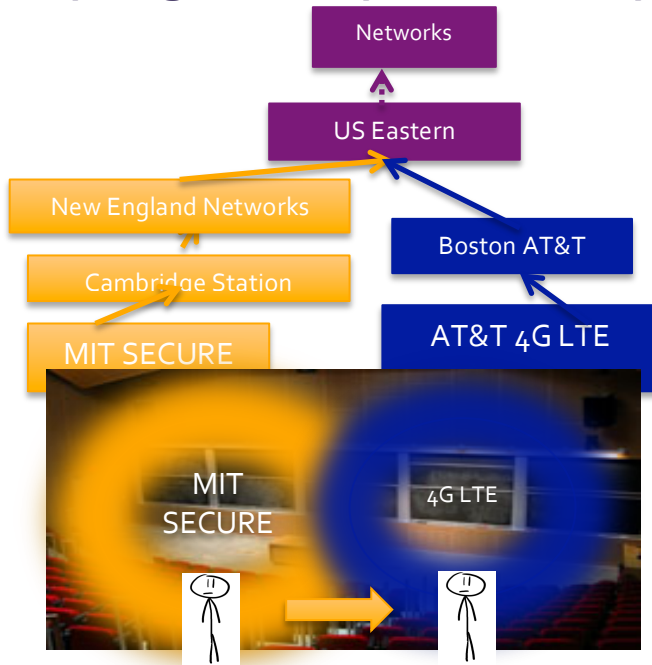


Predict Users Mobility in Networks - Shidan Xu - ANA Group

Topological \neq Physical Mobility



Goal & Motivations

Goal:

- Model and predict topological mobility of wireless users

Motivations:

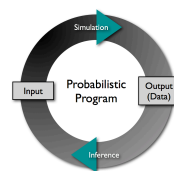
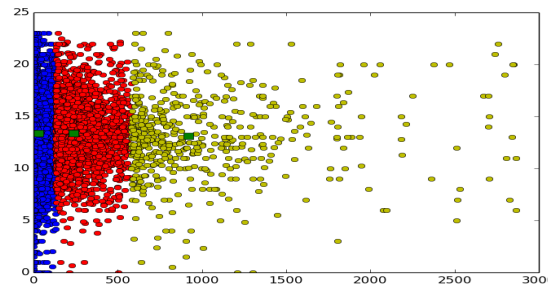
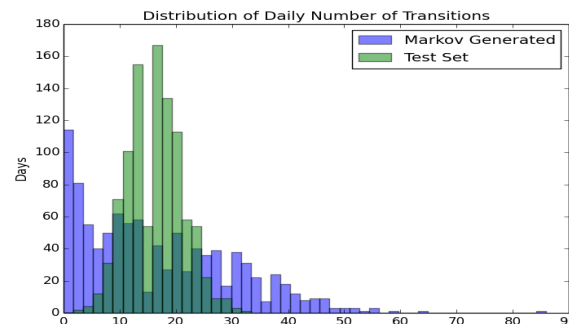
- Improved models and simulations of users mobile behaviors
- Evaluation of new Internet scale network architectures
- Exploration of new modeling techniques and their application to networking challenges

Major Contributions

1. Built and evaluated new models for network topological mobility.
2. Contribution to understanding of how network mobility affects new network design
3. Use and demonstration of suite of tools for broad exploration possibility

Results

- Identify different types of users
- Predict length of sessions
- Model frequency of transition between networks



Techniques

A suite of machine learning tools were used in this networks problem due to the size of the dataset

Technique	Toolkit	Usage
Probabilistic Programming	PYMC3	Fast Inference
Regression	Sklearn	Find optimal duration
Neural Net	Tensorflow	Classify sessions
KMeans clustering	Scipy	Identify user types
Data processing	Pandas	Disecting data

Datasets

- UMass Email log files
- >7000 users over 4 months period
- 10 Million entries of ...
- User Date Time Start
- Time End IP
- Device
- Sessions

Support

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