Lecture 5 Reading Summary

Paper-1

People are regularly urged to pay attention while driving, yet they routinely participate in a variety of activities such as chatting to passengers, eating, drinking, smoking, putting on cosmetics, and listening to the radio. Many new electronic gadgets have been created in recent years and are becoming ubiquitous in automobiles. These new technologies are interactive information delivery systems that, since they require more cognitive attention and take up more time, can be more distracting than older distractions.

The research with 40 persons aged 22 to 34 who had normal eyesight, a driver's license, and an average of 8 years of driving experience was undertaken. 78% of those polled possessed a mobile phone, and 87% of those who did acknowledged using one while driving. Participants in the research had to be social drinkers who consumed 3-5 drinks per week.

To analyze the variations between the situations, the researchers built driving profiles by collecting data for 10 seconds after the pace car's brake lights came on. This information was utilized to generate profiles of the participants' braking response, driving speed, and following distance. When the participants were inebriated, they tended to brake more aggressively, yet their reflexes were slower when using a mobile phone.

According to the study, both intoxicated and cell phone drivers behaved differently than the baseline, with cell phone drivers having slower reflexes, longer following distances, taking longer to restore speed after stopping, and being involved in more accidents. Cell phone drivers tend to be impaired owing to distraction from the information processing required for safe driving, whereas the effects of alcohol remain over time and contribute to chronic impairments.

Paper-2

In recent years, self-driving vehicles, also known as automated vehicles, have received a lot of attention. These vehicles can perceive their surroundings, maneuver without human interaction, and conduct driving activities on their own, offering transportation services comparable to ordinary automobiles. Companies such as Google have reported autonomous driving distances of over one million miles, while automakers such as Mercedes-Benz, General Motors, and BMW have launched their own self-driving vehicle designs. It is expected that by 2040, autonomous cars will account for up to 75% of all vehicles on the road.

The goals of this study were to look at the impacts of takeover request lead time as well as non-driving tasks on driver taking-over control behavior in automated cars and to determine the ideal range of lead time that would result in the best take-over behavior and acceptability. The results showed that lead time had a substantial influence on collision rate. When the takeover proposal was made early, the tendency of such significant change slowed. The crash rate was substantially greater at 3 seconds than at other lead durations; significantly higher

at 6 seconds than at 10 seconds, 15 seconds, 30 seconds, and 60 seconds. The main influence of task on crash rate was not significant.

The impact of takeover request lead time and non-driving chores on driver takeover behavior and subjective opinion on automated cars were explored in this study. Lead times ranging from 10 to 60 s resulted in more progressive handling, as seen by smoother lateral acceleration. Such findings indicated that drivers would require adequate lead time to better comprehend and respond to take-over requests and the accident occurrence, as well as to create improved take-over behavior. With insufficient lead time at the start of take-over requests, the driver may not have enough time to discern which way to swerve, and crashes with cars traveling in the next lane may occur. In the current experiment, such collisions were seen.