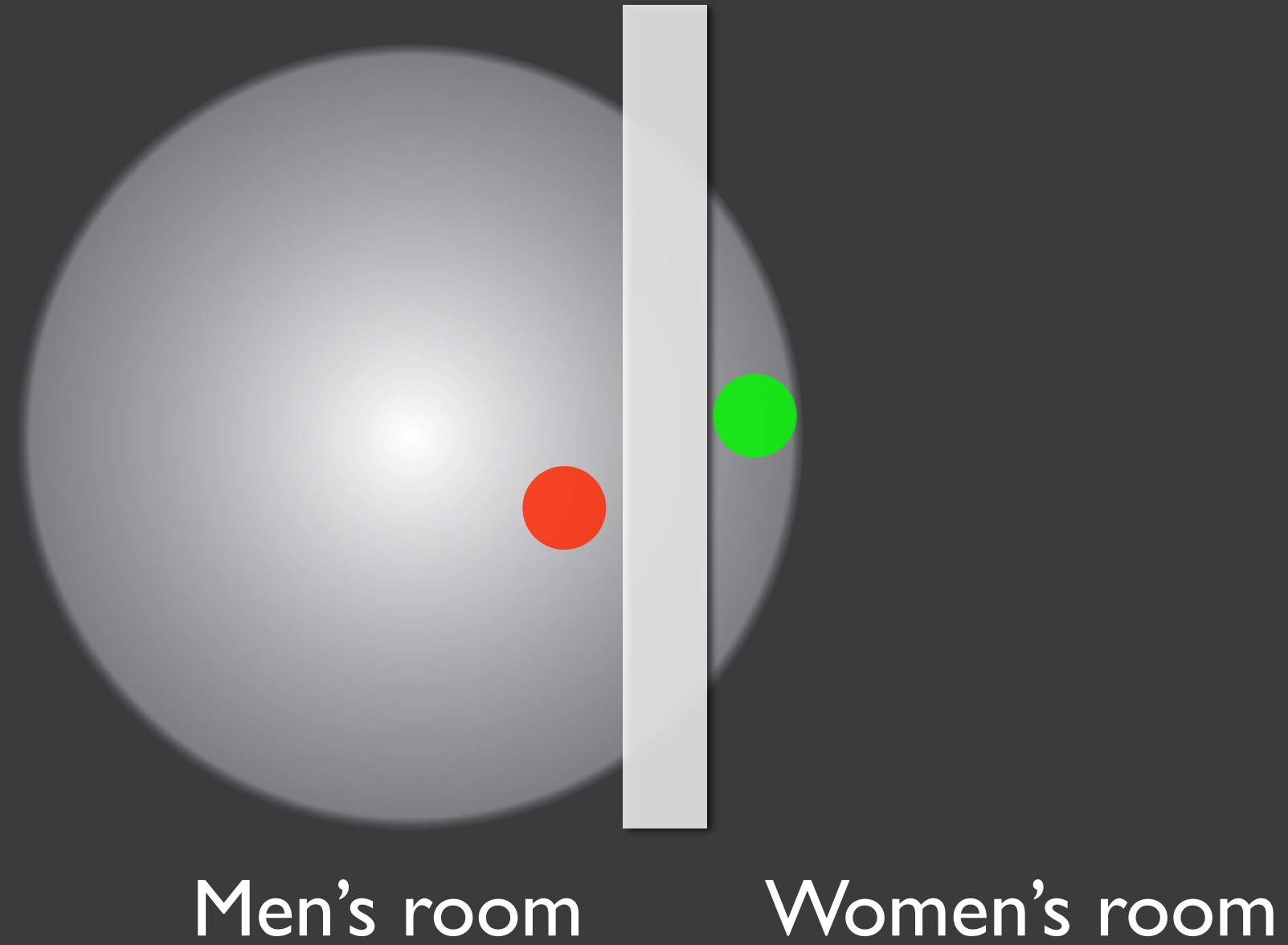


Shopping Analytics

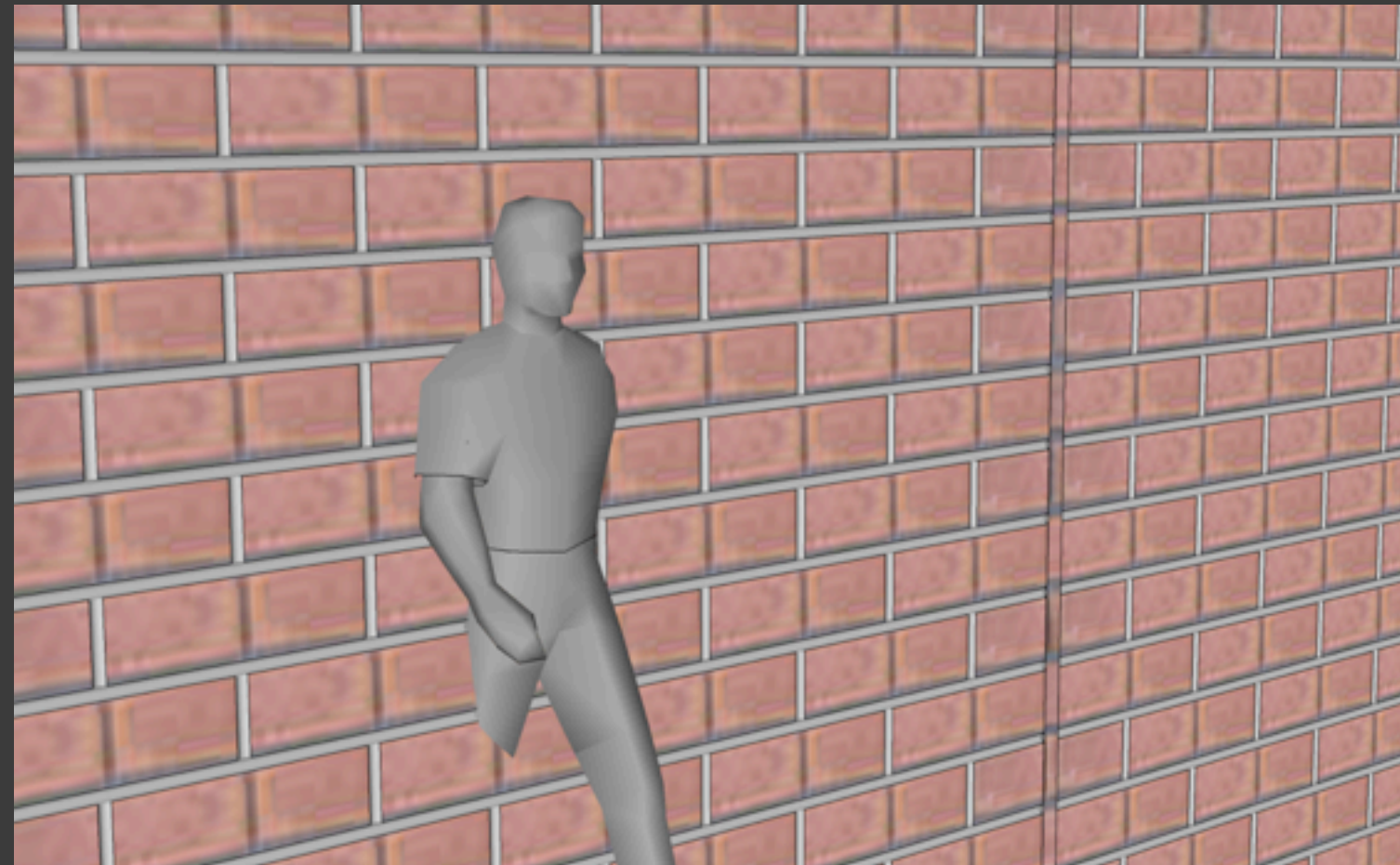
