OPTIMUS RIDE

CITY of BOSTON

Q3 2021

Optimus Ride Progress Report

Autonomous Vehicle Testing – City of Boston

About Optimus Ride

Optimus Ride is an autonomous shuttle company on a mission to drive the future of transportation. The company develops autonomous vehicle technology and mobility services for residential communities, corporate and academic campuses, and mixed use developments. Its convenient, sustainable rides connect people in and around their communities, when and where they need it. Optimus Ride's team of technology and mobility experts partner with community and transit teams to deliver end-to-end mobility solutions that unlock operational efficiencies and create amazing rider experiences. Our services have been deployed in communities across the country including California, New York, Virginia, and Washington D.C. During the last quarter, Optimus Ride received a $4.3M award from the Department of Energy (DOE) to perform AV mobility research on the campus of Clemson University in partnership with Clemson University, UC Berkeley, and Argonne National Lab.

Testing Activities – Q3 2021

Over the last quarter, we tested in multiple environments, from simulation, closed-course testing, and public roads around Raymond Flynn Marine Park and the Seaport District. We performed software testing in simulation to identify any errors in the software before operating on public roads. Once software testing, including bench and static testing, was complete, we tested on a closed course track to help ensure the vehicle's safety and performance before testing on public roads. All of our testing occurred within the specified Operational Design Domain (ODD), during the daytime in fair weather conditions to light rain.

During this quarter the focus was to test our latest compute platform and sensor configuration. As we advance and explore use cases of the technology, ensuring that our sensors are configured in an optimal placement on the vehicle to perceive the surrounding environment is critical for operations. Our services operate in various environments, and therefore, we also used the last quarter to collect data manually around Marine Park and Seaport District to inform the system of changing weather conditions. We review the data and make improvements to the software when it operates in situations such as light rain and fog. Lastly, in preparation for complex intersections, we have been improving our ability to detect and classify objects such as traffic lights and learning the dynamics of the uniqueness of traffic light behaviors in intersections outside of the Marine Park.

COVID-19 Update

We continue to cautiously and gradually open up access to our headquarters. Out of an abundance of caution, we continue high sanitation practices within our office. We additionally encourage our employees to vaccinate and report their vaccination status. Our employees continue to be able to work from home - or on a reduced in-office schedule - to promote their health and wellbeing. While our employees are out testing in the vehicles, we are maintaining a mask requirement. Physical dividers remain installed in our vehicles as well, though we are evaluating whether to keep them. Additionally, sanitation protocols remain in place at our deployment sites.

Community Engagement

Optimus Ride has a strong relationship with MassRobotics, a Boston-based innovation hub that aims to bring together startups and existing technology organizations to nurture the next generation of talent and promote economic growth and innovation. We participate in local recruiting events run by MassRobotics. Additionally, we sponsor an MIT robotics seminar group that holds frequent events to engage local companies and students in the robotics community.

Over the summer months, at The Yards in Washington DC, we extended our ride service and operating hours to provide transportation for community and broader city members at various concerts and events in the local parks. It offered the opportunity to support community connection and educate on autonomous shuttles and technology. Additionally, the Optimus Ride team connected officials from the Southwest Business Improvement District (SWBID) and Deputy Mayor's Office for Planning and Economic Development (DMPED) to experience autonomous shuttle demo rides and educational conversation on the latest technological capabilities and explore the opportunities to extend autonomous shuttle community presence in DC and connect neighborhoods with autonomous vehicles.

Also, Optimus Ride hosted demo rides at Halley Ride, Reston, Virginia, for prospective tenants, supporting community growth and membership by showcasing the value of autonomous shuttle services provided by Brookfield properties.

