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Trajectory Utility after Anonymization: Comparison of Similarity Measures

Project Group "Praxis der Forschung"
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1 Project

Nowadays, due to the expansion of geo-tracking devices, we have an unprecedented amount of human and vehicle trajectories, which hold a good deal of sensitive information and must be protected. Anonymization mechanisms try to balance out two conflicting goals: strong privacy and high utility. To measure utility, one requires the use of metrics, and one important subcategorization for the specific field of trajectory anonymization are the similarity measures. These are functions which quantify how similar two trajectories are, and, for example, can be used to measure the difference between an original and its corresponding sanitized trajectory. Trajectory similarity measures are common in the literature, with many variations including the Euclidean distance, time series measures, edit distances, road network-based measures, etc.; all of which have their unique useful properties.

2 Goal

One of the project's goal is to look at the utility measures present in the state of the art and provide experimental evaluation over real trajectory databases and their anonymized counterparts, which can help understand which properties are desirable, or provide the highest utility, in diverse scenarios. Adapting similarity measures to be able to compare while taking into consideration the locations with categorical information ("home", "coffee shop", ...) in a natural way can also be an interesting research direction.

3 Starting References

[1] overviews many trajectory similarity measures and their common properties. Similarity measures based on road networks are not overviewed here, but [2, 3] are some recent papers on these type of measures. Finally, [4, 5] provide some experimentation and comparison akin to the project's goal.

4 Contact

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References

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