

MIT School of Engineering
Department of Computer Science and Engineering
Project Synopsis

Group ID: 3

Project Title: Ai Car Simulation

Name of the Guide: Abhishek Das

**Group Members: Abhishek Tekavade
Vince Francis Dsouza
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PROBLEM STATEMENT:

The project purpose is to train a neural network to drive an autonomous car agent on the tracks.

ABSTRACT:

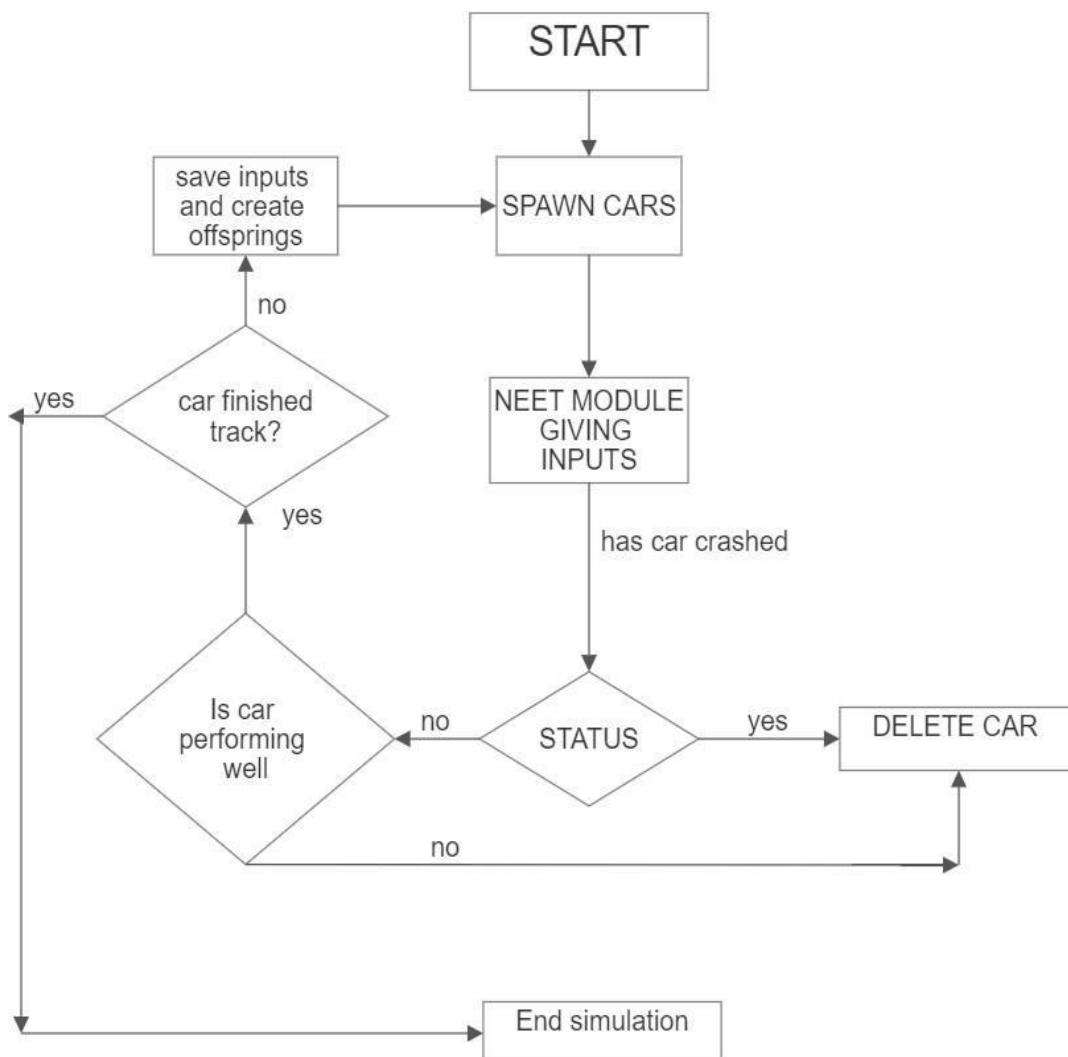
Self-driving cars have become a trending subject with a significant improvement in the technologies in the last decade. Ai will learn to control a racecar using NEAT -Neuro evolution of augmenting topologies and find the best possible inputs to finish the race in the shortest amount of time. NeuroEvolution of Augmenting Topologies(NEAT) is a genetic algorithm (GA) for the generation of evolving artificial neural networks (a neuro evolution technique)

