Amir Asiaee-Taheri

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ACADEMIC APPOINTMENTS

Postdoctoral Fellow at Mathematical Biosciences Institute, The Ohio State University
2017 - present

EDUCATION

Ph.D. in Computer Science, University of Minnesota 2010 - 2017
- GPA: 3.68
- Thesis Topic: *High Dimensional Learning with Structure Inducing Constraints and Regularizers*
- Adviser: Professor Arindam Banerjee

M.S. in Artificial Intelligence and Robotics, University of Tehran 2007 - 2010
- GPA: 3.42
- Thesis Topic: *Studying the Effect of Structure on Spreading Process in Complex Networks*
- Adviser: Professor Masoud Asadpour

B.S. in Computer Engineering - Software, University of Tehran 2003 - 2007
- GPA: 3.58 (among top 10%)

RESEARCH INTERESTS

- Cancer Genomics
- Bioinformatics
- Machine Learning and Data Mining
- Computational Biology
- High Dimensional Statistics
- Large Scale Optimization
- Graphical Models
- Social Network Analysis

HONORS

- Student Travel Award, SIAM International Conference on Data Mining, SDM 2016
- Student Travel Award, Uncertainty in Artificial Intelligence, UAI 2015
- University of Minnesota ECE Department Fellowship, Fall of 2010
- Awarded M.Sc. position by the Office of Gifted Students, 2007
- Top 0.1% of participants, National University Entrance Exam among about 500,000 participants, Iran 2003

PUBLICATIONS

Preprints
- Amir Asiaee, Samet Oymak, Arindam Banerjee, and Kevin R. Coombes. High dimensional data sharing: Interpretable, fast, and data-efficient. submitted to NIPS 2018
- Zachary B. Abrams, Mark Zucker, Min Wang, Amir Asiaee, Lynne V. Abruzzo, and Kevin R. Coombes. Thirty biologically interpretable clusters of transcription factors determine cancer type. submitted to BMC Genomics

Articles
- Amir Asiaee T., Hardik Goel, Shalini Ghosh, Vinod Yegneswaran, and Arindam Banerjee. Time series deinterleaving of dns traffic. In *1st Deep Learning and Security Workshop*, 2018
- Amir Asiaee T., Soumyadeep Chaterjee, and Arindam Banerjee. High dimensional structured estimation with noisy designs. In *16th SIAM International Conference on Data Mining (SDM)*, pages 801–809. SIAM, 2016
- Golshan Golnari, Amir Asiaee T., Arindam Banerjee, and Zhi-Li Zhang. Revisiting non-progressive influence models: Scalable influence maximization in social networks. In *31st Conference on Uncertainty in Artificial Intelligence (UAI)*, pages 316–325, 2015

- Amir Asiaee T., Mohammad Afshar, and Masoud Asadpour. Influence maximization for informed agents in collective behavior. In *Distributed Autonomous Robotic Systems*, pages 389–402. Springer, 2013
- Amir Asiaee T., Mariano Tepper, Arindam Banerjee, and Guillermo Sapiro. If you are happy and you know it... tweet. In *21st ACM international conference on Information and knowledge management (CIKM)*, pages 1602–1606. ACM, 2012

RESEARCH EXPERIENCES	**Postdoctoral Fellowship** Ohio State University, Columbus	September 2017 to present

- Personalized treatment for lung cancer
    - *Collaborators:* Prof. Kevin Coombes and Prof. Arindam Banerjee
    - *Theory*: High dimensional data sharing
    - *Technology*: R
    - *Outline*: Predicting responses of lung cancer patients to different drugs and detecting relevant genetic markers using genetic and epigenetic information of 150 lung cancer cell lines and their response to 35 drugs.
- Finding combination therapy for AML
    - *Collaborators:* Prof. Kevin Coombes and Dr. Erin Hertlein
    - *Theory*: Topic Modeling
    - *Technology*: R
    - *Outline*: Investigating the efficacy and potency of combinations of EZH2 with other drugs in treating AML using the dose-response data for 22 drug combinations.
- Learning the relation of mutations, pathways, and cancer hallmarks
    - *Collaborators:* Prof. Kevin Coombes
    - *Theory*: Topic Modeling
    - *Technology*: R
    - *Outline*: Uncovering the relationship of molecular-level mutations to a more pronounced manifestation of cancer known as cancer hallmarks using TCGA's 10,000 patients with 33 cancers.