- Semantic Space vs. Physical Space

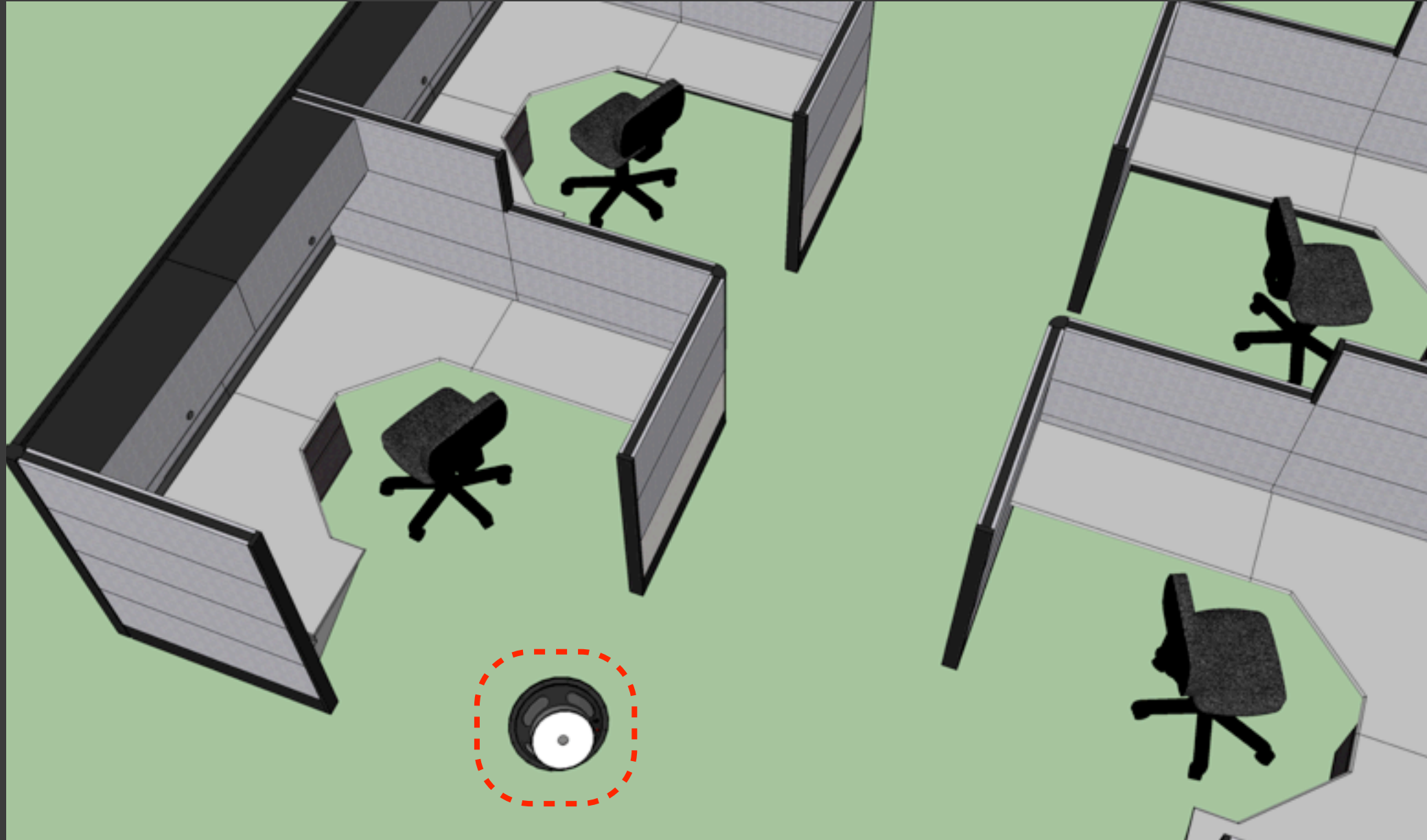


- Semantic Space vs. Physical Space

