Statistics Seminar

Development of Emotion Recognition with ML Techniques and Challenges

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Friday, March 10   **12:00 pm**   **DERR 325**

Abstract: The unmet service tool for children with autism spectrum disorder (ASD) is the lack of tools that help them recognize or teach them to understand human emotions. Like many children with ASD, the target population prefers or focuses on handheld devices that provide graphical interphases that capture their attention. Our current effort is developing an app tool that will help them recognize and understand the human emotions of people with whom they interact daily. The emotions are classified and detected by the facial, speech, and body-gesture motions when interacting with someone. The app will be supported via Machine and Deep Learning models that discretely recognize emotions based on different human traits. The app will respond and provide an emoticon to the screen to indicate the recognized feelings based on the AI models' overall outcomes. Over time, the app's utilization can offer children and adolescents a tool to develop skills and identify patterns in the emotional state of people they interact with using models that account for different ethnic backgrounds. The recognition and understanding over the life span can provide better communication with parents and caretakers at a level that might have been otherwise difficult to convey if someone was happy or upset with them or about anything else. The overall objective is to develop a tool available for all to use on mobile or handheld devices and improve human emotions' communication and recognition skills over time. However, these models provide a biasing and usually incorrect recognition of how people interpret emotions. This is because datasets are typically represented with actors or exaggerated samples. Emotions also depend on cultural backgrounds and other aspects of our brain that help interpret complex behaviors. Our study will continue to explore the environment, timing, and other features that help recognize human emotions.

Bio: Dr. Valles is an Assistant Professor for the Ingram School of Engineering at Texas State University. He focuses on High-Performance Computing (HPC), Machine Learning (ML), Embedded System, and now Augmented/Virtual reality implementations under the High-Performance Engineering research group. Dr. Valles received his B.S., M.S, and PhD. from The University of Texas at El Paso from the Electrical and Computer Engineering Department, focusing on Reconfigurable Processors and HPC research. Dr. Valles did a post-doc at Montana Tech as the HPC Application Scientist under the Computer Science department. He also worked as an HPC System Administrator in the Information Systems department and an adjunct faculty position in the Computer Science department at Wake Forest University.