

Spatiotemporal correlations of handset-based service usages

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We study spatiotemporal correlations and temporal diversities of handset-based service usages by analyzing a dataset that includes detailed information about locations and service usages of 124 users over 16 months. By constructing the spatiotemporal trajectories of the users we detect several meaningful places or contexts for each one of them and show how the context affects the service usage patterns. We find that temporal patterns of service usages are bound to the typical weekly cycles of humans, yet they show maximal activities at different times. We first discuss their temporal correlations and then investigate the time-ordering behavior of communication services like calls being followed by the non-communication services like applications. We also find that the behavioral overlap network based on the clustering of temporal patterns is comparable to the communication network of users. Our approach provides a useful framework for handset-based data analysis and helps us to understand the complexities of information and communications technology enabled human behavior.

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