Literature Survey: Detail survey done

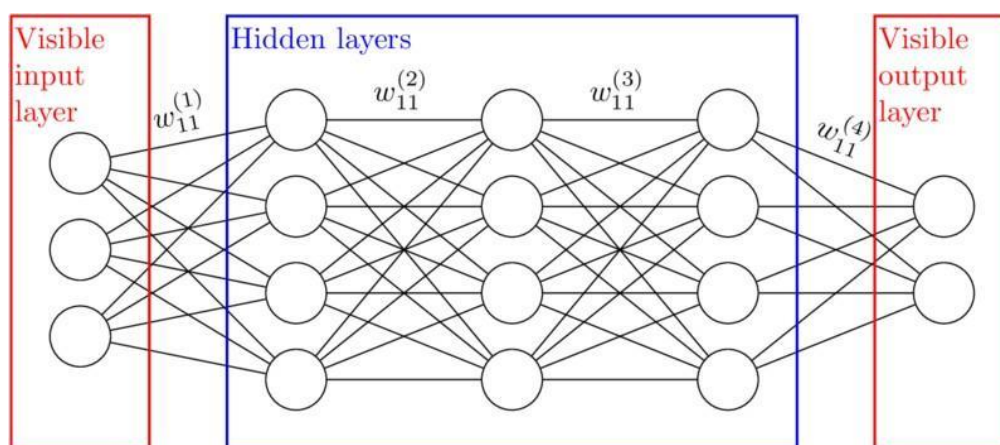
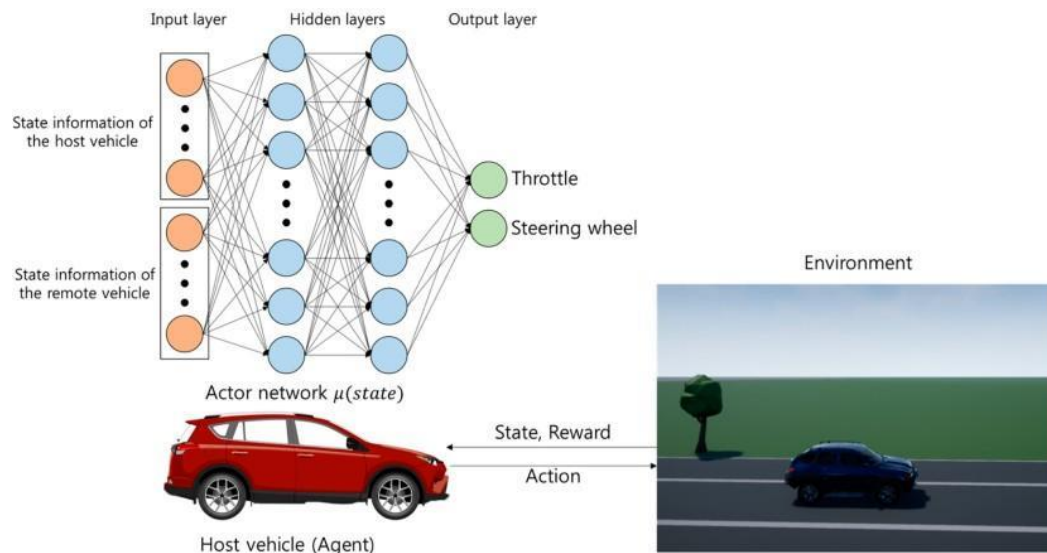
Sr No.	Paper Name	Author	Year of Publication	objective	Methodology	conclusion
1	ARTIFICIAL INTELLIGENCE IN AUTONOMOUS VEHICLES - A LITERATURE REVIEW	VINYAS D. SAGAR	27/03/2019	Give an holistic views of an artificially intelligent vehicle and the different methods adopted	The following components have been used in this research paper <ul style="list-style-type: none">Fuzzy-Neural Vehicle Systems ControlNeural-Netw ork-Based Virtual SensorsCascaded Neural Networks in Order to Recognize Traffic Signs	Artificial intelligence, especially neural networks, machine learning, and deep learning have become an absolute necessity to make autonomous vehicles function properly and safely. All these make the vehicles more efficient and does not pose a threat to neither the pedestrians nor the travellers, with advanced sensors and technology autonomous vehicles can predict what might happen and hence gather information to perform the necessary tasks. Autonomous vehicles also reduce distracted driving accidents to a great extent.
2	Bilateral Deep Reinforcement Learning Approach for Better-than-human Car-following	Tianyu Shi1 , Yifei Ai2 , Omar ElSamadisy1 , Baher Abdulhai	—	Deep Reinforcement Learning (DRL) framework for car-following control by integrating bilateral information into both state and reward function based on the bilateral control model (BCM) for car-following control	The following components have been used in this research paper <ul style="list-style-type: none">Centralized and decentralized learning frameworkMarkov Decision Process	Designed the bilateral deep reinforcement learning framework for car-following control. Also found that the framework has better performance than human driving models. It is the most effective perturbation damper among these models. Also, it is in the top place in other metrics, i.e., safety, efficiency, comfort.
3	Review of the State-of-the-Art of Brain-Controlled Vehicles	Amin Hekmatm Anesh, Pedro H J Nardelli	18/06/2022	It focuses on the most relevant topics on brain-controlled vehicles, with a special reference	The following components have been used in this research paper <ul style="list-style-type: none">Bio-signal patterns	They provide a systematic presentation of the most significant literature in the topic of BCV and BCAV from the past ten years

