­Do you look at entrepreneurship as a career option? \*

Yes, we have always aimed to be successful entrepreneurs. Our belief is that entrepreneurship is one of the few means to allow one’s creativity to flow and not be bounded; unlike in a corporate environment. Coming from an engineering institute, we see a plethora of ideas that have life-changing potential but no true means to take them forward into the real world. Entrepreneurship is truly a means for our innovation to revolutionize the life of millions. The entrepreneur in us sees opportunities everywhere we look, but many people see only problems everywhere they look. We feel that entrepreneurship provides learnings and insights into life that a standard 9 to 5 job cannot provide. Entrepreneurship is a key stepping stone in our mission to change the world.

What is your vision for yourself and your venture? \*

We want to be able to use our skills and knowledge to impact a large domain of society. We want to use the potential startup we generate from this venture to have a lasting effect on society. Our venture aims to impress this positive impact on society through the means of accident prevention. In the future, we see ourselves taking this basic idea to a new level by providing corrective measures to motor vehicles and possibly introducing a degree of autonomy. Furthermore, we hope that our product provides inspiration for future life-saving products to come.

Give a brief synopsis about your Idea\*

The “Automated Guidance System for Motor Vehicles” aims to curb the rising problem of motor vehicle accidents through the constant monitoring of the vehicles’ surroundings. Internal monitoring focuses on ensuring the driver is fit to drive at all times. Human error is the primary cause of accidents and thus it is of utmost importance that the driver is cognitively aware of his/her surroundings. Externally, we intend to provide 360 degree analysis by providing warnings of incoming traffic (including pedestrians) in the blind spots and suggesting minimum braking distance (depending on road conditions and speed). Furthermore, the system guides a vehicle steering off course back on the road. Thus, the system will help prevent accidents by acting as a personalized mentor and helping us make the best decisions while driving.

Who is your customer? [Age Group, Income levels, geography etc.]\*

The guidance system is suited for any kind of automobile like cars, buses, motorcycles, trucks and even public transport vehicles such as auto-rickshaws. It is directed at two broad categories: companies such as car-hailing apps, truck driving companies and personal automobile owners. In India, most roads are operated well beyond capacity and are built in a haphazard fashion, with multiple blind corners, extremely narrow roads etc. Consequently, our system is beneficial in these dense urban environments, especially with the decline of visibility due to rising smog. As the guidance system is relatively cheap, we expect that any car/truck/bus owner will be able to afford such a system.

Why does solving the problem matters? Describe the impact of your solution in terms of efficiency, throughput, cost saving, etc.\*

Annually, around 150,000 citizens of India lose their lives in motor vehicle accidents, making it one of the largest causes of preventable deaths in India. Monetarily, the figures are staggering: according to the transport ministry of India, a staggering 55,000 crore (3% of Indian GDP) is lost through road accidents. The social impact on families and corporations is immense as accidents are life changing events. Our theoretical predictions indicate, that after thorough analysis of raw data using ML and other noise reduction algorithms, our system can sense and identify obstacles up to 100m and provide an 85% accuracy in recommending the next course of action. Our system also will help control stress levels of the people at the wheel as the need not constantly worry about their surroundings. Thus, the automated guidance system can help improve the life of motorists all around the world.

Describe the uniqueness of your product design (Novelty)\*

In a significant proportion of accidents, while humans are able to detect oncoming traffic, there isn’t enough time to act and prevent an accident. A great deal of countermeasures thus focus on improving the reaction time of humans or providing some form of early warning. Our system has the novel idea of providing real time minimum braking distances. While empirical data on minimum braking distances is readily available, no systems exist that guide drivers to maintain the required distances. Our system takes in environmental variables such as temperature, precipitation, ice, humidity, current speed etc and apply ML and other analysis to determine the optimum minimum braking distance.

What is your core technical innovation?

Our core technical innovation is the determination of real time minimum braking distance. We take in various inputs from the vehicle such as current velocity, current situation of tyres and from sensors like the distance to preceding vehicle, temperature, humidity, precipitation, ice build-up etc. To determine the minimum braking distance, we apply machine learning, training our model based on widely available data on braking distances. Note that while there is data on each individual parameter varying, no data exists on the collective variance of all parameters exists. The resultant distance is then compared with the current distance with the preceding vehicle and the recommended action is then provided based on the output.

Is your product (Pure Software/App on Mobile device/Non Electronics/ Your custom Hardware) with/without software based Idea\*

Our product is a combination of custom hardware and software. We collect a multitude of data from sensors (temperature, humidity, mmWave, camera, IR thermometer etc) and feed them into a microprocessor. Then, we apply analysis (on the data) to determine the minimum braking distance and providing recommended action(s) which are then transmitted to a screen and speakers. We do plan on developing a secondary interface through an app to create a more user friendly MMI.

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<https://store.ti.com/TMDSCM572X-TMDSEVM572x-Camera-Module-P50225.aspx>

TMDSCM572X

TMDSEVM572x Camera Module

(for camera)

<http://www.ti.com/sensors/mmwave/awr/products.html>

<http://www.ti.com/product/AWR1642>

(for mmwave AWR sensor)

<https://beagleboard.org/black>

(beagleboard black development board)

<http://www.ti.com/sensors/humidity-sensors/products.html>

<http://www.ti.com/product/HDC1080>

(for temperature and humidity)

TMP006

(for contactless thermal measurement)

<http://www.ti.com/tool/430boost-sharp96>

(display)