Karlsruhe Institute of Technology

KASTEL

Institute of Information Security and Dependability
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Bachelor's Thesis *or* Master's Thesis

Suppression to Enhance Privacy in Trajectory Data

Did you know that knowing just four location points is enough to identify 95% of the population? While trajectory data is great for analysis, it contains very **sensitive information**. It can be used to learn where you've been and at what time, when you left home, and when you meet up with friends. So it's really important to make sure that the personal information in a trajectory database is protected.

To keep trajectory data safe, we can use a mechanism that satisfies **differential privacy** (ε-DP), the go-to privacy notion. However, all DP mechanisms for trajectory protection have one thing in common: the **low utility of the sanitized data**.

Thesis Task In this thesis, you'll try to enhance utility by using **suppression**. You'll adapt suppression to trajectory data to see how they can be used to protect people's privacy when they share their location online. You'll look at how the new mechanisms affect privacy and utility, and describe the settings that provide the most improvement.

If you're interested in developing and deploying new tools to protect your location and keep your data safe, this thesis will be a good fit for you.

Prerequisites Primary interest in the topic. Coding skills in Python or similar languages, basic software development practices (e.g., Git), and English communication skills are required.

If you are interested in this topic or have further questions, please contact Àlex Miranda-Pascual (alex.pascual@kit.edu).

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