# UNIVERSITY OF MANAGEMENT AND TECHNOLOGY


# Feature based driver's Distraction Detection Techniques using Neural Network based on Fixed Single Camera

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# Dedication

*We would like to dedicate this project to our beloved parents who made great efforts to help us standing in this position. It is their unconditional love that motivates us to set higher targets.*

# Statement of plagiarism

To the best of our knowledge and belief, this Research Project Report is our own work. All sources have been properly acknowledged and the work done in this project is completed in a respective manner, especially code area and research paper writing. The standard of plagiarism rate is 18% which we have reduced to 5%.

# Acknowledgement

*We would like to gratefully and sincerely thank to our supervisor, Syed Farooq Ali whose encouragement, guidance and support from the initial to the final level enabled us to develop an understanding of the project. We also want to thank Mirza Mubasher Baig for his guidance and support. Lastly, we offer our regards and blessings to all of those who have supported us in any respect during the completion of the project.*

# Gratitude to ALLAH

*In the name of thy Lord, Who created man from clot and thy Lord is the most bountiful, Who taught man what he knew nothing.*

*Above all we indebt to "Allah" Lord of our life and everthing in the universe and His Holy Prophet Muhammad (Peace Be Upon Him), whose blessings enabled us to receive and purist higher ideas of life and whose footsteps lead us to right direction. We pay our special gratitude to Allah Almighty, Who is the sole owner of this universe and helped us whenever we prayed for his assistance. We have no words to express our deepest feelings of gratitude to Almighty, Compassionate and Supreme Allah. Although the element of luck cannot be ruled out, but Allah provided us the faith and determination to grasp the opportunities for the completion of a successful project.*

# Table of Contents

# 1. Abstract:

Most accidents occur due to drowsiness while driving, avoiding road signs and due to driver's distraction. Driver's distraction depends on various factors which includes talking with passengers while driving, avoiding road signs, mood disorder, nervousness, anger, over-excitement, anxiety, loud music, illness and fatigue that may result in the distraction of a driver. This paper introduces novel approaches that compute various features using the facial points especially features computed using motion vectors and interpolation. These facial points are detected by Active Shape Model (ASM) and Boosted Regression with Markov Networks (BoRMaN). The features of different frames are trained and tested on Neural Networks (NN) to decide about driver's distraction. These approaches are also scale invariant. The result shows that the approach 4 using novel idea of motion vectors and interpolation techniques outperforms all other approaches.