

Faculty Name:

Sharon Di

Faculty Email:

sharon.di@columbia.edu

Lab:

DitecT

Project Title:

Understand Travel Mode Changes through LLMs and In-context Learning

Description:

In recent years, Large Language Models (LLMs), such as GPT-3, GPT-4, and LLama 2, are algorithms trained on extensive datasets, exhibiting exceptional zero-shot learning capabilities across numerous unlabeled tasks. Building on this notion, in-context learning involves conditioning LLMs on specific linguistic instructions or task demonstrations, subsequently enabling them to tackle analogous tasks through sequence predictions. In the field of Travel Mode Analysis, a significant volume of unlabeled data exists. Of particular interest are the unlabeled tweets generated by commuters, which offer insights into evolving travel patterns, especially in the context of events like a pandemic. By harnessing the strengths of LLMs and in-context learning, there exists potential to extract valuable insights from unlabeled data.

We aim to address the following research questions:

What constitutes an effective prompt structure that reliably directs LLMs to produce specific outputs? For instance, how can an LLM discern whether an unlabeled tweet is related to a private vehicle or a service like taxi or Uber?

How can LLMs be employed to investigate shifts in travel behavior, encompassing aspects such as travel frequency, travel distance, and interpersonal similarity in travel patterns?

Is it feasible to use LLMs to generate travel mode datasets from recent or context-specific data, facilitating immediate adaptability?

Location of Research:

Hybrid (both Remote and On Site)

of hrs/week:

20

Department/Program:

Civil Engineering & Engineering Mechanics

Eligibility:

BS, Fourth Year, MS

To apply, please contact: Sharon Di sharon.di@columbia.edu