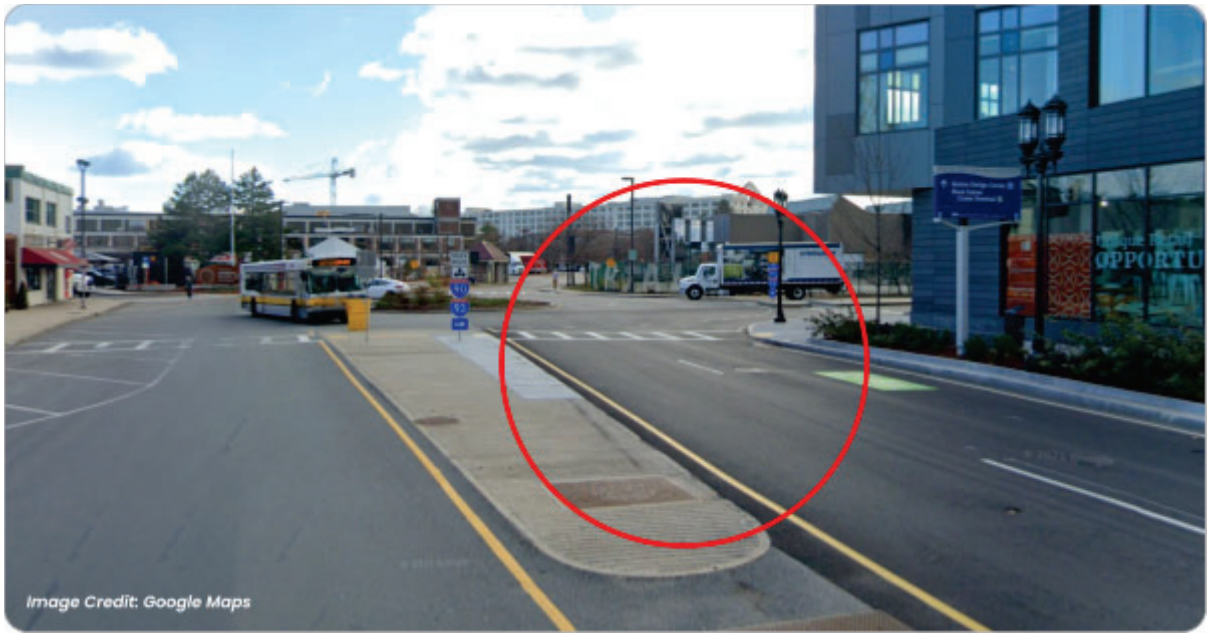
Takeovers

At Optimus Ride, safety is a priority especially when our vehicles are on the road. When a vehicle encounters situations it cannot handle alone then our safety driver will take the vehicle out of autonomous operation and ensure safe vehicle operation. The takeover options available in Optimus Ride's vehicles are designed to ensure that the Human Machine Interface (HMI) is clear, consistent, gives context, and provides safety operators the necessary feedback about the system. The system is designed to disengage autonomous control and enable manual control by the safety driver when a takeover is initiated. The safety driver can immediately take control using the brakes, throttle, or steering wheel. During this quarter, we have no notable takeovers to report as Optimus Ride's on-road testing focused on manual data collection.

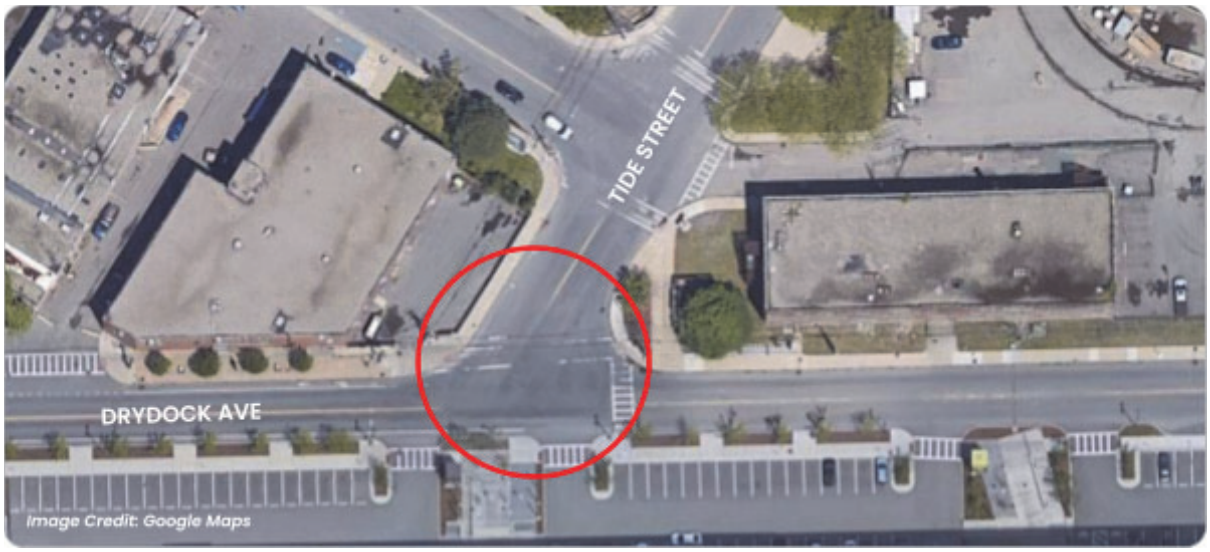
General Observations and Lessons Learned

Over the last quarter there are two areas in the Marine Park that we have experienced to be challenging due to worn out lane markings.

1. **The roundabout which connects Northern Avenue and Mass Haul Road.**
   The paint re-striping on the roundabout is causing confusion with drivers. There are two lanes one for a right turn and the other for all other exits, but these are not marked. We recommend additional signs to explain proper right of way in the roundabout.



2. **Tide Street and Drydock Avenue**
   A section of Tide Street, before the intersection of Drydock Avenue, lane markings are barely visible. During our testing, we have observed vehicles cutting the lane when making the left from Drydock onto Tide Street.



Goals for Current and Future Testing, and/or Proposals for Changes

Our goals for current and future testing is to continue to gain experience with our new compute platform and sensor configuration which allows us to expand our ODD to include inclimate weather conditions. We look to continue to collect data and evaluate our system's capability to operate in more complex environments.

Description of all ADS system failures, citations, or violations received during testing

Following the third quarter, Optimus Ride conducted an internal audit of ADS system failures, citations, and violations received during testing. For this period, Optimus Ride has no system failures, citations, or violations to report during testing.

Pilot Service Tests

Optimus Ride is not providing pilot service tests at this time in the State of Massachusetts. For more information regarding the services we provide, our commercial deployment sites, or general inquiries, please refer to our website: www.optimusride.com.