

A Multi-task Learning Framework for Road Attribute Using Large Language Models (LLMs)

Project Description:

The service of ride-hailing providers significantly relies on the quality of the underlying digital map. Incomplete map data such as a missing road or even a missing road attribute, such as maximum road speed, number of lanes, and driving directions, can lead to misleading routing decisions or inaccurate estimation of a driver's arrival time. However, the updating of both commercial and free maps still heavily relies on the manual annotations from human. The high-cost results in maps with low completeness and inaccurate outdated data. Take the OpenStreetMap (OSM) as an example, which provides the community a user-generated map of the world, its data completeness and accuracy vary significantly in different cities. To address this issue, we will build a multi-task learning framework for road attribute detection via joint analysis of map data and GPS traces.

Duties/Activities:

The Intern will review related works in order to understand the scope of the project. He/she will work on Doha GPS dataset and gets supervision from the mentor in writing the code. Then, each intern will work on a specific road attribute (meta-data). For example, one intern will work independently on predicting posted speed, while other one will work on estimating the number of lanes. Then, we will combine these attributes in a unified framework.

Required Skills:

Excellent Python programming skills is required. Understand the basic machine learning / deep learning architectures is required.

Learning Opportunities:

The intern will have opportunity to work with scientists and software engineers on promising research problems. In addition, it is great opportunity to participate in solving real-world transportation problems.

Expected Team Size: 2-3

Mentors

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