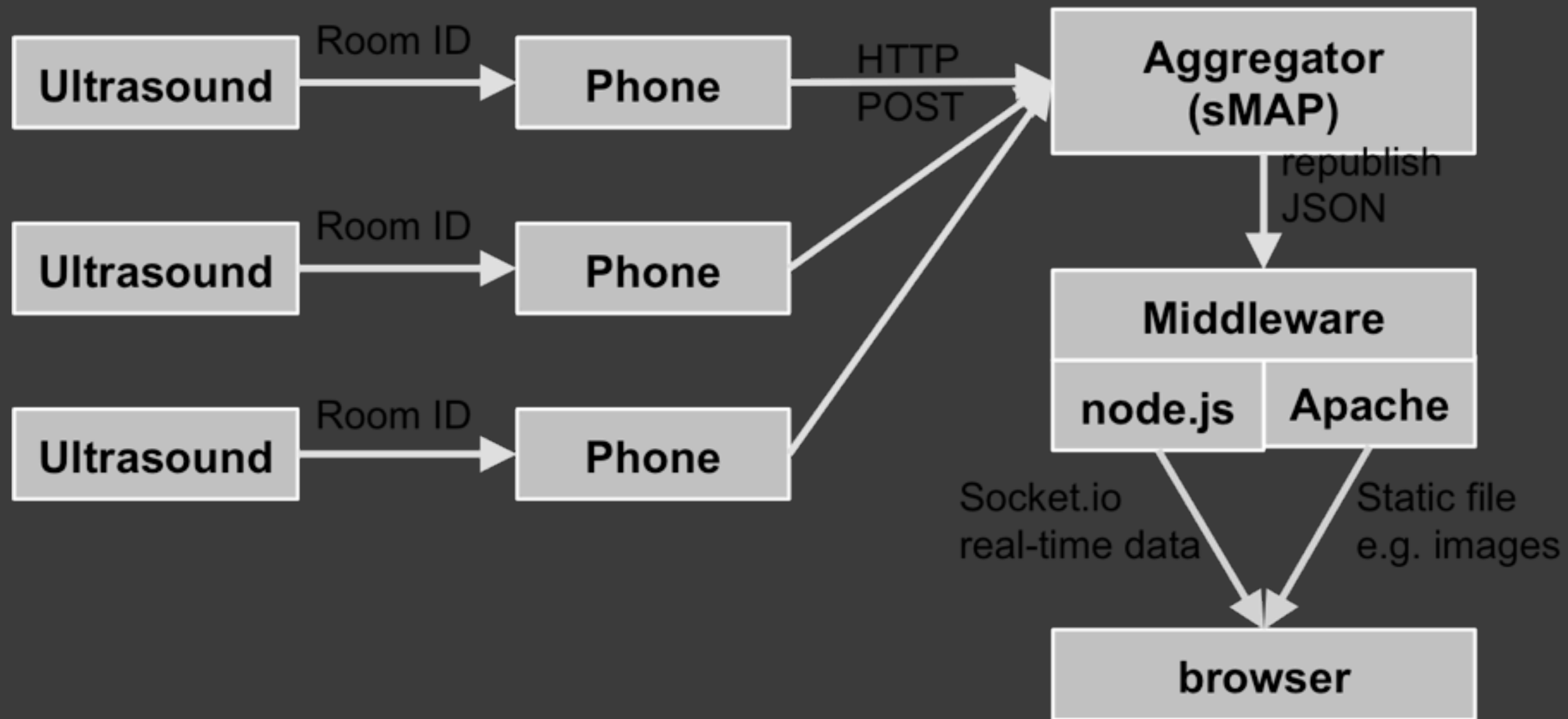


- Benefit from Semantic Information

