

# AUTOPilot CAR

We want to build a model to drive cars automatically using machine learning  
and deep learning algorithms

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Submitted to: Mr. Intisar Tahmid Naheen



# Motivation

UNLOCKING THE  
ROADS OF TOMORROW

In the heart of our code, lies the promise of a safer, more efficient future. Our autonomous car project isn't just about algorithms and sensors—it's about empowering vehicles to navigate the world with precision, learn from every mile, and democratize access to cutting-edge technology. Buckle up, because we're steering toward a road where innovation meets affordability!



# Brief About Topic

Picture a world where cars become *brilliant companions*, learning from every turn and stop. Our groundbreaking project merges the power of *machine learning and deep learning* to birth autonomous vehicles. In their training mode, these cars keenly observe human drivers, mastering the art of handling obstacles, deciphering signals, and gracefully navigating corners.

But it doesn't stop there—once in autopilot mode, they take the wheel, adjusting speed, braking, and steering with uncanny precision. Our mission? To democratize *innovation, making smart, affordable* cars accessible to all. *Buckle up, because the road ahead is paved with intelligence!"*

## RELATED WORKS

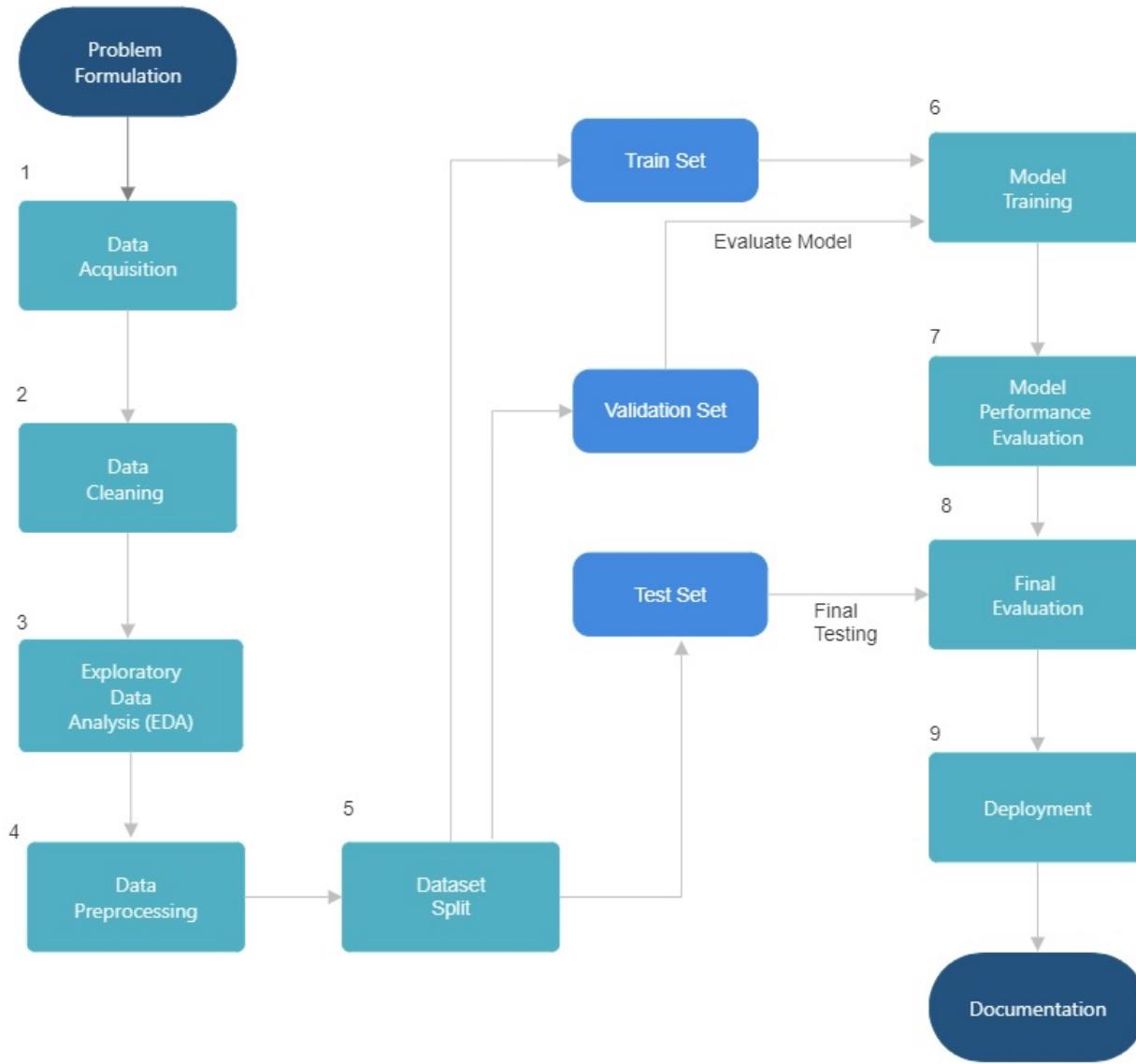
- **End to End Learning for Self-Driving Cars**  
Mariusz Bojarski, Davide Del Testa, Daniel Dworakowski, Bernhard Firner, Beat Flepp, Prasoon Goyal, Lawrence D. Jackel, Mathew Monfort, Urs Muller, Jiakai Zhang, Xin Zhang, Jake Zhao, Karol Zieba

