ELECTRICAL & COMPUTER ENGINEERING **BIO-SEMINAR** **Fall 2020** TEXAS A&M UNIVERSITY Engineering

When: **Friday 16:15 – 17:05, September 25, 2020**

Where: https://tamu.zoom.us/j/514754727

Speaker: **Omar Maddouri**

Ph.D. Student in Prof. Byung-Jun Yoon's Group
Department of Electrical and Computer Engineering
Texas A&M University

Title: Transferability in the Context of Optimal Bayesian Transfer Learning for Error Estimation

Abstract: Classification has been a major task in many research problems. With the difficulty in obtaining large samples or even moderately sized samples in many fields such as medical or biological problems, the design of accurate and robust classifiers has become almost intractable. Recently, an innovative learning procedure called transfer learning has been proposed and has attracted significant attention as it solves the problem of small-size samples by jointly learning from an augmented target domain where additional labeled instances are added from a closely related source domain. As the supervised evaluation of any designed classifier relies on the accurate estimation of its true error, the traditional error estimation techniques based on training-data lack the theory and the heuristics to effectively handle the hybrid learning domain proposed by transfer learning. In this talk, I will briefly introduce a novel class of error estimators well-suited for the evaluation of classifiers designed based on Bayesian transfer learning. I will first extend the definition of the previously proposed Bayesian minimum mean square error estimators based on new posteriors of the target parameters. Also, I will present some performance analysis results for a set of state-of-the-art classifiers in the context of transfer learning. Finally, I will provide useful conclusions and insights about the leading factors of transferability between the source and target domains when the uncertainty classes of the feature-label distributions are known.

Bio: Omar Maddouri received his BS in Computer Science from the National School of Computer Science (ENSI), Tunisia in 2010, an MS in Biological and Biomedical Sciences from the College of Science and Engineering of HBKU, Qatar in 2017, and an MS in Electrical Engineering from Texas A&M University, College Station in 2019. Between 2010 and 2015, he served as a software engineer in LG Electronics and Continental Automotive. He is currently pursuing his Ph.D. in Electrical Engineering at Texas A&M University. His main research interests are in bioinformatics, computational biology, machine learning, and Bayesian learning.