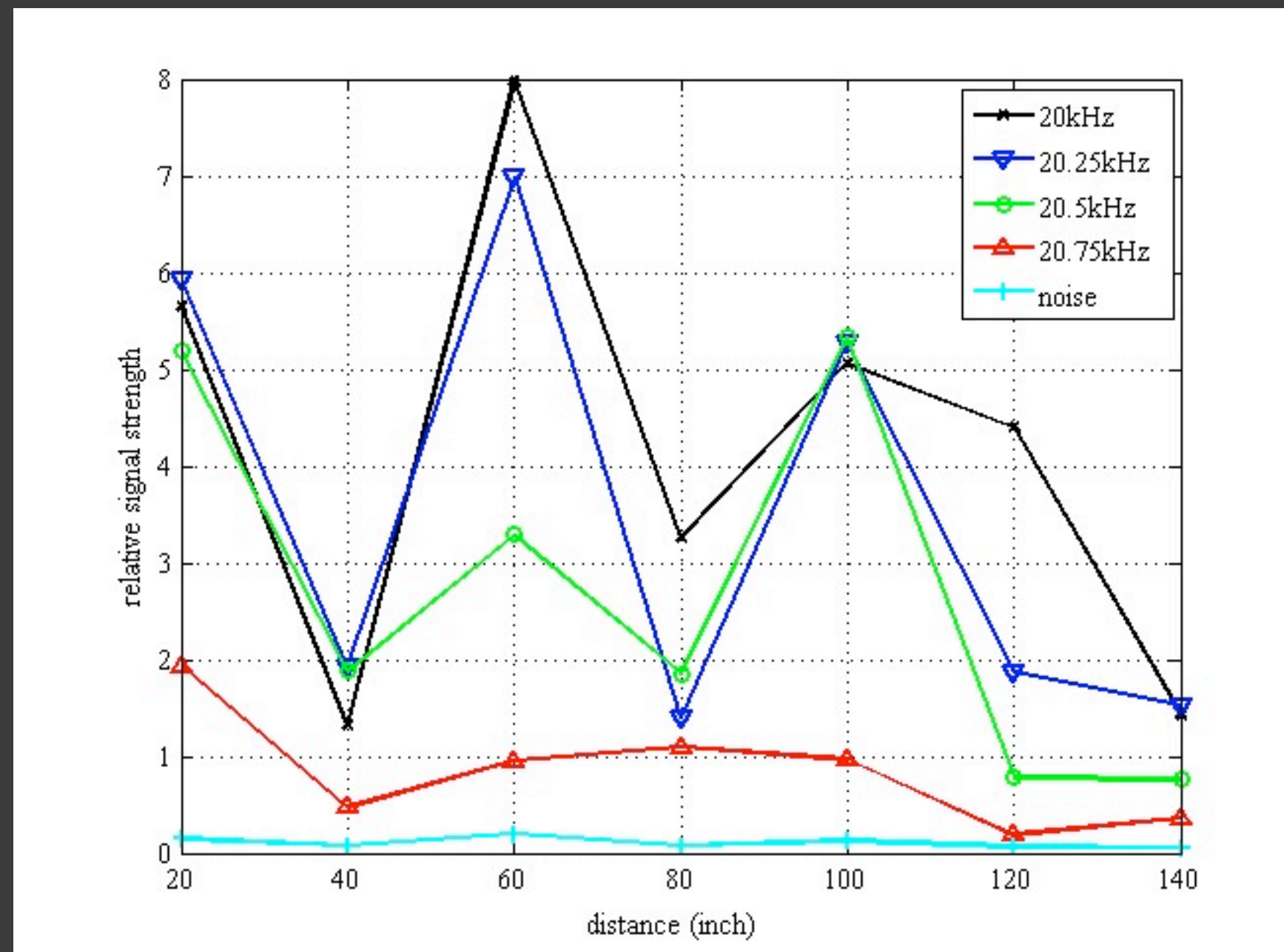
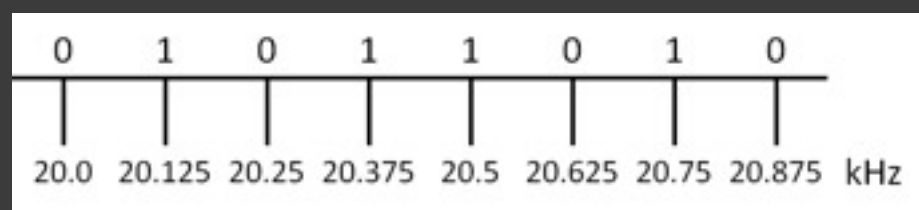
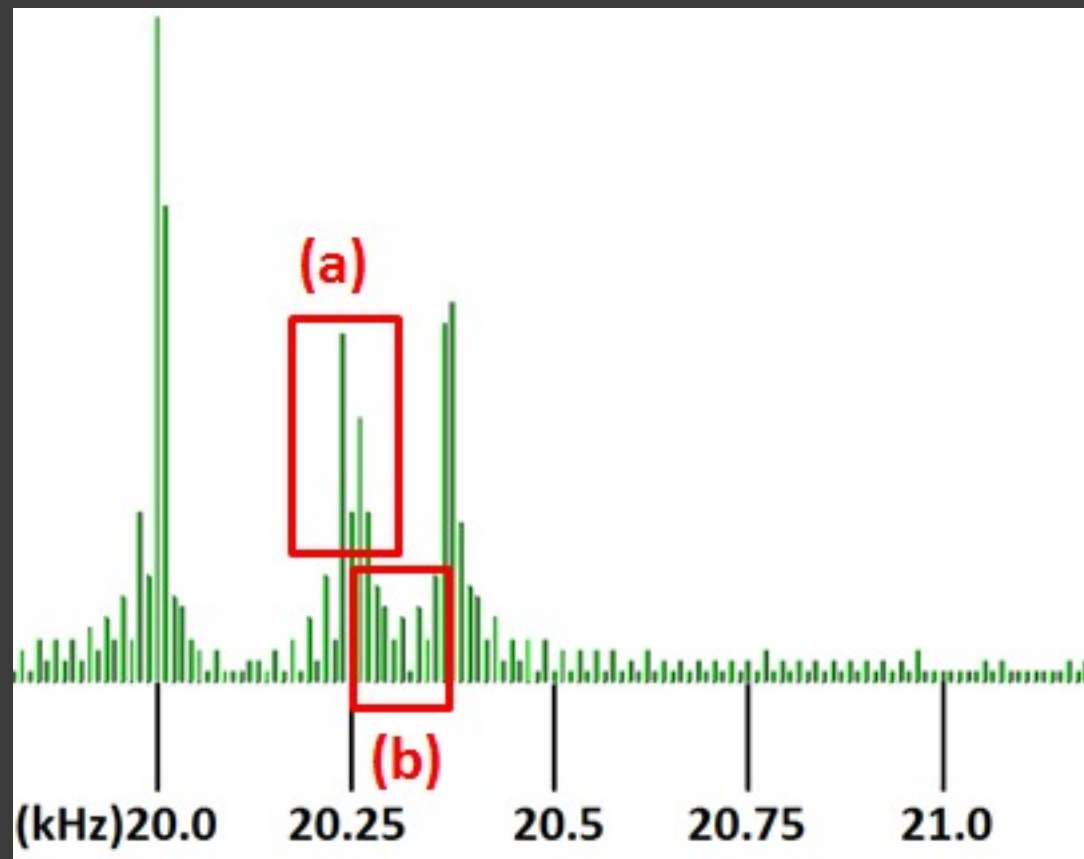