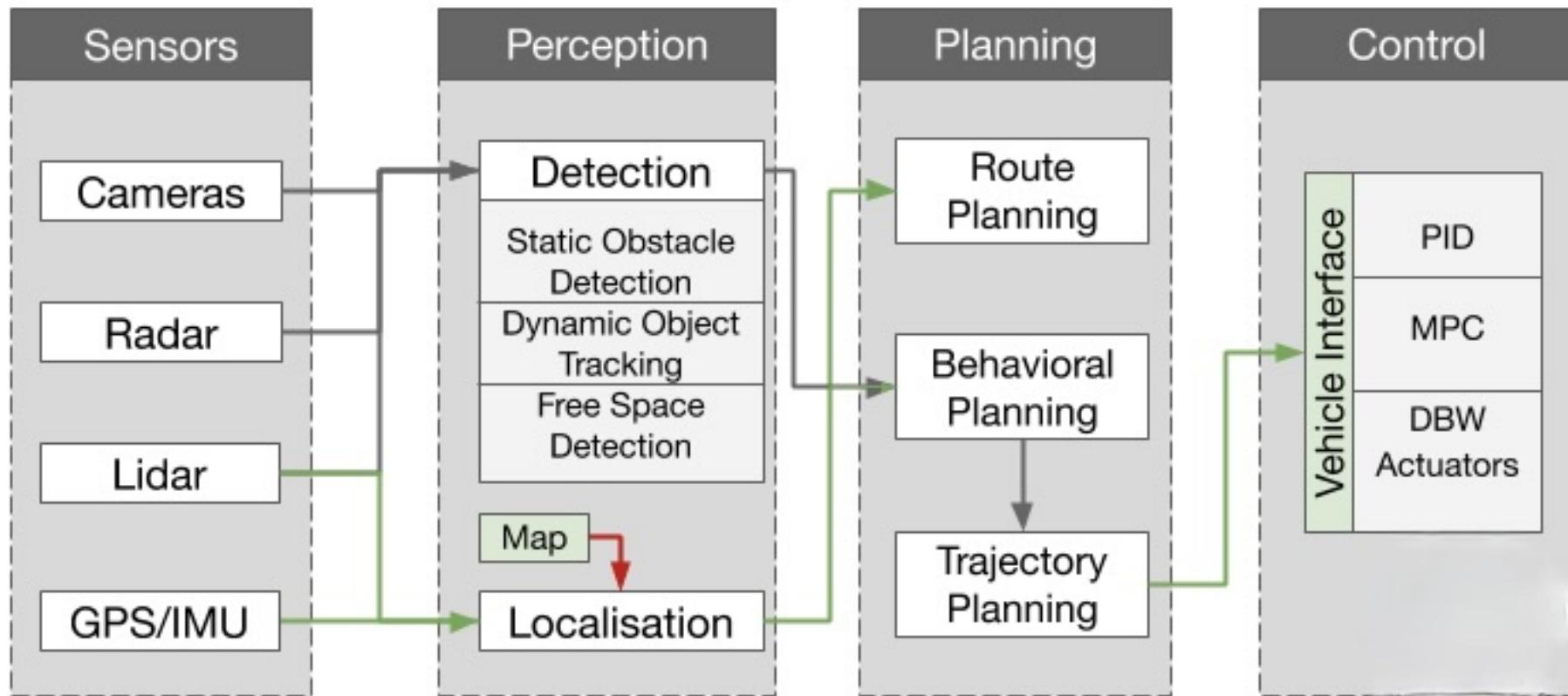
Link: <https://arxiv.org/abs/1604.07316>

