Students' Diary

My Smart Mobility Journey

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On one fine morning in February 2022, around 6:30 am, I got a call from one of the postdocs in my lab. I was informed to direct the truck driver to our lab and unload the Golf cart vehicle. Five months later, in June, the Golf cart vehicle is doing test runs autonomously on the roads of IIT Hyderabad, making itself ready to give a ride to the officials from the Department of Science and Technology (DST). Being enthusiastic about science and research, I started my Electrical Engineering degree in 2015. I completely engrossed myself in the world of electronics and parallelly worked on a research project. The positive response to this research project raised my confidence to pursue higher education in the happening fields. Apart from Electrical, I had gained knowledge and some hands-on experience in the robotics domain because my close friends used to run a robotics club at our college. I used to closely follow the latest works of companies like ABB and TESLA, which are sovereigns in the field of my interest. After clearing the GATE exam with a decent score in 2021, I looked at different specializations to pursue Masters at IITs. Like all other students, I also got stupefied with many questions in the back of my head. Besides other options, I got Smart Mobility from IIT Hyderabad in the fifth round. Looking at the department curriculum and good praises from seniors, I accepted the offer and have been one of those 19 students who formed the second batch of Smart Mobility.

COVID-19 pandemic relinquished my dreams about experiencing days at IITH. Unfortunately, my first semester courses happened online, but over time I slowly dwelled in the world of Autonomous vehicles, which seem fictitious until today. Around October, I was asked to join a team led by postdoc Dr Santhosh. This team works on the IITH and Suzuki collaboration of the Level4 Autonomous vehicle project. I was assigned to develop an algorithm for Pothole detection in Indian scenarios.

I felt fortunate for such an offer but was baffled at the same time that I had no experience in Deep learning projects before. After accurate readings and support from my friends, I ran my first Deep learning algorithm, which detected potholes. Thanks to the Open Source Projects on the internet and the invaluable documentation available, which is incompatible with the notion of the solitary genius. Completing courses like Machine learning, Random variables, Autonomous Navigation, and IoT laid the foundation for understanding the field of Autonomous vehicles. While exploring the university campus in the first weeks of December.

I came across TIHAN, which is getting ready to serve as a testing facility for Autonomous Vehicles and Drones. TIHAN was the first of its kind facility in India and had a hangar spread over almost 9500 square feet.
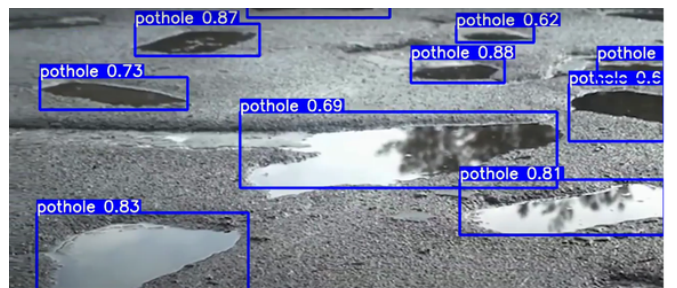
Besides the hangar, the testbed includes test tracks, Smart poles, Environment emulators for rainfall, SIL, HIL, MIL, VIL control centres, Drone runways, Anti-drone detection systems, & sophisticated labs. It seems to be nothing less than a facility that an Autonomous car enthusiast can dream of. From January 2022, I engaged myself in predominant courses such as Deep Learning and Visual Computing, which revealed to me the perception view of an Autonomous vehicle. During this time, working on different models from FRCNN to Swin Transformers on Autonomous applications with the support of many AI enthusiasts such as Dr Sumohana has escalated my curiosity in this field.

Concomitantly, I was asked to join a team meant to work on the Drive by wire technology and Golf cart vehicle Navigation. Thanks to the TIHAN project director and my faculty advisor Prof Rajalaksmi for assigning me to this diligent team. We were designated to work on Automotive grade sensors, mighty GPU boards, and high-end actuators at the Connected and Autonomous vehicles lab (CAV). In this lab, I met Dr Akshay, an erudite personality with a comprehensive knowledge of different fields. I should not miss mentioning Suneel, one of my seniors who shared a plethora of knowledge in the Autonomous domain with me.

In addition to this, I worked on an Autonomous bicycle. These urban mobility projects were showcased in front of distinguished personalities on the Inaugural day of TIHAN, i.e., the 4th of July.

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When my second semester was about to end, we were informed about the one-month visit of Prof Srikanth Saripalli (Director of CANVASS lab at Texas A&M). Fortunately, he also took the Sensing and Planning for Autonomous vehicles course during this period. All his lectures were thought-provoking and put all my understanding of Autonomous vehicles in proper perspective. Personal interactions with him elucidated the path I should take to excel in this field. Working with people who own startups, making cool stuff to work for the first time, meeting people from different fields, fenced in with Autonomous vehicles. I could not have asked more for my 20s.

Students' Diary
A great experience that drastically enhanced my life.
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Being one of the first students to join the pioneer batch of India's first Master's program in the domain of Autonomous Vehicles brought me closer to fulfilling my childhood passion for working with automobiles, which became even more exciting. I chose Mechanical Engineering as my Bachelor's degree at IIT Dharwad from 2016 to 2020 and investigated every nook and cranny of automobiles. I decided to pursue a career in the automotive industry after working with Volvo cars in 2017 and interacting with numerous industry professionals.

Along with my primary interest, I am constantly researching new technologies and advancements. Had worked on numerous projects in the Robotics domain using IoT and Cloud. Machine learning was another topic that piqued my interest while working on research projects at IIT Bombay.

The COVID-19 Pandemic affected us all in different ways. My seat in the Masters of Automotive Engineering program at RWTH Aachen, Germany, was declined because they did not accept international students, and my fallback job offer was also revoked. When exploring alternatives, this new Smart Mobility program at IIT Hyderabad appeared like a godsend. This was an obvious move where I could combine all of my passions into one large venture and participate in this exciting initiative. My first interaction with our professors was during my interview selection process. The encounter sparked my curiosity about working here. Everything had to be built from scratch. It was an excellent opportunity to display my enthusiasm. Had done various courses like Autonomous Navigation, Machine Learning, Introduction to UAVs, Computer Vision, Intelligent Transportation Systems, Sustainable Energy, etc. Dr Ashok Kumar Pandey's Vehicle Dynamics class is one of my favourites. I chose to work under him for my Thesis because he worked in one of my favourite fields. He was the one who encouraged me to pursue my passion for ground vehicles, both personally and professionally.

Along with an impressive academic record, I was offered an internship at Mercedes-Benz R&D in the Autonomous Driving field, where I not only gained hands-on experience with the technologies' real-world application but also built safety frameworks for several subsystems in AD and ADAS. As part of innovation developmental milestones, I also created features for Mercedes' infotainment system.

Thanks to Dr Rajalakshmi, TiHAN's Project Director, and my Faculty Advisor, for her unwavering commitment to seeing TiHAN expand at an exceedingly quick speed that was often difficult to keep up with. During my time at TiHAN, I was appointed as the overall MTech representative, responsible for the coordination and organization of not just key research programs and clusters ut also major events. Thanks to all of my Smart Mobility friends and colleagues who believed in me and without whose help I would not have been able to succeed in this position.