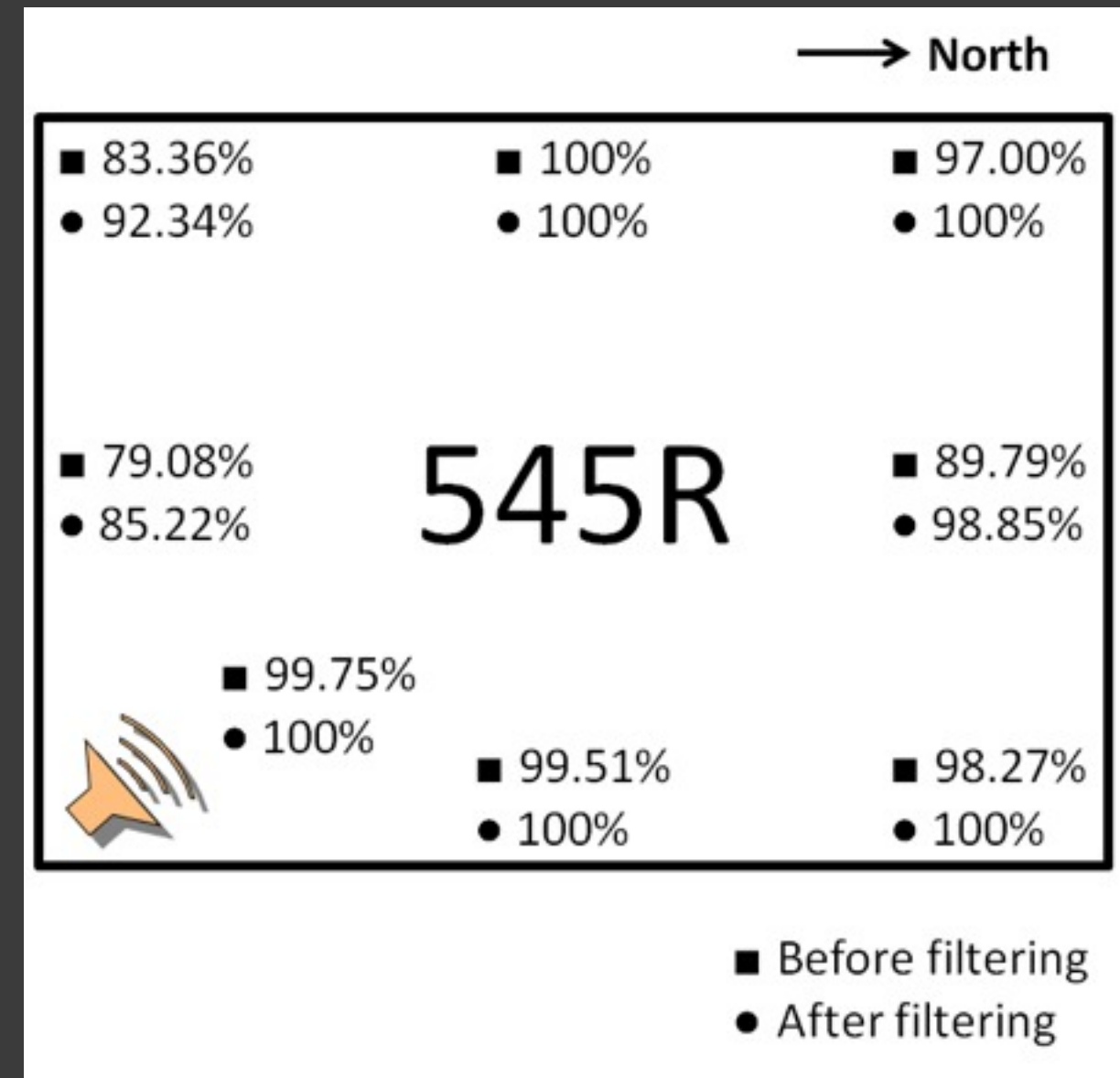
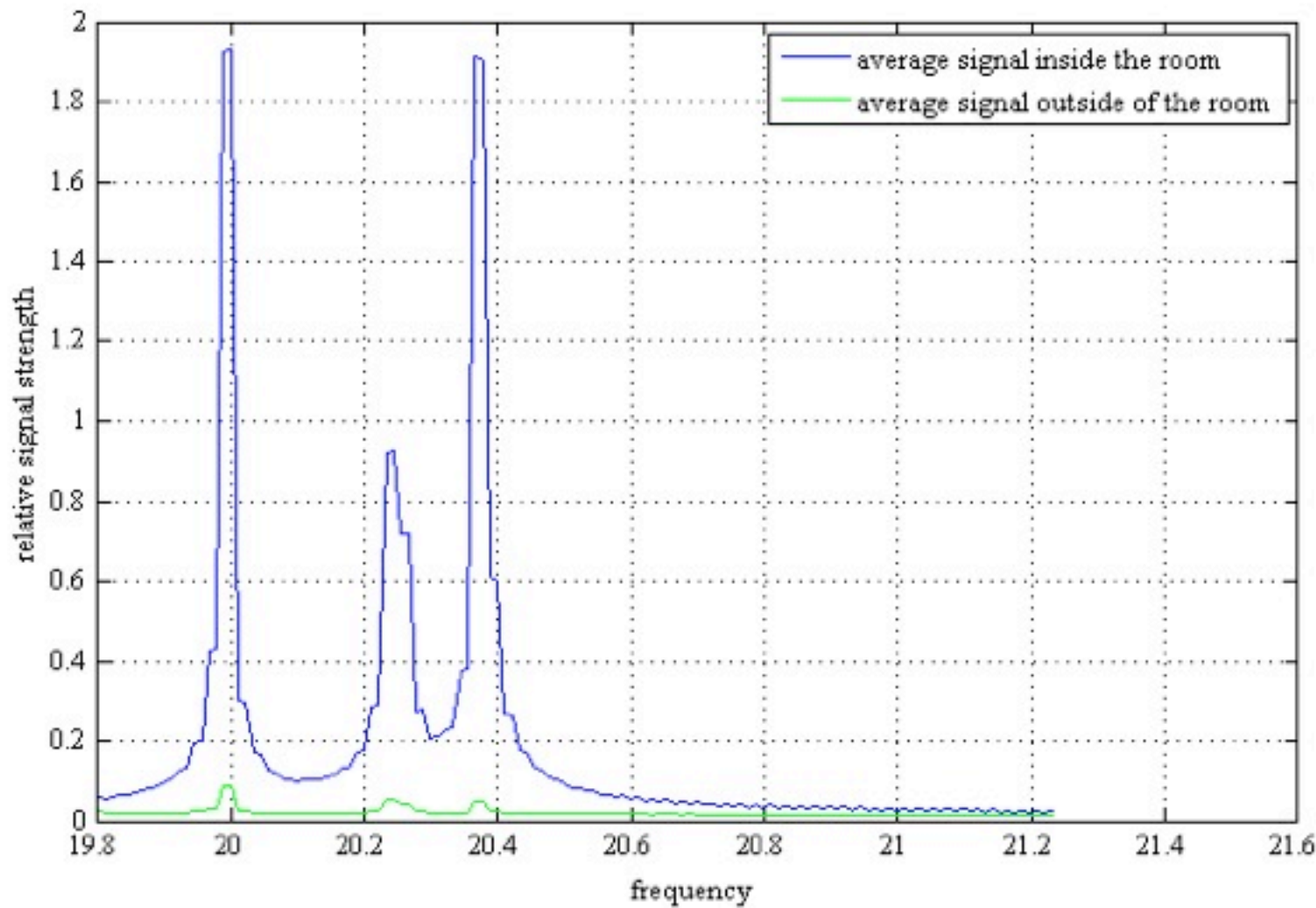
EECS 149: Ultrasound