- **Self-Driving Cars: Automation Testing Using Udacity Simulator** Shahzeb Ali

Link: <https://www.irjet.net/archives/V8/i4/IRJET-V8I401.pdf>

## FLOWCHART





# Technology Stack

01

Python

02

Jupyter-Notebook

03

Google-Colab

04

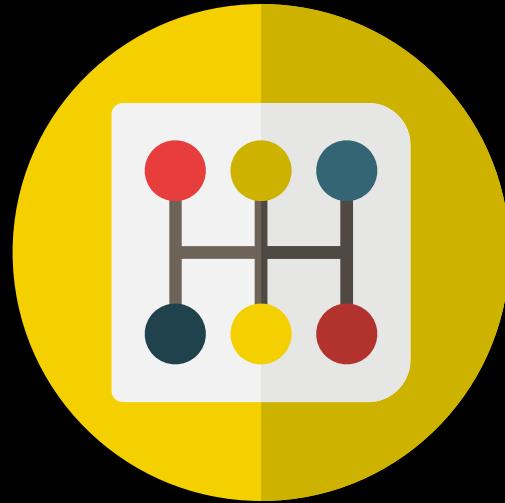
Tensorflow

05

Pandas, Numpy,  
Matplotlib, Seaborn  
etc

06

Flask Api



OBJECTIVE/TIME	MARCH				APRIL				MAY			
	Week-1	Week-2	Week-3	Week-4	Week-5	Week-6	Week-7	Week-8	Week-9	Week-10	Week-11	Week-12
Problem Formulation	Start											
Data Acquition	Start	End										
Data Cleaning			Start									
EDA & Preprocessing				Start	End							
Building Model					Start	End						
Dataset Split							Start	End				
Model Training								Start	End			
Model Performance Evaluation									Start	End		
Final Evaluation									Start	End		
Deployment										Start	End	
Documentation										Start	End	

# References

Learning a Driving Simulator (Eder Santana \* University of Florida, George Hotz comma.ai)

<https://arxiv.org/pdf/1608.01230v1.pdf>

Artificial Intelligence based Self-Driving Car(Hiral Thadesswar; Vinit Shah; Mahek Jain; Rujata Chaudhari; Vishal Badgujarz)

<https://ieeexplore.ieee.org/document/9315223>

The key technology toward the self-driving car - Jianfeng Zhao, Bodong Liang and Qiuxia Chen School of Automotive and Transportation Engineering, Shenzhen Polytechnic, Shenzhen, China

<https://www.emerald.com/insight/content/doi/10.1108/IJIUS-08-2017-0008/full/pdf?title=the-key-technology-toward-the-self-driving-car>

Level 2 Autonomous Driving on a Single Device: Diving into the Devils of Openpilot - Li Chen<sup>1,\*</sup>,†, Tutian Tang<sup>2,\*</sup>, Zhitian Cai<sup>1,\*</sup>, Yang Li<sup>1,\*</sup>, Penghao Wu<sup>3</sup>, Hongyang Li<sup>1,2,†</sup>, Jianping Shi<sup>4</sup>, Junchi Yan<sup>1,2</sup>

<https://arxiv.org/pdf/2206.08176.pdf>

The Research on autopilot system based on lightweight YOLO-V3 target detection algorithm

[https://www.researchgate.net/publication/340733546\\_The\\_Research\\_on\\_autopilot\\_system\\_based\\_on\\_lightweight\\_YOLO-V3\\_target\\_detection\\_algorithm](https://www.researchgate.net/publication/340733546_The_Research_on_autopilot_system_based_on_lightweight_YOLO-V3_target_detection_algorithm)

The Liability Limits of Self-Driving Cars - Liliya Ivanova University of Tyumen, Nikita Kalashnikov<sup>2</sup>

[https://www.researchgate.net/publication/362947016\\_The\\_Liability\\_Limits\\_of\\_Self-Driving\\_Cars](https://www.researchgate.net/publication/362947016_The_Liability_Limits_of_Self-Driving_Cars)

Test Your Self-Driving Algorithm: An Overview of Publicly Available Driving Datasets and Virtual Testing Environments Yue Kang , Hang Yin

<https://ieeexplore.ieee.org/document/8667012?denied=&fbclid=IwAR1hbWxuHXxoW3tFgAFWycpJ4rNZUFH0kyOQnw8-L34zMdaH34ZcvaR3Vg>

Self-Driving Car to Drive Autonomously using Image Processing and Deep Learning, Aligarh muslim university

[https://www.researchgate.net/publication/358106939\\_Self-Driving\\_Car\\_to\\_Drive\\_Autonomously\\_using\\_Image\\_Processing\\_and\\_Deep\\_Learning](https://www.researchgate.net/publication/358106939_Self-Driving_Car_to_Drive_Autonomously_using_Image_Processing_and_Deep_Learning)



**THANK YOU**

Any Question??

