Spatio-Temporal Location Recommendation for Urban Facility Placement via Graph Convolutional and Recurrent Networks

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Research Objectives

- Location recommendation is crucial for the success of urban planning on facility placement.

- Customer effect, spatial correlation and temporal dependency are essential factors for location popularity.

- Deep Learning has been widely employed to model high-dimensional spatio-temporal data.

Research Method

- Consider the spatio-temporal trajectories and online social services of dwellers.

- Introduce a novel semi-supervised spatio-temporal learning model STGCRN.

- Propose an attention based contextual graph convolution module and a popularity approximation block.

Research Results

- STGCRN significantly outperforms all competitors under all conditions on Acc and RMSE.

- the Acc and RMSE of STGCRN are stably superior to that of all the baselines.

- STGCRN is quite effective for top-k candidate location recommendation for urban facility placement.

Research Conclusions

- The experiments demonstrate the superiority of the proposed STGCRN compared with baselines.

- It can obtain the well-ranked candidate location lists for facility placement.

- In the future, we are of interest to explore the updates of candidate locations and dweller.