

Tracking devices are Everywhere



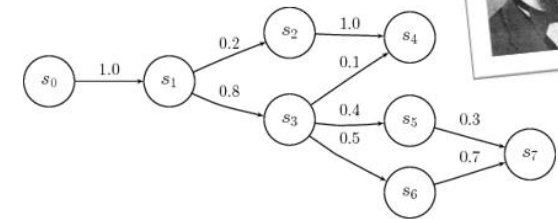
What is location prediction

- Location Prediction means predicting the user's future location from **historical movement data** and **contextual features** gathered through the mobile device.
- Contains **Spatial division** that break the surface into smaller units and a **probability function** that maps a probability of moving to another unit in a defined future time.
- The probability function use both the previous movements of the user and **contextual information gathered from the mobile device** (e.g. day, hour or recent phone calls).

Our work

- Methods to improve location prediction algorithms
- Methods to combine location prediction algorithms
- Handle the cold start problem (insufficient amount of training set)
- Add other helping information to the prediction
- Use location prediction output more efficiently
- Embed machine learning algorithms

Markov model & City Grid



*	0	1	2	3	4	5	6	7	8
0	4	8	5	2	0	0	4	9	0
1	0	5	7	6	3	5	2	7	1
2	3	0	7	3	1	5	1	7	1
3	6	9	4	8	8	2	6	8	6
4	7	3	5	1	5	2	1	3	5
5	2	5	9	9	6	6	6	7	0
6	7	5	0	0	2	0	6	7	0
7	7	7	9	2	0	7	2	1	8
8	8	3	3	7	5	0	6	8	1



*	0	1	2	3	4	5	6	7	8
0	0.125	0.25	0.16	0.06	0	0	0.13	0.28	0
1	0	0.14	0.19	0.17	0.08	0.14	0.06	0.19	0.03
2	0.107	0	0.25	0.11	0.04	0.18	0.04	0.25	0.04
3	0.105	0.16	0.07	0.14	0.14	0.04	0.11	0.14	0.11
4	0.219	0.09	0.16	0.03	0.16	0.06	0.03	0.09	0.16
5	0.04	0.1	0.18	0.18	0.12	0.12	0.12	0.14	0
6	0.259	0.19	0	0	0.07	0	0.22	0.26	0
7	0.163	0.16	0.21	0.05	0	0.16	0.05	0.02	0.19
8	0.195	0.07	0.07	0.17	0.12	0	0.15	0.2	0.02