**Minutes of General AutoDrive Meeting for 10/25/2024 - Fall 24 Week 5**

1. **Background**

North Carolina A&T State University (NCAT) participates in SAE International’s student project to develop solutions for tomorrow’s self-driving cars. The NCAT team, Aggies Autonomous Auto(A3) meet on a weekly schedule. The meetings are held to coordinate team efforts towards the successful execution of yearly deliverables. This particular meeting was held both **in-person/virtually** on **October 25, 2024** via the Zoom platform for a one (1) hour duration; specifically, from **10:00am -11:00am**. The Agenda of the meeting was set by the team captain.

1. **Attendees**

In attendance for the **October 25, 2024** meeting were the following people:

* Dr. Younho Seong (Faculty)
* Dr. Sun Yi (Faculty)
* Dr Daniel Acree (Faculty)
* Kelvin Kwakye (Team Captain)
* Clement Alabi (Project manager)
* Chandra (Technical Lead)
* Hossam (Technical Lead)
* Abiodun (Technical Lead)
* Azeez (Technical Lead)
* Yoo Sang Chang (Team Member)
* Francis Logarh (Team Member)
* Tunji Ademola (Team Member)
* Chase Jackson (Team Member)
* Jayleen (Team Member)
* Nooruldeen Al Azawi (Team Member)
* Muktadir (Team Member)
* Christopher Tetteh Nenebi
* Ahmed

1. **Agenda**

* Updates from Team Leads
* Open Forum
* Closing Remarks

1. **Main Points of Discussion**

* **Meeting Began** (**10:01am**)**:** Clement opened the meeting with introducing the flow of the meeting, recap of previous meetings, Gantt charts and updated timelines. Clement spoke of updates regarding Hossam and Sydney regarding developments of Gantt charts. Noted a few deadlines upcoming as Nov. 1 “Design your own challenge”. Another deadline was Nov. 30th. Updates from other team members such as Michael, Chandra, and a few other allocations for task assignments for the other teams like perception.
* **Dynamic Team Update (10:04am**): Hossam started with updating the Gantt chart, updated the cameras and lidar to 80% completed since there was an issue that was discovered. Chandra notified of a few tasks that they didn’t get to, so Part 3 remains undone. The Radar integration was delayed. Hossam stitched the 2 cameras using **ffmpeg** although not natively done. There is an area of overlap between the 2 cameras. The 3rd camera and lidar did not connect yet. Camera and lidar didn’t overlay properly. Lidar data by default has different axis to the camera. Plans to fix it by rotating the axis by 90 degrees. Website is still not working of the HD Map creator. SAE still hasn’t a query from back then. Plans to do test next week on Wednesday. Chandra noted the use of FFMPEG rather than using python/OpenCV. Still haven’t finalized the exact hour for the test.
* **Route Planning (10:14):** Byron states that the Team struggles with ROS installation and tutorials (clear path robotics). Noor suggested helping with ROS and also to read papers that go over the A\* Algorithms. Will simulate the global planning once the reading is done. Chandra noted the unavailability of some dynamic members for the biweekly meeting. Xinggaug will get back with an implementation from last year for the A\* Algorithm so Byron doesn’t start from scratch
* **Electrical (10:18am):** Abiodun plans on installing a 12V DC battery. With Blue lights, a fan (for ventilation). When they went to Michigan they noted the issue of power loss at the back of the vehicle. To solve that they can complement the battery at the bottom with a battery at the back. The SAE should approve this so we’re sending an email to them. Safety team will make sure that they can proceed with it. We still haven’t communicated with SAE about the battery. Other teams at Michigan last year had that battery and didn’t face the issue we faced. Dr. Sun-Yi noted to send an email to Cree first. For Blue light we’re reaching out to blue-light, although he’s busy and hard to get hold-of. Oscar is working on the cables and they plan on changing the design of the vehicle for better ventilation and wiring,
  + Baja Assistance (10:22am): Make a rack for the trunk, components with the highest-heat emissions will be at the top, make a cable tray to hide all the cable runs. Will be placed on top of existing racks. A timeline for next week, they predict 1-2 weeks for the whole design and implementation. Introduced a new senior and an underclassman to commit time for AutoDrive.
* **HMI (10:24):** Noor, stated that the HMI feature for autonomous mode activation/deactivation has been partially implemented, with frontend JavaScript code sending requests to the backend via ROS communication. The backend, using ROS, publishes and subscribes to autonomous mode messages, activating/deactivating the mode accordingly. Progress considerations include implementing real-time updates using WebSocket’s/WebRTC, ensuring secure authentication/authorization, error handling, and thorough testing on the car's server and local network. Next steps involve integrating with other vehicle systems, implementing fail-safes, conducting field testing/validation, and refining the user interface/experience. The implementation consists of a button-based interface, with example frontend code using fetch API and backend code using ROS Python libraries, requiring deployment on the car's server for full testing and validation.
* **HD MAP (10:42):** Byron attempting to reach out to Richard
* **Static (10:55):** Had a static team meetup yesterday. Completed onboarding of Lamadia to the project leadership teams.
* **Safety:** Azeez shared his updated timelines stating that generally it will require
* **Meeting Ended** (**10:59am**)**:** Clement moved the meeting to a close, stating that all teams should work on meeting all weekly deliverables from previous weeks before our next meeting.

1. **Conclusion/Takeaways/Deliverables**

**General**

* - All teams to complete weekly deliverables from previous weeks
* - Ensure timely communication and updates

**Dynamic Team**

* - Complete Part 3 of tasks
* - Resolve Radar integration delay
* - Fix camera and lidar overlay issue
* - Test next Wednesday

**Route Planning**

* - Byron to simulate global planning using A\* Algorithm
* - Noor to assist with ROS installation and tutorials
* - Review papers on A\* Algorithms

**Electrical(Abiodun to:)**

* Install 12V DC battery
* Add Blue lights and fan for ventilation
* Compliment battery at bottom with one at back
* Email SAE for approval
* Design and implement rack for trunk components
* Create cable tray to hide cable runs
* Complete design and implementation within 1-2 weeks

**Perception**

* Design Your Own Challenge/**Deadline upcoming**

**HMI**

* - Implement real-time updates using WebSockets/WebRTC
* - Ensure secure authentication/authorization
* - Conduct thorough testing on car's server and local network

**HD Map:**

* Byron to reach out to Richard