Supervised machine learning is the branch of computer science concerned with developing algorithms that learn functions, rules, and patterns based on labeled data. In my talk I will give an overview of several of my contributions to the machine learning, statistics, bioinformatics, and cancer biology literature. I will discuss two genomic data analysis problems in depth: breakpoint detection in DNA copy number data, and peak detection in ChIP-seq data. My contributions are new labeling methods and supervised machine learning algorithms that provide state-of-the-art detection accuracy in these data. I will also briefly discuss some of my other projects and plans for future research.