

Out-of-home activity recognition from GPS data in schizophrenic patients

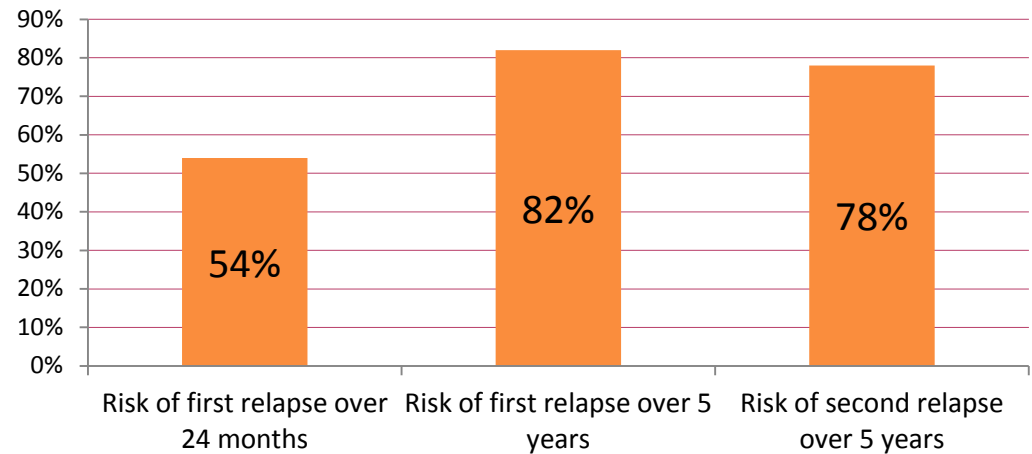
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Background

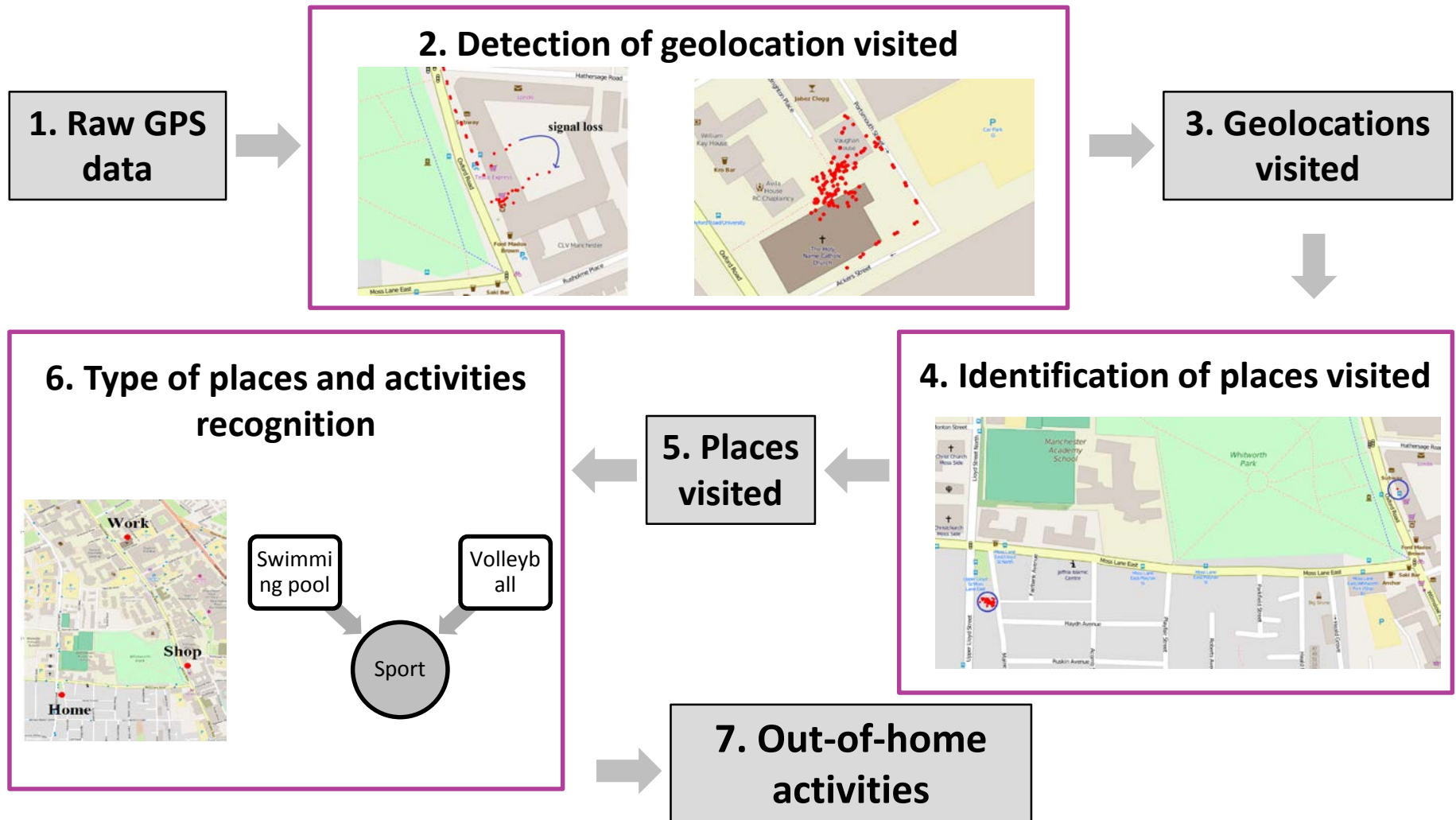
- According to NHS in England, schizophrenia has a prevalence of 1%.
- It is characterized by repeated psychotic episodes.



- Social functioning, or out-of-home activities, it is a common measure to monitor the risk of psychotic relapse.
- Monitoring of out-of-home activities usually relies on infrequent clinic visits, limiting the capacity to detect sudden changes.
 - Routinely collected GPS data from smartphones introduce novel opportunities to implement real-time monitoring of out-of-home activities.

Methods

1. We conducted a pilot study with 5 schizophrenic patients to assess the feasibility of this approach.
2. We implemented two pipelines to infer out-of-home activities from raw GPS data.



Results

Data summary

	Total number of days	Total number of hours	Total number of SFD activities
Total	20	396.6	35
Mean (SD)	4 (1)	79.3 (30.6)	7 (2.9)
Range	3 - 5	36.8 - 109.9	3 - 11

Recall and precision

Algorithm	Recall	Precision
Time-based	0.600 (0.163)	0.909 (0.096)
Density-based	0.714 (0.168)	0.714 (0.157)

Conclusion

- We demonstrated the feasibility to assess out-of-home activities from geolocation data that is routinely collected with smartphones.
- This provides novel opportunities for early detection of relapse in schizophrenic patients.
- In the future, we will investigate more sophisticated analytical methods to obtain better performance.

Thank you.

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