Data Science Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, November 30, 2021
- Time: 12:00pm – 1:00pm
- Room: Zoom
- Speaker: Dr. Antonio Linero (The University of Texas at Austin)
- Title: Bayesian Decision Tree Ensembling Strategies for Nonparametric Problems

Abstract

In this talk, we will make the case for using Bayesian decision tree ensembles, such as Bayesian additive regression trees (BART), for addressing some fully-nonparametric problems. We present models for density regression and survival analysis and argue that our approaches are both easier to use and more effective than more standard Bayesian nonparametric solutions (such as those based on mixture models). On the applied side, we show how to use our models to extract interesting features across several datasets. On the theoretical side, we also show that our models attain minimax-optimal rates of convergence of the posterior in high-dimensional settings. Throughout the talk, we will emphasize the flexibility and ease-of-use of our approach: all simulation and real data analyses attain excellent results using heuristically chosen “default” priors, and it is quite straight-forward for researchers (both in-principle and in-practice) to embed our ensembles in larger models.

Biography of the speaker: Dr. Linero is an Assistant Professor in the Department of Statistics and Data Sciences at the University of Texas at Austin. He received his Ph.D. in statistics from the University of Florida under Michael Daniels and Hani Doss. His work focuses on the theory and practice of applying Bayesian machine learning methods to causal inference and missing data problems.