



# GOOGLE AUTONOMOUS CAR: AI AND MACHINE LEARNING MODELS

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# WHY IS THIS RELEVANT?



reduced road  
accidents



improved  
traffic flow



increased  
personal time



expanded  
mobility



# MACHINE LEARNING AND AI IN WAYMO'S SELF-DRIVING CARS



Perception



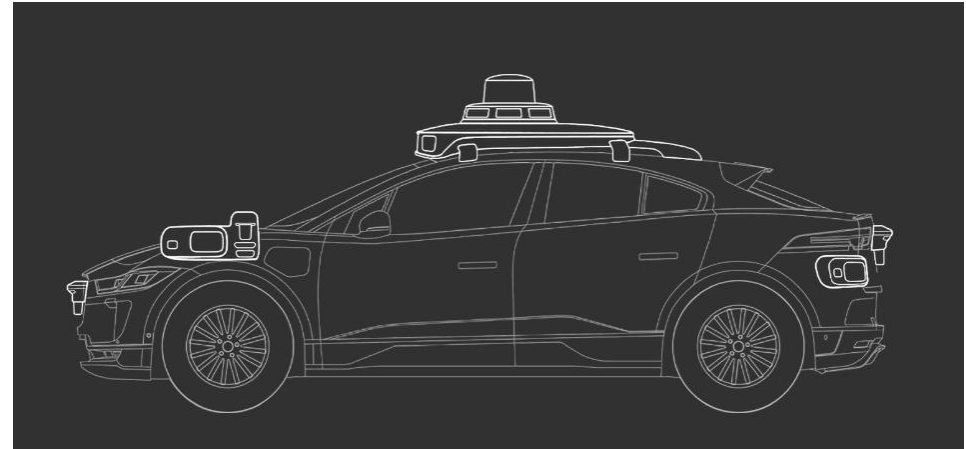
Prediction



Planning



Control



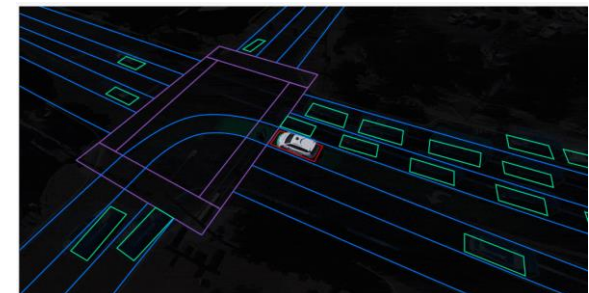
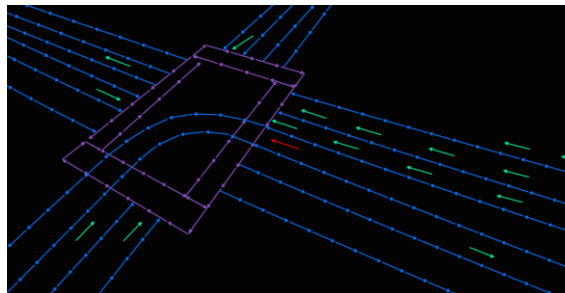
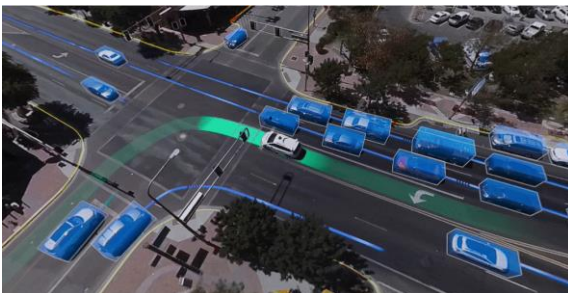
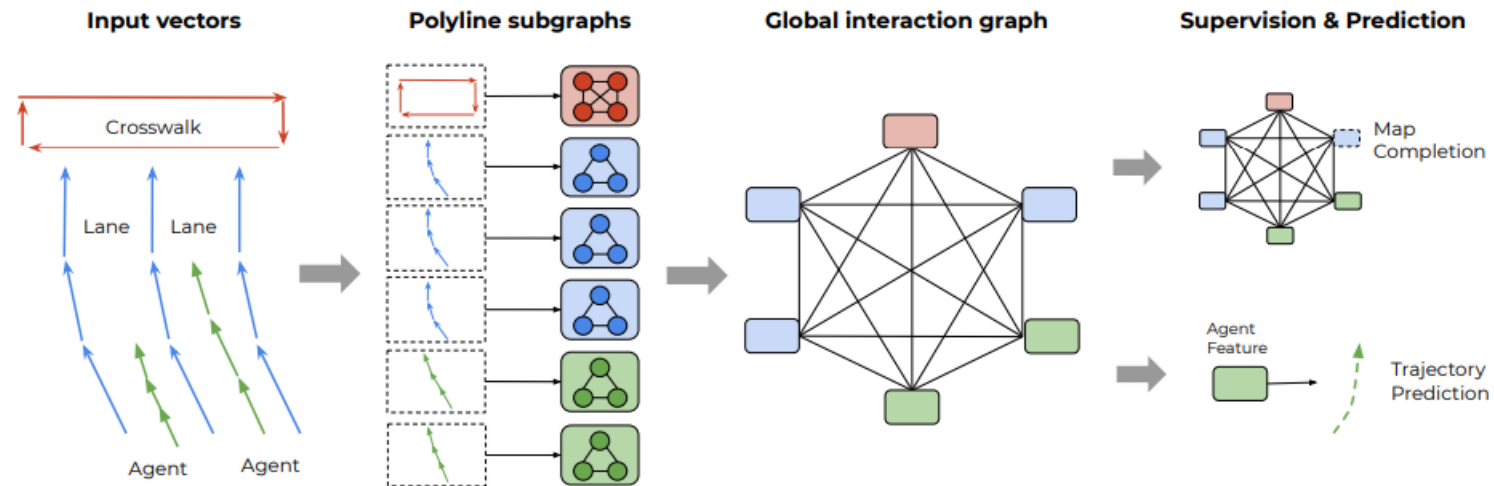


# DATA COLLECTION AND MODEL TRAINING

- 20+ million miles of real world driving
- 20+ billion miles in simulation
- GPS coordinates
- Detailed maps of environment
- Machine learning models
  - Sensor fusion
  - Object detection
  - Path Planning
  - Behaviour Prediction



# NEURAL NETWORK FOR BEHAVIOUR PREDICTION (VECTOR NET)



# ETHICAL CONSIDERATIONS AND COLLATERAL EFFECTS

Liability

Job  
Displacement

Data Privacy



# RELATED PROJECTS

Aurora: A startup founded by former Google and Uber employees developed the Aurora Driver

Apple: reportedly developing its own self-driving car technology

# CONCLUSION

Safer, more  
efficient, and  
more accessible  
transportation

Ethical concerns,  
liability, data  
privacy



# SOURCES

- <https://www.iflscience.com/google-has-developed-self-driving-car-24607>
- <https://waymo.com/waymo-driver/>
- <https://waymo.com/blog/2021/10/the-waymo-driver-handbook-perception.html>
- <https://waymo.com/blog/2021/08/MostExperiencedUrbanDriver.html>
- <https://waymo.com/blog/2020/05/vectornet.html>
- <https://arxiv.org/abs/2005.04259>