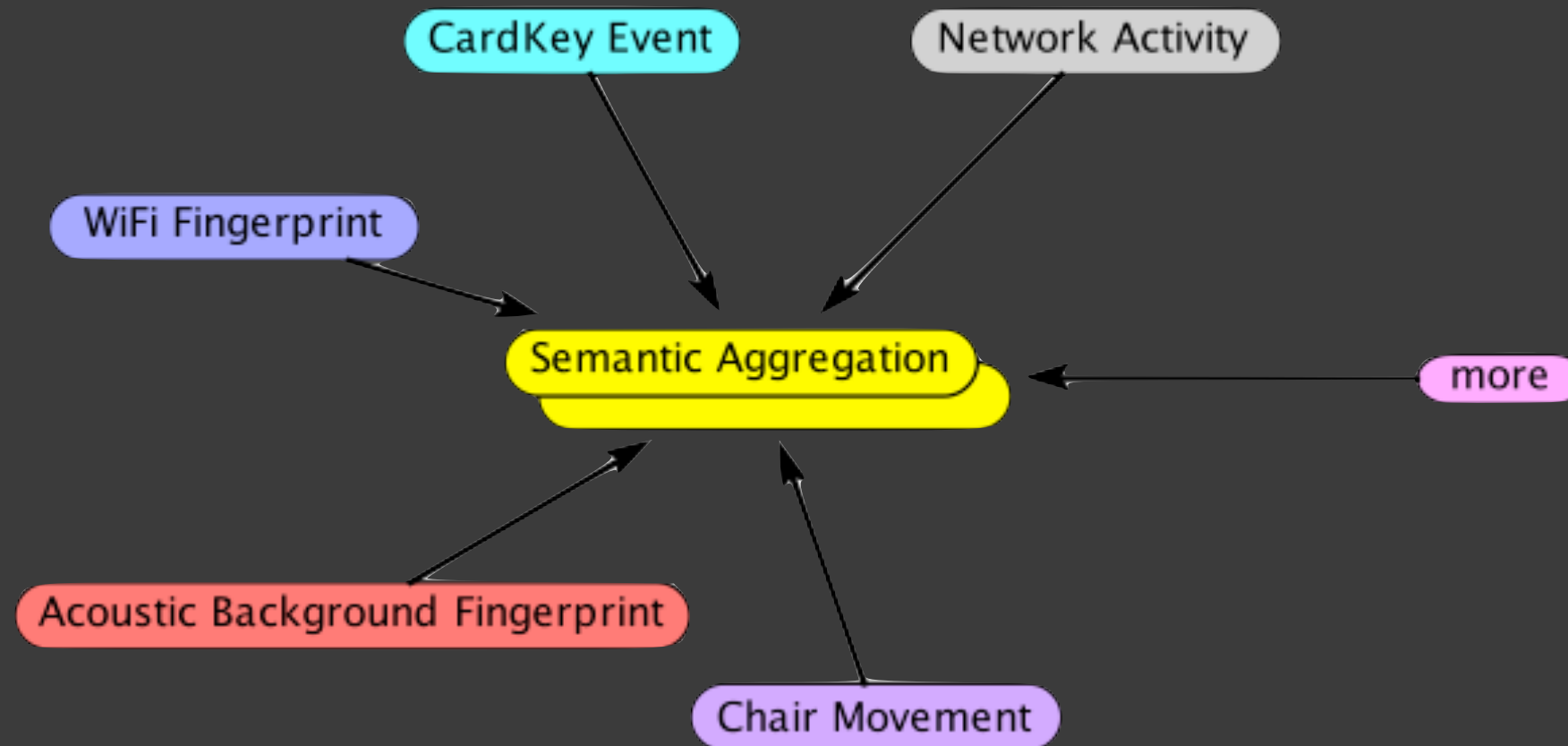
EECS 149: Ultrasound



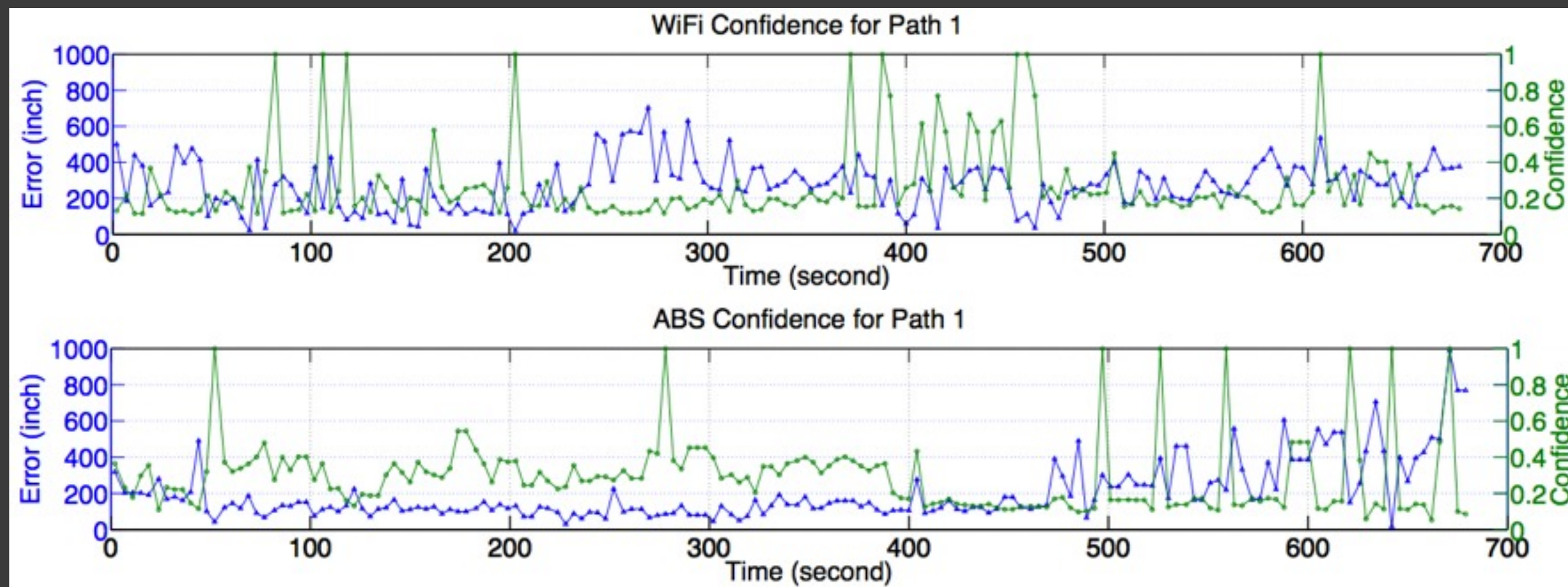
Ultrasound Demo + Evaluation



