

Location Prediction on Trajectory Data: A Review

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ABSTRACT

- ▶ Location prediction is the key technique in many location based services including route navigation, dining location recommendations, and traffic planning and control, to mention a few.
- ▶ This survey provides a comprehensive overview of location prediction, including basic definitions and concepts, algorithms, and applications.
- ▶ First, we introduce the types of trajectory data and related basic concepts. Then, we review existing location-prediction methods, ranging from temporal-pattern-based prediction to spatiotemporal-pattern-based prediction.
- ▶ We also discuss and analyze the advantages and disadvantages of these algorithms and briefly summarize current applications of location prediction in diverse fields.
- ▶ Finally, we identify the potential challenges and future research directions in location prediction

EXISTING SYSTEM

- ▶ Urban planning, relieving traffic congestion, and effective location recommendation systems are important objectives worldwide and have received increasing attention in recent years. Spatio-temporal data mining is the key technique involved in the sepractical applications.
- ▶ Trajectory data brings new opportunities and challenges in the mining of knowledge about moving objects. To present, many researchers have used trajectory data to mine latent patterns that are hidden in data.
- ▶ These patterns can also be extracted for the analysis of the behavior of moving objects. Location prediction, as the primary task of spatiotemporal data mining, predicts the next location of an object at a given time.
- ▶ In recent years, researchers in location prediction have made much progress.

DISADVANTAGE

- ▶ In contrast to traditional data, the unique properties of trajectory data (e.g., different sampling rates, different lengths, and sparsity) mean that location prediction faces many challenges.
- ▶ Randomness of movement behavior
- ▶ Time sensitivity
- ▶ Cold start and sparsity problems
- ▶ Heterogeneous data

PROPOSED

- ▶ For instance, early studies traced student ID cards to identify frequent temporal patterns and used these patterns to predict their next Location.
- ▶ Since then, location prediction has had a wide range of applications in daily life, e.g., travel recommendation, location-aware advertisements, and early warning of potential public emergencies, to mention a few .
- ▶ Location prediction typically must employ many techniques, including trajectory data preprocessing, trajectory clustering, trajectory pattern mining, trajectory segmentation, and trajectory semantic representation.
- ▶ In this article, we review the field of location prediction, its basic definitions, typical algorithms, model evaluations, and diverse applications.

Our objective in this review is to present a comprehensive picture of

ADVANTAGE

- ▶ we introduced the basic concepts of location prediction, the different types of data sources, the challenges associated with location predictions and the location prediction framework.
- ▶ We introduced trajectory data preprocessing methods and then identified the classification of location prediction model types and discussed these models in detail.

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HARDWARE REQUIREMENTS

- ▶ Processor – Pentium -III
- ▶ Speed – 1.1 Ghz
- ▶ RAM – 256 MB(min)
- ▶ Hard Disk – 20 GB
- ▶ Floppy Drive – 1.44 MB
- ▶ Key Board – Standard Windows Keyboard
- ▶ Mouse – Two or Three Button Mouse
- ▶ Monitor – SVGA

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SOFTWARE REQUIREMENTS

- ▶ Operating System : Windows 8
- ▶ Front End : Java / DOTNET
- ▶ Database : Mysql / HEIDISQL

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CONCLUSION

- ▶ In this article, we provided an overview of location prediction ranging from trajectory data preprocessing to forecasting location and the evaluation of location prediction systems.
- ▶ First, we introduced the basic concepts of location prediction, the different types of data sources, the challenges associated with location predictions and the location prediction framework.
- ▶ We introduced trajectory data preprocessing methods and then identified the classification of location prediction model types and discussed these models in detail.
- ▶ Next, we categorized location-prediction models as either single-object or group models or shared insights about these approaches.
- ▶ We also listed the available public datasets and evaluation methods to help readers conduct their own research. Lastly, we discussed location-prediction applications and future work.

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