ANUPAMA NANDI

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Research Interest

Differential Privacy, Private Machine Learning, Optimization, Adaptive Data Analysis and Algorithms.

Publications

· Raef Bassily, Shay Moran, and Anupama Nandi. Learning from mixtures of private and public populations. *arXiv preprint available at https://arxiv.org/abs/2008.00331 (accepted in Neural Information Processing Systems, NeurIPS)*, 2020

· Anupama Nandi and Raef Bassily. Privately answering classification queries in the agnostic PAC model. In *Algorithmic Learning Theory, ALT*, 2020

· Joseph Anderson, Navin Goyal, Anupama Nandi, and Luis Rademacher. Heavy-tailed analogues of the covariance matrix for ICA. In *Association for the Advancement of Artificial Intelligence, AAAI*, 2017

· Joseph Anderson, Navin Goyal, Anupama Nandi, and Luis Rademacher. Heavy-tailed independent component analysis. In *Foundations of Computer Science, FOCS*, 2015

Professional Positions

Visiting Graduate Student, Simons Institute for the Theory of Computing — *Berkeley, CA*
· Participated in the program Data Privacy: Foundations and Applications — *Jan 2019-May 2019*

Graduate Research Assistant, The Ohio State University — *Columbus,OH*
· Working on private learning with public data and private convex optimization — *Aug 2018-Present*
· Worked on Heavy-tailed independent component analysis. — *Jan 2015-Dec 2016*

Assistant System Engineer, Tata Consultancy Services — *Chennai,India*
· Developed an *EDI Vendor Management web application* as a part of a 7 member team — *Dec 2009 – July 2011*
· Awarded **best team** for successful implementation of Vendor EDI application
· Led a 3 member team to implement an application to maintain details about batteries being used in the Data warehouse.

Education

The Ohio State University — *Columbus,OH*
PhD student in Computer Science and Engineering
Advisor: Luis Rademacher — *Aug 2013 - Dec 2017*
Advisor: Raef Bassily — *May 2018 - Present*

Indian Institute of Technology Guwahati — *Assam,India*
Master of Technology (Computer Science) – CGPA : 8.64 /10.00 — *July 2011 - May 2013*
Thesis: Implementation and Analysis of Minimum Spanning Tree in External Memory
Advisor: G. Sajith

G. H. Patel College of Engineering & Technology — *Gujarat,India*
Bachelor of Engineering (Computer Science) – CGPA : 9.49 /10.00 — *July 2005 - July 2009*

Course Projects

Implementation of Private Learning via Stability — *Jan - May 2018*
Instructor: Raef Bassily
· Analyzed the performance of binary and multiclass classification algorithms using the algorithm comprising of sparse vector technique and sub-sample aggregrate method as proposed in the paper Model-Agnostic Private Learning

Orthogonalization via the centroid body *Jan-May 2016*
Instructor: Luis Rademacher
· Using Minkowski sum and linear programming tested membership for a centroid body to approximate an orthogonalization matrix.

Set Cover Implementation *Jan-May 2015*
Instructor: Anastasios (Tasos) Sidiropoulos
· Implemented the set cover problem using Python and PuLP package on Frequent Itemset Mining Dataset Repository.
· Compared the performance of the greedy algorithm with the **linear programming relaxation.**

Logistic regression classifier for prediction of seizures *Aug-Dec 2014*
Instructor: Brian Kulis
· Trained a logistic regression classifier in order to predict seizures from a number of EEG features.
· Main goal was to differentiate between the preictal and interictal states from the EEG data of patients and dogs of naturally occurring epilepsy.

FUSE Implementation for MySQL *Jan-May 2014*
Instructor: Arnab Nandi
· Designed and implemented a file system in userspace (FUSE) in C.
· FUSE enabled a MySQL database to be viewed CSV files with insertion and deletion capabilites.

Conferences & Workshops

Presenter
· Algorithmic Learning Theory (ALT) 2020, San Diego, USA
Attendee
· Information Theory and Applications (ITA) Workshop 2020, San Diego, USA
· Data Privacy: Foundations and Applications program (2019), Simons Institute, Berkeley, CA, USA
· Foundations of Computer Science 2015, Berkeley, CA, USA
External Reviewer
· ALT2021, ALT2020, CCS19

Computer Software and Skills

Proficient: C, C++, Python, Java
Basic: MATLAB (optimization toolkit,Gurobi plugin), Mathematica, SQL, PL/SQL ,Javascript

Graduate Coursework

Differential Privacy, Advanced Algorithms, Machine learning, Probability Theory, Statistical analysis, Computability and Complexity, Data Mining, Introduction to Linear Mathematics, Advanced Artificial Intelligence, Operating Systems, Introduction to Algorithms

Teaching Experience

The Ohio State University *Columbus,OH*
· Teaching Assistant, Machine Learning and Statistical Pattern Recognition *Aug 2020-Present*
· Teaching Assistant, Machine Learning and Statistical Pattern Recognition *Aug 2018-Dec 2018*
· Teaching Assistant, Foundations II: Data Structures and Algorithms *Aug 2018-Dec 2018*
· Teaching Assistant, Modeling and Problem Solving with Spreadsheets and Databases *Jan 2017-Dec 2017*
· Teaching Assistant, Foundations of Programming Languages *Aug 2014-Dec 2014*
· Teaching Assistant, Systems II: Introduction to Operating Systems *Aug 2013-May 2014*

Awards & Activities

· **Literary Secretary** of IIT Hostel (2012-2013): Organized debates, blogging and other intra-hostel events.
· **Technical Coordinator** of CSE department (2007-2009): Organized various project competitions and helped in providing facilities to students for making their projects.
· Graduated with rank 2 from the Computer Science department at G. H. Patel College of Engineering & Technology in 2009
· Secured 2nd position as a part of a team in the poster presentation competition in Prakarsh 2007 (technical festival: state level) held at SVIT, Vasad.
· Received scholarships for outstanding performance during academic years 2005-06 and 2006-07 at Sardar Patel University.