				to the terrestrial BCV and the aerial BCV, also called BCAV controlled by using bio-signals, such as electroencephalogram (EEG), Electrooculogram (EOG), and Electromyogram (EMG)	<ul style="list-style-type: none"> • machine learning • artificial intelligence simulator, • aerial vehicle. 	
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PROPOSED SYSTEM(BLOCK DIAGRAM):



DESIGN DIAGRAMS:



CONCLUSION:

From the research conducted by us, several group discussions and our personal opinions, we would like to conclude our synopsis by saying that Self-driving cars aim to revolutionize car travel by making it safe and efficient. Some of the key components such as NEAT, cameras, and most importantly – the algorithms that make self-driving cars possible. While it's promising, there's still a lot of room for improvement. For example, current self-driving cars are at level-2 out of level-5 of advancement, which means that there still has to be a human ready to intervene if necessary.

ANNEXURE:

ANNEXURE I: FORM A-TITLE APPROVAL (FOR OFFLINE MODE)

MIT School of Engineering
Department of Computer Science and Engineering
Mini Project (I, II, III, IV) Topic Approval

Date: 05/03/2020

Class: SY CSE1

Project Group ID: 03

Group Members:

Enrollment No	Name of Student	E-mail Address	Contact No.
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MITU20BTCS0003	Aaditya Nair	aadityanair1803@gmail.com	7757984061

PROJECT TITLE EVALUATION PARAMETERS:

Sr No.	Parameters	Topic 1	Topic 2	Topic 3
1	Title	Language Translator	Ai Car Simulated	Face detection Attendance
2	Domain Expertise	Creating this software will require a good knowledge of python and Google translator API.	Creating this project will require a good knowledge of python, Ai & Neat.	Creating this online platform for attendance will require a good knowledge of Python ,Media pipe, Sql databases /Oracle.
3	Technical Feasibility	This website will be very technically feasible, as it will provide a fresh new perspective to everyone who finds it difficult to understand different languages.	The main purpose of this project is to make a car learn and choose which path will be the most efficient and quickest the user can draw or provide an image for the path and then the car will start learning and find the path. Thus, this project is technically feasible.	This website will work as a time saver for all the teachers and students and it will be easy to use. The students have to look in the camera and his/her attendance will be considered

