Geospatial Information Technology for Mobility Services

Prof. LIU Xianghong
刘向宏
VP of DiDi Chuxing
Chief Scientist of DiDi Smart Transportation Division
滴滴出行副总裁，滴滴智慧交通首席科学家
DiDi: World's Largest Transportation Platform

+31 million work opportunities
+550 million registered riders

10 billion trips/year

To Consumers:
- Taxi
- Express
- Enterprise
- Premier
- Luxe
- Bike & E-Bike
- Car Sharing
- Designated Driving
- Food Delivery

To Cities:
- Public Bus Mgmt System
- Minibus
- Clean Energy Solutions
- Smart Transportation

MORE THAN A JOURNEY
Global Community, Collective Adventure

1000+ cities
80% of world’s population

DiDi Labs 2017.03
DiDi Mobility Japan 2018.06
Launched in Mexico 2018.04
Launched in Australia 2018.05

More than a journey
Smart Transportation System

Smart Travelers
From Drive Alone to Ride Sharing

Smart Vehicles
From Human Driven to Autonomous Driving

Smart Infrastructure
From Highway Systems to Cooperative Vehicle-Highway Systems

Cloud
Big Data
Transportation Engineering
AI
Mapping Service: Seeing Through A Rider’s Lens
Geospatial Information Application in DiDi

Business Scenarios
- Supply & Demand Forecasting
- Capacity Management
- Carpooling
- Smart Dispatching

Map Services
- ETA
- Route Planning
- PUDO (Pick-up & Drop-off)
- “R-U-Going…”
AI Powered Demand and Supply Forecast
AI-Powered Mapping Services

Route Planning

- To minimize cost
- To maximize driver efficiency
- To optimize transportation efficiency

ETA (Estimated Time of Arrival)

To estimate the traveling time and the waiting time of each ride

\[ ETA = T_{\text{travel}} + T_{\text{wait}} \]

Wang et al., KDD 2018
Big Data

- 106+ TB trajectory data/day
- 4875 TB data processed /day
- 40 billion+ routing requests /day
- 15 billion location points /day
Smart Transportation Management

运行概览

14:50 上次更新时间 [10分钟前]

1.5 运行指数
37 km/h 运行速度

拥堵道路分布:
- 高速路: 17%
- 快速路: 37%
- 主要路: 46%

DiDi Urban Transportation Platform

MORE THAN A JOURNEY
Towards a New Stage with GI Technology
DiDi GAIA Open Data Initiative

- Open Dataset
- Theme-Based Research Projects
Together, we can transform transportation.