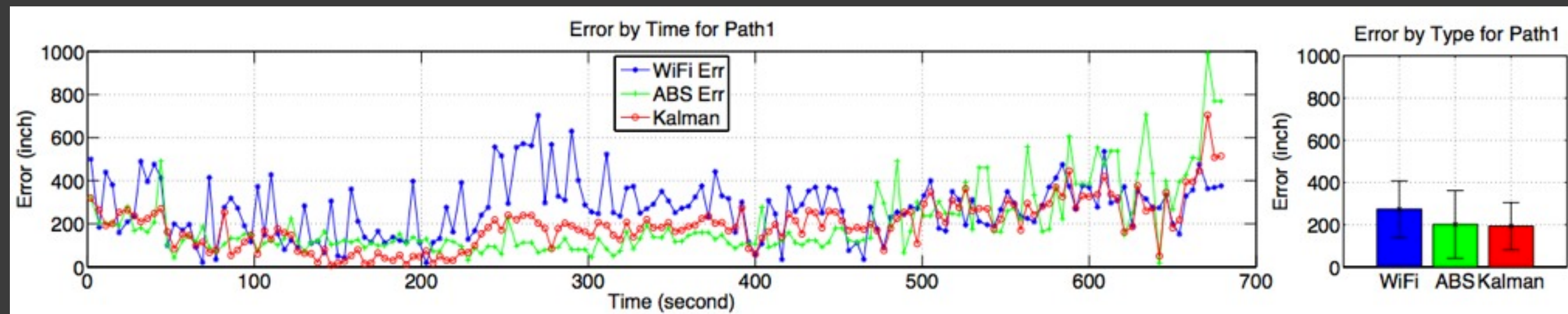
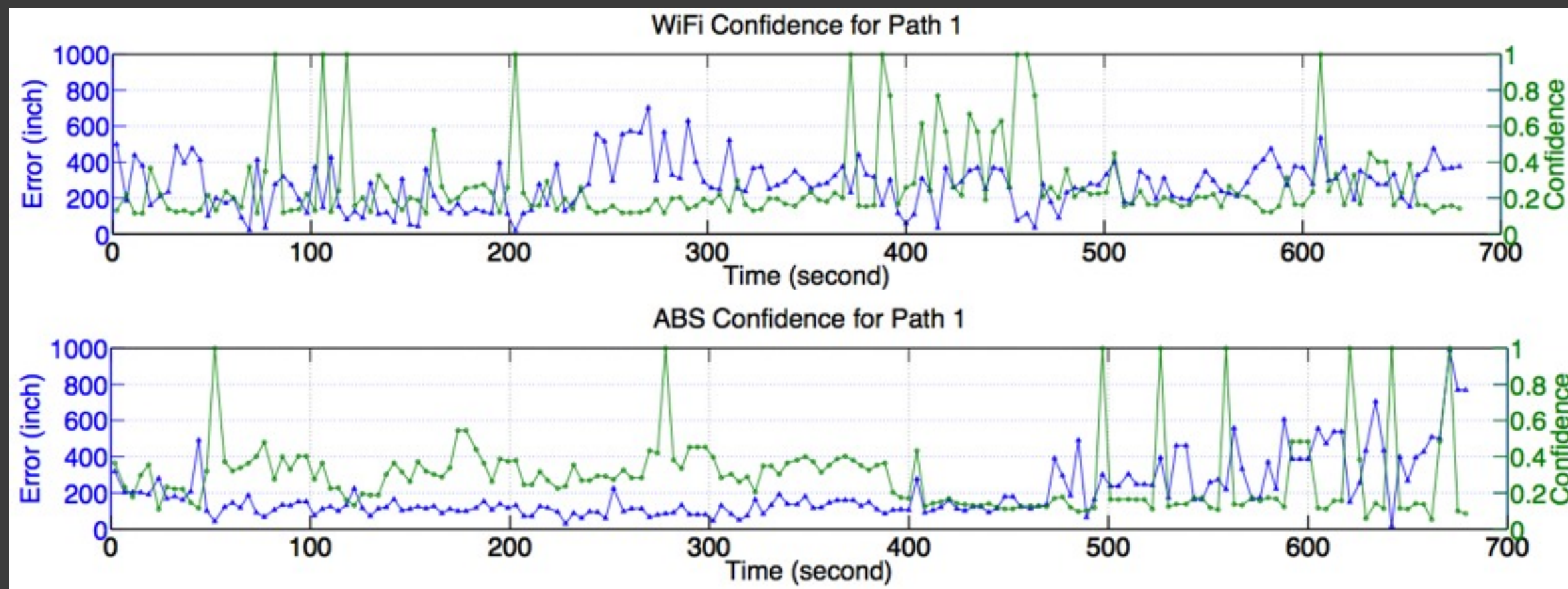
Ultrasound Demo + Evaluation