4	Future Scope	The future of translation will cover more cultures, as the internet continues to penetrate in emerging countries worldwide. Besides the top languages for translation, the software will have to provide accurate solutions to communicate with audiences who speak less known dialects	This software can be deployed on ambulances or fire trucks which will help them to find the quickest and safest path. also replace routine jobs and repetitive tasks like picking and packing goods, separating and segregating material, responding to repetitive customer queries	This system can be deployed for verification and attendance tracking at various government offices and corporations. For access control verification and identification of authentic users it can also be installed in bank lockers and vaults. For identification of criminals the system can be used by police force also
5	Applicability	<p><u>This project is applicable in the following ways –</u></p> <ul style="list-style-type: none"> • Giving users a feeling of happiness or not feeling left out for not understanding other languages. • Quizzes added on the website will allow users to engage their minds while having fun. • A number of languages to choose from makes sure that there is something available for anyone on our language translator. 	<p><u>This project is applicable in the following ways –</u></p> <ul style="list-style-type: none"> • We will be able to see and implement an Ai learning from itself. • A user-friendly interface. 	<p><u>This project is applicable in the following ways –</u></p> <ul style="list-style-type: none"> • Users will have the opportunity to virtually attend class and won't need to fill forms for attendance. • Saving time of both teacher and student which can be utilised on teaching/studying.
Approved				
Remarks				

Sr. No. Name of Subject Expert

Signature

1. _____

2. _____

ANNEXURE II: FORM B - MARKET AND FINANCIAL FEASIBILITY

MIT School of Engineering
Department of Computer Science and Engineering

Viability Analysis Report (Filled by student and verify by guide)

Date: 05/03/2020

Class: SY CSE1

Project Group ID: 03

Project Title: Ai Car Simulation

PROJECT TITLE EVALUATION PARAMETERS:

Sr. No.	Parameters	Description About Project	Marks (5)
1.	Business Ideas and Implementation from project	Data gathered from the project can be implemented to create more accurate simulations and self driving algorithms	
2.	Market Survey (competitors, substitute products, potential market, etc.)	The automotive industry is an extensive and vast industry. The industry is estimated to have a compound annual growth rate of 13.5% by 2030. Our potential market includes – convolutional neural network (CNN),Wayve, Cruise Automation, and Sensible4	
3.	Market Acceptability of Product	The global Autonomous / Self-driving Cars Market size is projected to grow from 20.3 million units in 2021 to 62.4 million units by 2030 as automobiles become faster a need for self driving algorithms will also increase	
4.	Emerging Trends about Project and Product	Increasing no. of smart self driving cars in developed nations increases due to dependable software	
5.	Income Generation ideas through Project	This project can easily be turned into an income generation opportunity through – <ul style="list-style-type: none">• Algorithm can be patented and distributed providing profit with each installation• Data collected can be turned into profit	

6.	Project Profitability	We believe this project will be extremely profitable and viable. It can be turned into a virtual simulator where the user can learn how to drive and also it can be designed for special services.we plan on adopting this as a personal project and thus will take all measures to make this project profitable!	
7.	Cost Benefit Analysis	Serving community	
8.	Any Other Point	Our product will provide a fresh perspective to nostalgic games from the mid-2000s, and also provide user satisfaction with an interface that will be easy to use.	
Remark:			

Commercial Feasibility of project is evaluated based on the above parameters.

Project Approval Status: Approved / Not Approved

**(Name & Designation of Market
Expert) Signature with Date.**

ANNEXURE III: LITERATURE SURVEY PAPER OR LINKS

1. ARTIFICIAL INTELLIGENCE IN AUTONOMOUS VEHICLES - A LITERATURE REVIEW

https://www.researchgate.net/profile/Dr-Nanjundeswaraswamy-2/publication/333608078_ARTIFICIAL_INTELLIGENCE_IN_AUTONOMOUS_VEHICLES_-_A_LITERATURE_REVIEW/links/5cff7e9ca6fdccd13091e354/ARTIFICIAL-INTELLIGENCE-IN-AUTONOMOUS-VEHICLES-A-LITERATURE-REVIEW.pdf

2. Bilateral Deep Reinforcement Learning Approach for Better-than-human Car-following

<https://arxiv.org/ftp/arxiv/papers/2203/2203.04749.pdf>

3. Review of the State-of-the-Art of Brain-Controlled Vehicles

<https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=9499083>

4. NEAT

https://neat-python.readthedocs.io/en/latest/neat_overview.html