Research Assistantship   September 2010 to August 2017
University of Minnesota, Minneapolis

- Structured high dimensional data sharing model
    - *Theory*: High dimensional statistics and convergence rate analysis.
    - *Technology*: R
    - *Outline*: We propose a fast algorithm to exploit the given grouping of samples in high dimensional regime and learn per group differences for a given prediction task.
- Fine-grained analysis of malware domain groups
    - *Theory*: Deep learning and LSTMs
    - *Technology*: TensorFlow and Python
    - *Outline*: We propose to leverage recent advances in large-scale machine learning algorithms to develop novel analytics that can uncover previously unknown malicious domains in massive streams of DNS resolution traffic.
- Structured high dimensional linear regression with error-in-variables
    - *Theory:* High dimensional statistics and concentration inequalities.
    - *Technology*: MATLAB

- *Outline*: We developed efficient algorithm for estimating linear regression parameter, under the assumption that it is structured (i.e., sparse, group sparse, etc.) and the observations are corrupted with noise.

- Influence maximization in social networks
  - *Theory*: Random walks and submodularity
  - *Technology*: MPI for Python, MATLAB
  - *Outline*: We propose a new non-progressive model for social influence and provided efficient algorithm to find most influential individuals.

- Twitter sentiment analysis
  - *Theory*: Various classification/dimensionality reduction techniques and dictionary learning.
  - *Technology*: Python and MATLAB
  - *Outline*: Using supervised learning techniques we predict if a tweet is positive, negative or neutral about a given topic of interest.

Research Internship   June 2013 to August 2013
Technicolor Research Center, Palo Alto
- Modeling electro-dermal signal
  - *Theory*: Switching auto-regressive process and EM.
  - *Technology*: MATLAB
  - *Outline*: We model audience responses to video content through an implicit biometric feedback, electro-dermal activity. The engagement of a viewer is the hidden switch variable that generates the observed continuous dermal signal.

M.S. Thesis   September 2009 to September 2010
University of Tehran, Tehran
- Influence maximization by changing the network structure
  - *Theory*: Submodularity and complex networks.
  - *Technology*: MATLAB
  - *Outline*: Using social influence models we try to find the best set of links to add to a network to facilitate the spreading process.

Software Engineering Internship   July 2006 to October 2006
Iran Telecommunication Research Center (ITRC), Tehran
- Statistical machine translation for Farsi language
  - *Theory*: Dynamic programming and MLE.
  - *Technology*: C++
  - *Outline*: I developed a part of machine translation toolbox and surveyed the literature of statistical machine translation.

COMPUTING   • Proficient in: R, Python, MATLAB, C++, Java
SKILLS   • Familiar with: C, C#, VB, Verilog, MySQL, UML

TEACHING   **Teaching Assistant**   Spring 2011 to Spring 2016
EXPERIENCE University of Minnesota, Twin Cities, USA
- CSCI 5512, Artificial Intelligence II, Spring 2016
- CSCI 5525, Machine Learning, Fall 2015
- CSCI 5421, Advanced Algorithms and Data Structures, Fall 2011, Spring 2012
- CSCI 2011, Discrete Structures, Summer 2011
- CSCI 4041, Algorithms and Data Structures, Spring 2011/2014/2015, Fall 2013

University of Tehran, Tehran, Iran
- Artificial Intelligence, Spring 2008/2010
- Social Network, Fall 2009
- Theory of Formal Language and Automata, Spring 2007
- Operating Systems, Fall 2006
- Data Structures and Algorithm, Fall 2005

COURSE
HIGHLIGHTS

Pattern Recognition, Machine Learning, Data Mining, Introduction to Nonlinear Optimization, Artificial Intelligence I/II, Probability and Stochastic Processes, Advanced Algorithm and Data Structure, Software Engineering, Object-oriented Programming.

PROFESSIONAL
DEVELOPMENT

- Professional Development Seminars at Mathematical Biosciences Institute, Fall 2017 - present
- Preparing Future Faculty, Spring 2010
  Practicum course which prepare students for teaching in higher education

ACADEMIC
SERVICES

- Curriculum development for "Machine Learning for Bioinformatics" course, Bioinformatics Department, Ohio State University, Spring 2018

REFERENCES

Professor Kevin R. Coombes

- *Affiliation*: Department of Biomedical Informatics, Ohio State University
- *Contact Info*: Kevin.Coombes@osumc.edu, (614) 685-3251
- *Address*: 340-E, 250 Lincoln Tower, 1800 Cannon Drive, Columbus, OH 43210

Professor Arindam Banerjee

- *Affiliation*: Department of Computer Science, University of Minnesota.
- *Contact Info*: banerjee@cs.umn.edu, (612) 625-0041
- *Address*: 4-192 Keller Hall, 200 Union Street SE, Minneapolis, MN 55455

Professor Zhi-Li Zhang

- *Affiliation*: Department of Computer Science, University of Minnesota.
- *Contact Info*: zhzhang@cs.umn.edu, (612) 625-8568
- *Address*: 4-192 Keller Hall, 200 Union Street SE, Minneapolis, MN 55455

Dr. Fernando Silveira

- *Affiliation*: Data Analytics Lead, DriveScale Inc.
- *Contact Info*: fernando@drivescale.com, (415) 562-6364
- *Address*: 1230 Midas Way, Suite 210 Sunnyvale, CA 94085