**Briefing of Research work**

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| **Title** | Navigation and control autonomous ground vehicle. |
| **Research Scholar name** | Vineet Kumar Yadav, NIT Tiruchirappalli |
| **Name of Guide and Co-Guide** | * Prof. K Dhanalakshmi   National Institute of Technology, Tiruchirappalli, Tamil Nadu-620015   * Dr. Shubhashisa Sahoo, Scientist-‘F’ Centre for Artificial Intelligence and Robotics (CAIR) DRDO, Bangalore, Karnataka-560093 |
| **Project duration** | **36 Months** [Started at January 2021,  14 months over 22 months left] |
| **Institute date joining** | 25-08-2020 |
| **CAIR date joining** | 27-12-2021 |

**Objective**

Kino-dynamic modelling and control of the ground vehicle which includes the derive-by-wire subsystems (electro-mechanical actuators used for accelerator, brake, steering etc.) and terrain information.

**Scope**

* Vehicle motion prediction for trajectory planning.
* Design of vehicle motion controller for trajectory tracking.
* Vehicle motion simulation for offline analysis and testing.

**Mile stones and Corresponding time line**

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| **Mile stone-1** | **Time duration (6 months up to June 2022)** |
| Work scope | To collect the basic knowledge regarding vehicle dynamics behaviour and characteristics. What work earlier did and what’s new I will be do in given time span. |
| Deliverable | I submitted literature review reports and analysis. |
| **Mile stone-2** | **Time duration (3 months up to September)** |
| Work scope | Try to implement modelling for our plant with help of previous literatures and try to write force balance equation for our vehicle dynamics. |
| Deliverable | I will try to make one detail report regarding this and I will submit it. |
| **Mile stone-3** | **Time duration (3 months up to December)** |
| Work scope | After getting the model from IIT Madras’ student. I will check that how much efficient that model for my system and accordingly, I will do changes and after that I will try to design controller and work on throttle, steering and break as an input and x, y and theta as a output. |
| Deliverable | I will try to make one detail report regarding this and I will submit it. |
| **Mile stone-4** | **Time duration (3 months up to March 2023)** |
| Work scope | In this segment at least two journal paper I will try to write and submit it to in good journal. |
| Deliverable | Accordingly, I do changes and make one detail report. |

To be continued….