Distracted driving poses a significant threat to traffic safety improvement, diverting drivers’ attention and compromising vehicle control. While previous research has focused on the impact of distractions on driving performance, little is known about how brain activity is affected in these situations. This study aims to compare driver distractions caused by Unmanned Aerial Systems (UAS) and those stemming from existing work zone-based road closures utilizing Under Bridge Inspection Trucks (UBIT). By leveraging Electroencephalography (EEG) and eye tracker signals, the research seeks to identify instances of heightened distraction and determine the safest technology for construction activities on roadways. Building on prior work that utilized an eye tracker to measure driver distraction in the presence of UAS, this project employs EEG and eye tracker signals to analyze driver distraction during UAS-induced visual disturbances. With the participation of 100 healthy volunteers across different scenarios and different conditions, this study will measure and analyze drivers’ EEG responses and eye tracker signals to provide comprehensive insights into the nature of driver distractions. This research seeks to understand the situations in which drivers experience increased distraction and determine the most suitable and safest technology for engineering and construction purposes on roadways.

Zainab Afzali Kusha and Reza Akhavian

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- Drivers’ critical role in safe driving
- 1.3 million road fatalities annually
- 20-50 million non-fatal injuries
- Economic losses and treatment costs.
- Global gross domestic product (GDP) impact (up to 3%)
- National Highway Traffic Safety Administration (NHTSA): Driver distraction (20%-60% accidents)