

Survey Date



Profiles



Sample

Role-play with LLM



Reasoning Enhancement

As a Resident



##Travel Reasoning Chain:

At Home(8:00AM):

Whether?Why?When?Where?How?

At Work (3:00 PM): ...

At shopping(4:00PM)

At Home (5:00 PM):...

##Travel Table:

Place Visited/Arrival Time/Departure Time /Location Type

Post-processing



Reasoning Enhancement

Chain-of-Trips

Prompt:

<system prompt>

You are a city dweller...

Instructions

Profile

Your profile is as follows:

Age: 39 Gender:...

Survey date

Saturday, August 2016

Answer:

##Travel Reasoning Chain:

At Home(8:00AM):

Whether?Why?When?Where?How?

...

##Travel Table:

Place Visited/Arrival Time /Departure Time/Location Type...

Base LRM



Chain-of-Trips

BaseData EnhanceData

Seed Model



B-SFT

LoRA SFT

E-SFT

Synthetic Data

Refinement Data



LoRA SFT

Reward

Filter

Seed Model

TravelReasoner

(A) Simulation Overview

(B) Post-Training Pipeline

(C) Mobility Data Simulation

Prompt

<system prompt>

You are a city dweller. Based on your personal profile and travel purpose, please simulate your travel in a first-person perspective

<Instructions>

<Profile>

Your profile is as follows:

Age: 39 Gender: female Working status: Yes...

<Survey date>

Saturday, August 2016



Answer

##Travel Reasoning Chain:

At Home(8:00AM):

- **Whether to travel?** Yes.

- **Why travel?** It is Saturday, and I want to engage in recreational activities. I have planned to visit a park to relax and enjoy my morning.

- **When to travel?** Around 8:00 AM.

- **Where to travel?** A nearby park or recreational area.

- **How to travel?** Use public or commuter bus for convenience.

...

##Travel Table:

Place	Arrival Time	Departure Time	Type
Home	12:00 AM	8:00 AM	1
Work	10:50 AM	3:00 PM	3
Home	5:00 PM	11:59 PM	1