Critique 8 | Week 10 | Disha Singh

Transportation Mode Detection using Mobile Phones and GIS Information: 2011 - **P11**

Inferring Human Mobility Patterns from Anonymized Mobile Communication Usage: 2012 – **P12**

CityCoupling: 2016 – **P16**

Being someone reading these papers in 2022, it feels impossible that something I use in daily life, i.e., Google Maps had its foundational knowledge being researched just 10-11 years ago because as of today it is superbly advanced. Today, Google Maps(and other similar apps) can seamlessly show me all transportation options car, metro, bus and even taxi separately along with the several times at which they are available in combination with the time it will take for me to get to my destination based on the traffic with high accuracy. It is hard to believe that at one point even distinguishing between the several motorized transport modes was challenging and P11 was the first to propose a high accuracy solution for it. It is ludicrous however that, **even though P12 talks about planning cities using people movement pattern, the people come in only after the city is constructed** and only then can their movement be tracked. As such, this study is more applicable in case of city expansions, rebuilding roads, bridges, transportation networks etc.

The 3 papers are very different in terms of their goal and the science they are using **but together they could have come under the UbiComp and Smart City theme** too covered during our course as all of them work towards making cities better by having more knowledge of how and where people travel usually(as in P11, P12) or in a rare event(as in P16), so that the people moving around the city can be provided more relevant services, be it in the form of relevant ads on their mobile device or on a larger community level - providing better transportation infrastructure, or providing better disaster management say by letting authorities know where people will need them if at all a disaster occurs. In combination with GPS sensor data, P11 uses transportation network data like real time locations, train routes etc to detect mode of transport whereas P12 uses geographic data, demographic data to see where to and from people move by finding the probability of a user's location at a given time. P16 is similar to P12 in terms of goal but in rare event scenario and by utilizing the similarities among a city where this rare event occurred.

What's worth thinking is that the **sparsity of data that P12 talks about can today be tackled easily as people use the internet all the time** so the problem of "lesser communication events" or phone calls is no more present as people are almost all the time connected to the mobile data and hence their internet usage can show their mobility pattern for this kind of study. In fact in my opinion, Google must be using this data and creating the congestion predictions on roads at various times based on the life pattern of people as described in this paper. P16 therefore does not suffer from this kind of a challenge as the research was in a time when mobile devices were more ubiquitous and large scale human-mobility data easily available.

P16 has given me a different perspective of how a problem can be tackled without any data - by deducing data from similar use cases, like to see how Osaka's human mobility will be impacted in case of an earthquake based on Tokyo's by intercity spatial mapping based on Probability models.

Something I would like to discuss in class is how the studies in three papers can be combined to effectively plan cities. **Can we provide real time transport recommendations(P11), emergency/safety alerts to people affected by a sudden, never before occurred Hurricane(P16) by knowing the time of the day, hence knowing the volume of people that might be stuck in a particular region(P12)?**