ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
ΠΟΛΥΤΕΧΝΙΚΗ ΣΧΟΛΗ - ΤΜΗΜΑ ΠΟΛΙΤΙΚΩΝ ΜΗΧΑΝΙΚΩΝ

ΣΕΙΡΑ ΕΠΙΣΤΗΜΟΝΙΚΩΝ ΔΙΑΛΕΞΕΩΝ
ΑΚΑΔΗΜΑΙΚΟΥ ΕΤΟΥΣ 2019-2020

The impact of text-reading while driving, through cluster modeling analysis and decision trees

Ευτυχία Ναθαναήλ
Αναπληρώτρια Καθηγήτρια Πανεπιστημίου Θεσσαλίας
Τετάρτη **11/12/2019**, Ώρα:**14:00**
Αίθουσα **A2**, Τμήμα Πολιτικών Μηχανικών

Abstract:

Driver distraction is one of the most significant causes of road crashes. The objectives of this paper were to (i) investigate the correlation of text reading and text sending with demographic characteristics, gender, age, race, highest educational level and driving experience was investigated along with the influence of other driving habits on these dependent variables, and (ii) develop driver behavior prediction models such as probability for lane encroachment while text-reading and driving.

The research was based on a sample of 203 taxi drivers in Honolulu, who drove a simulator under non-distraction and text-reading scenarios. Eight driving performance measures were recorded. The same drivers completed a survey questionnaire which included sociodemographic information and recorded drivers' preferences and driving habits. Non-parametric testing was used to define clusters, based on gender, age, experience, educational level and race. The correlation was investigated of the driving behavior and the driving performance indicators.

Ordinal regression analysis was implemented for text reading, considering demographic parameters only, as independent variables, then enriched with driver habits, behavioral belief, risk comprehension, descriptive norms and control beliefs. One of the statistically significant results was that race appears to be a strong predictor of large effects during text reading. Multinomial logit regression was also used and the lane encroachment incidents demonstrated the best model fit with a classification accuracy of 87.6%. Text reading creates distraction, which affects driving behavior. Age and race are the most important influencers in distraction prediction.