

# Explainable Ride-pooling Services

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# Outline

- Problem
- Ride Pooling
- Motivation
- Methods
- Results
- Conclusion and Future Work
- References

- Public transportation is chosen by citizens as an option for factors such as carbon emissions and budget constraints.
- Public transportation can reduce up to 50% carbon emissions (Dasgupta et al. 2023).
- But it has its limitations when bringing people from and to the desired location.

- Digital-based mobility service.
- Bundles travel requests from people who want to travel in a similar direction.
- Algorithm plans the route, allocates trip requests to vehicles, makes their distribution, etc.

# Ride Pooling



Figure: Ride Pooling examples

- Ride Pooling can be a solution.
- Users sometimes have questions and doubts about their rides.
- Not all users have technical knowledge.

- A web interface with a conversational agent was designed to put the solution into practice.
- Agent combines survey methods from a market search.
- It can also use machine learning methods to learn from survey data to predict waiting time, travel time and arrival time for rides.



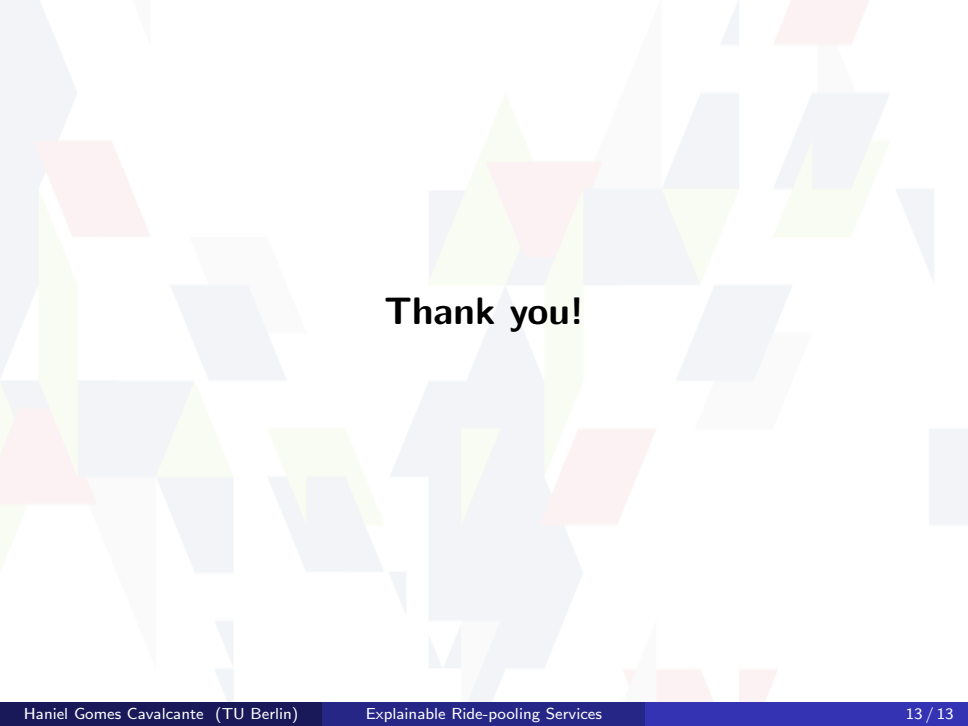
Figure: Agent for explanations

- Dataset
  - Most used time of the day
  - Longest waiting time
  - Longest travel time
  - Gender
  - Area

- Interface that implicit identifies steps that can be used to formulate an approach.
- Users can submit a request and receive a solution.
- New approach in generating results.

- This work provides an interface for a virtual agent that offers answers and explanations about car pooling rides for end-users with little or no technical knowledge.
- Leaves room for future work with respect to
  - Other possible questions and scenarios for car pooling.
  - Other applications other than car pooling.

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- Aleksandrov, Martin. "Learning Demands for Ride-pooling Services: A Case Study in Berlin." 2024 IEEE Intelligent Vehicles Symposium (IV). IEEE, 2024.
- Dasgupta, Susmita, Somik Lall, and David Wheeler. "Subways and CO2 emissions: A global analysis with satellite data." Science of The Total Environment 883 (2023): 163691.



**Thank you!**