

Privacy Preserving Genomic Data Analysis

Ph.D. student position at University of California Santa Cruz

funded by the National Science Foundation



Topic: Much of modern day medicine is driven by genomic data, with the size and complexity of genomic datasets increasing at a rapid pace. Naturally, any use of human genomic data raises grave privacy concerns. This is because the power to query multiple genomic databases with seemingly innocuous questions such as "Do you contain any genome that has mutation X?" is enough to determine whether an individual's genome is present in the databases. Such re-identification attacks have raised a germane question: can one implement privacy protection for genomic data so that meaningful data analysis remains possible, but attacks such as these become impossible?

Professors Dimitris Achlioptas, Abhradeep Guha Thakurta, and Vishesh Karwa are seeking one Ph.D. student to work on a NSF funded project on designing algorithms for privacy preserving data analysis with a focus on genomic data. The student will be hosted as a full-time student (with guaranteed funding for at least three years) in the Computer Science and Engineering department at University of California Santa Cruz.

Press Release: https://www.nsf.gov/awardsearch/showAward?AWD_ID=1839317

Required background: Qualified candidates should have a strong mathematical background, ideally through training in computer science, or statistics/machine learning. In particular, candidates should be happy reading and writing mathematical proofs. Knowledge of programming languages like Python (with machine learning packages like scikit-learn), MATLAB, and JAVA is a plus.

A few words about UC Santa Cruz: The genome bioinformatics group at UC Santa Cruz made history by releasing the first working draft of the human genome sequence on the web in July 7, 2000. Since then it hosts the human genome browser, an indispensable tool in modern biomedical research. Besides being a hotbed for computational genomic studies, UC Santa Cruz is located 45 minutes from Silicon Valley, on a hill overlooking the Pacific Ocean.

Contact: Please contact sf.aguhatha@ucsc.edu with your CV, and also apply to the Ph.D. program in the Computer Science and Engineering department at University of California Santa Cruz.