MRSD PROJECT – ILR03

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TEAM A- Aware

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1. Individual progress:

- Conducted an in depth literature review of the documentation provided by Delphi for Delphi ESR 2.5.
- Performed a detailed analysis of the potential risks which might be encountered during the cores of the project, Classified the risks on the basis of likelihood and consequence and prepared a mitigation plan for all the major risks:
    - Dynamic Range of Camera:

      The dynamic range of the camera might not be enough for the camera to work under extreme conditions (extreme lighting and/or pitch darkness). This would halt all future work with the camera, greatly impacting the schedule and adding extra cost. This could affect the target milestones of the project. A proposed mitigation strategy would be to test the camera under extreme lighting conditions in the coming week. The image quality of the test would be a decisive factor in considering the use of this camera for the project.
    - Drivers for the radar

      The documentation/drivers for the radar was not provided by Delphi. The radar has been depicted in Fig.1.
    - Inability/Incompetence of a team member
- Allows microcontrollers and devices to communicate with each other in applications without a host computer It is a message based protocol that was designed primarily for use in automobile multiplex wiring CAN 2.0 is the latest version of CAN, with two variants or flavors, if you will: standard format with 11-bit identifier or extended format with 29-bit identifier Bosch released a flexible data rate CAN in 2012 which uses a different frame format All nodes on the CAN network must operate at the same nominal bit rate, but noise, phase shifts, oscillator tolerance and oscillator drift mean that the actual bit rate may not be the same as the nominal bit rate.

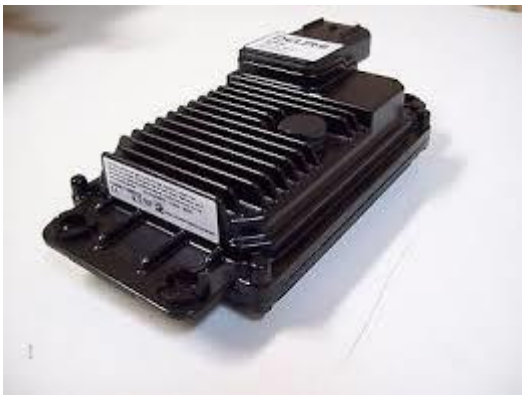

Fig.1 , Delphi ESR 2.5 Radar

2. Challenges

- CAN bus: since a separate clock signal is not used in the CAN protocol, a means of synchronizing the nodes is necessary. Synchronization is important during arbitration since the nodes in arbitration must be able to see both their transmitted data and the other nodes' transmitted data at the same time. Synchronization is also important to ensure that variations in oscillator timing between nodes do not cause errors.
- Difficulty to acquire test driver.
- Troubled communication between sponsor
- Technology is proprietary and the lead time on conversations with sponsor are long.

3. Team Work

Harry: mounting rack mounting structure and final prototype for camera mounting, rewiring GPIO pins to take pulse trigger using Arduino

Menghan: progress review presentation, camera connection familiarization with camera software.

Yihao: camera setup camera resolution testing familiarization.

Zi-Hao: updated functional architecture, literature study for radar documentation, get sensible data output from data familiarize with can protocols for radar make lens adjustment to camera based on Yihao’s feedback.

4. Future Plans

The main topic that I will focus on up to the next ILR is to capture and store usable data from the RADAR. Also, I will look into the calibration of lens of the camera and adjusting with the focal length parameters.