CS262A: Aggregation Framework



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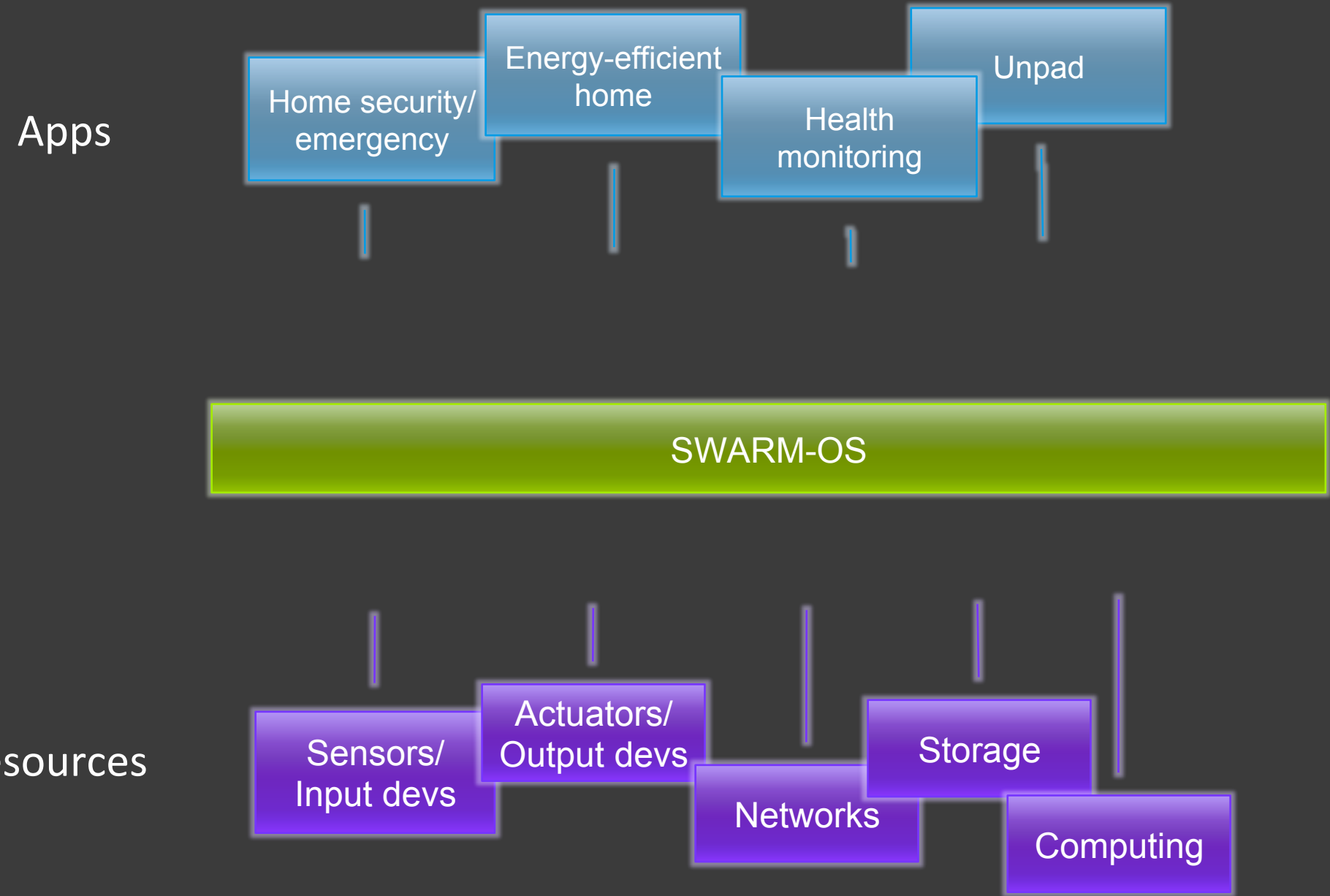


CS262A: Aggregation Framework



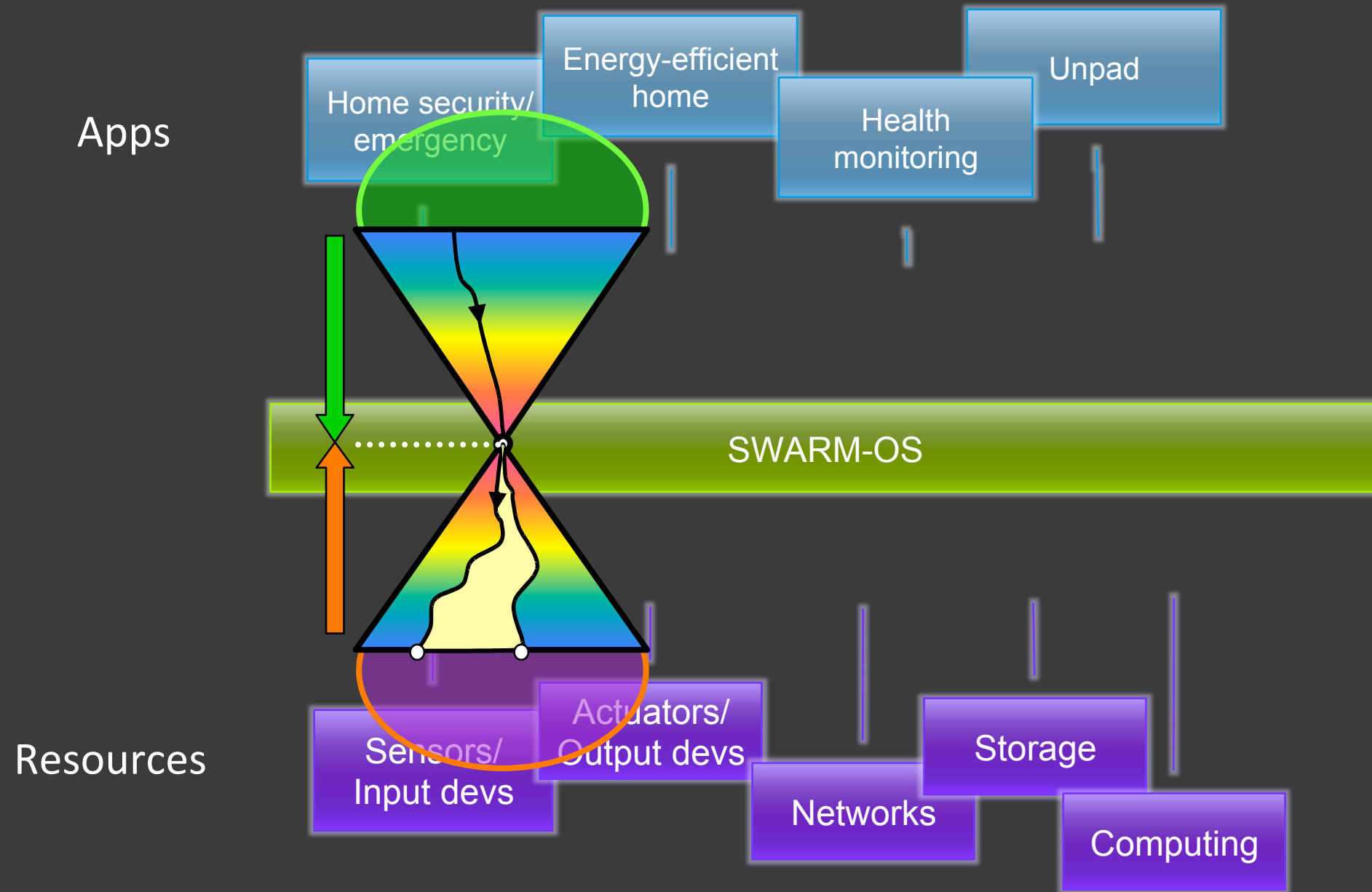
© Deciter Interactions

Benefit From Aggregation



[J. Rabaey, VLSI '11]

TerraSwarm Effort



[J. Rabaey, VLSI '11]

TerraSwarm Effort

- Marauder's Map Project (Smart City Theme)
 - Low-Power time-synchronous wireless nodes (Pister)
 - Ultrasound based TDOA localization (Anthony)
 - Particle Filters (Thomas)

Ongoing Project

Thanks!
Questions?