

Literature Review of Passive Behavioural Monitoring

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1 Literature Review

Some researches have been done with regard to estimating social density, especially more are focused on crowd density.

Video processing has limitations such as weather conditions, illumination changes, limited viewing angle, and density and brightness problem.

GSM location has an issue with privacy[1].

MAC is only a proxy since it does not infer directly to personal information, such as name or contact.

A research from [10] proposes a way to detect crowds using Bluetooth. The crowd density is quantized into 7 groups, ranging from nearly empty to extremely high (crowded). Several features were also devised in this research, ranging from bla bla. The method was chosen due to bla bla. The experiments were set up for 3 times, with 4 hours of duration each. 10 students were recruited to carry out the experiments. The results show that bla bla.

Furthermore, [3] alleges that the existence of social relationships is possible to be uncovered by using WiFi probe signals.

Human queue is also possible to be monitored using WiFi, as demonstrated in [9]. It is based on RSSI that is measured by a single WiFi monitor.

WiFi and Bluetooth were also used to estimate crowd densities and pedestrian flows in [7].

A research [1] utilizes MAC address data to determine spatio-temporal movement of human in terms of space utilization.

Bluetooth data is also used to analyze spatio-temporal movements of visitors event in Belgium [8].

Movements pattern and landmark preferences are possible to be extracted from publicly available photo repositories, such as Flickr and Panoramio, as presented in [5].

An interesting insight is found in [2], this research goal and method are really similar with our research.

A research [6] is also a little bit similar with the Paul's research.

Bluetooth, again is proven to be a potential source of tracking socially contextual behavior, as seen in [4]. Using Bluetooth trace, Chen, et. al. has shown the result with 85,8% accuracy.

[Why How] Literature on Topic Literature on Method Theoretical Approach
Find a Hole Look for debates

2 Conclusion

Write your conclusion here.

References

- [1] Naeim Abedi, Ashish Bhaskar, and Edward Chung. Tracking spatio-temporal movement of human in terms of space utilization using Media-Access-Control address data. *Applied Geography*, 51:72–81, 2014.
- [2] Anja Bachmann. Towards smartphone-based sensing of social interaction for ambulatory assessment. *Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers - UbiComp '15*, pages 423–428, 2015.
- [3] Marco V. Barbera, Alessandro Epasto, Alessandro Mei, Vasile C. Perta, and Julinda Stefa. Signals from the crowd: Uncovering social relationships through smartphone probes. *Proceedings of the 2013 Conference on Internet Measurement Conference*, pages 265–276, 2013.
- [4] Z Chen, Yiqiang Chen, Shuangquan Wang, and Junfa Liu. Inferring social contextual behavior from bluetooth traces. *Proceedings of the 2013 ...*, pages 267–270, 2013.
- [5] Piotr Jankowski, Natalia Andrienko, Gennady Andrienko, and Slava Kisilevich. Discovering Landmark Preferences and Movement Patterns from Photo Postings. *Transactions in GIS*, 14(6):833–852, dec 2010.
- [6] Lu Luo, Jun Yang, Xuan Bao, Zhixian Yan, and Yifei Jiang. SWAN: A Novel Mobile System to Track and Analyze Social Well-being. In *Adjunct Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers*, pages 703–712, New York, New York, USA, 2015. ACM Press.
- [7] Lorenz Schauer, Martin Werner, and Philipp Marcus. Estimating Crowd Densities and Pedestrian Flows Using Wi-Fi and Bluetooth. *Proceedings of the 11th International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services*, pages 171–177, 2014.

- [8] Mathias Versichele, Tijs Neutens, Matthias Delafontaine, and Nico Van de Weghe. The use of Bluetooth for analysing spatiotemporal dynamics of human movement at mass events: A case study of the Ghent Festivities. *Applied Geography*, 32(2):208–220, 2012.
- [9] Yan Wang, Jie Yang, Hongbo Liu, and Yingying Chen. Measuring human queues using WiFi signals. In *Proceedings of the 19th annual international conference on Mobile computing & networking*, pages 235–237, New York, New York, USA, 2013. ACM Press.
- [10] Jens Weppner and Paul Lukowicz. Bluetooth based collaborative crowd density estimation with mobile phones. *2013 IEEE International Conference on Pervasive Computing and Communications (PerCom)*, pages 193–200, mar 2013.