

**Title:** Predicting Criminal Charges with one, two, many classifiers

**Abstract:** Predictive policing has become increasingly common in assisting decisions in the criminal justice system. However, the use of these results is still controversial. There are often doubts about the bias in the decision, for example, racial disparities. We introduce the bootstrapping learning method based on combinatorial designs. Our approach improves over Bagging [Breiman, 96] and is the first to do so with a provable guarantee. We develop a single classifier with attentional Bi-LSTM achieving up to 97.50% prediction accuracy. Furthermore, we employ our bootstrapping method to robustify and outperform the single classifier by aggregating decisions over many classifiers constructed with diverse sub-samplings.

**Bio:** I am an assistant professor at the Stevens Institute of Technology and affiliated faculty at the Graduate Center in the City University of New York (CUNY). Previously, I was an associate professor at the Institute of Computing Technology, Chinese Academy of Sciences (Beijing), and an assistant professor at Tsinghua University. I graduated from Hermann Ney's group at RWTH Aachen with long-term research visits to the speech group in IBM Watson and the Natural Language Processing (NLP) group in Microsoft Research (MSR) Redmond. My current research interests are in Machine Learning, with a focus on highly competitive machine translation systems. Lately, I have developed an interest in devising techniques that explore the underlying Metric and Geometric properties of machine translation systems. I am publishing in mainstream venues in computational linguistics and machine learning (e.g., AAAI, ICML, ACL), and often I am leading teams that win the top-ranked positions in NLP competitions.