AKANKSHA ATREY

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OBJECTIVE

I am pursuing my Ph.D. in Computer Science with Prof. Prashant Shenoy at the University of Massachusetts Amherst. My current research interests lie at the intersection of machine learning, edge computing and privacy with a focus on applications in IoT and blockchain.

EDUCATION

University of Massachusetts Amherst Sep 2017 - present
Ph.D in Computer Science

University of Massachusetts Amherst Sep 2017 - Dec 2020
M.S. in Computer Science (3.89 GPA)

University at Albany, SUNY Aug 2014 - Dec 2016
B.Sc. Computer Science and Mathematics (4.0 GPA)

RESEARCH EXPERIENCE

University of Massachusetts Amherst (CICS) Jan 2020 - present
Research Assistant in the Laboratory for Advanced Software Systems

- Developing personalized models on edge computing systems
- Evaluating and building end-to-end privacy-preserving ML models for edge computing systems

University of Massachusetts Amherst (CICS) Sep 2017 - Dec 2019
Research Assistant in the Knowledge Discovery Laboratory

- Characterized, measured and evaluated the generalizability and explainability of deep reinforcement learning agents using causal modeling techniques
- Developed a methodology grounded in counterfactual reasoning to evaluate the explanations generated from saliency maps in deep reinforcement learning

IBM Research May 2019 - Aug 2019
Research Intern in the Science for Social Good Program

- Analyzed the temporal effects of long-term opioid usage on opioid addiction and misuse

University at Albany, SUNY (CEAS) Aug 2014 - Dec 2016
Undergraduate Research Projects

- Detected twitter bots to understand the popularity diffusion of presidential candidates (w/ Prof. Feng Chen)
- Analyzed e-petition information diffusion in online social networks (w/ Prof. Teresa Harrison)
- Developed a Reeb graph based validation approach of statistical predictive models for the spread of AIDS (w/ Prof. Elizabeth Munch)

Rutgers University, New Brunswick (SCI) May 2016 - Aug 2016
Research Intern w/ Prof. Vivek Singh

- Characterized and developed methods for real-time diversity analytics using images on social media

GRADUATE COURSEWORK

Advanced ML, Research Methods, Probabilistic Graphical Models, Secure Distributed Systems, Advanced Algorithms, Distributed and Operating Systems, Neural Networks.

WORK EXPERIENCE

IBM Jan 2017 - Aug 2017

Software Engineer

- Debugged, coded, tested and resolved complex client issues for two low-level IBM z/OS mainframe components
- Interacted and collaborated with clients directly to provide personalized assistance
- Languages/Tools: PLX, machine code, assembler

Auto/Mate Dealership Systems Sep 2016 - Dec 2016

Software Developer Intern

- Developed Java and SQL scripts for COBOL to PSQL conversions for the ReportMate application
- Languages/Tools: Java, COBOL, SQL, Eclipse

CommerceHub Feb 2016 - May 2016

Software Engineer Intern

- Handled numerous full-stack tasks with a primary focus on backend and unit testing in the Product Stream team
- Languages/Tools: Java, Groovy, MongoDB, Spock, Jira

VoxVilla, LLC May 2015 - Aug 2015

Web Developer Intern

- Established and populated backend and collaborated with front-end engineers on the design of the website
- Collaborated with potential clients off-site to gather domain knowledge
- Languages/Tools: Java, PHP, HTML5, SQL

PUBLICATIONS

[1] Bagchi, S., Abdelzaher, T. F., Govindan, R., Shenoy, P., Atrey, A., Ghosh, P., and Xu, R. New frontiers in IoT: Networking, systems, reliability, and security challenges. In *IEEE Internet of Things Journal* (2020)

[2] Atrey, A., Clary, K., and Jensen, D. Exploratory not explanatory: Counterfactual analysis of saliency maps for deep RL. In *ICLR* (2020)

[3] Oktay, H., Atrey, A., and Jensen, D. Identifying when effect restoration will improve estimates of causal effect. In *SIAM International Conference on Data Mining* (2019)

[4] Witty, Sam, L., Ki, J., Tosch, E., Atrey, A., Jensen, D., and Littman, M. Generalization in deep reinforcement learning. In *Critiquing and Correcting Trends in Machine Learning Workshop at NeurIPS* (2018)

[5] Singh, V. K., Atrey, A., and Hegde, S. Do individuals smile more in diverse social company?: Studying smiles and diversity via social media photos. In *ACM Multimedia* (2017), ACM, pp. 1818–1827

[6] Harrison, T. M., Dumas, C., DePaula, N., Fake, T., May, W., Atrey, A., Lee, J., Rishi, L., and Ravi, S. E-petitioning and online media: The case of #bringbackourgirls. In *International Conference on Digital Government Research* (2017), ACM, pp. 11–20

[7] Singh, V. K., Hegde, S., and Atrey, A. Towards measuring fine-grained diversity using social media photographs. In *ICWSM* (2017), pp. 668–671

[8] Dumas, C. L., Atrey, A., Lee, J., Harrison, T. M., Fake, T., Zhao, X., and Ravi, S. E-petition information diffusion in online social networks. In *International Conference on Digital Government Research* (2016), ACM, pp. 515–517

TALKS AND PRESENTATIONS

[1] *Evaluating Saliency Maps Using Interventions.* Women in Machine Learning (WiML) 2019. Dec 2019. Poster.

[2] *Using Counterfactual Reasoning to Facilitate Understanding of Deep Networks.* IBM Research Intern Highlight. June 2019. Invited Talk.

[3] *Identifying When Effect Restoration Will Improve Estimates of Causal Effect.* SIAM International Conference on Data Mining (SDM) 2019. May 2019. Paper talk & poster.

[4] *Do Diverse Social Interactions Make Us Smile More Often? Studying Smiles and Diversity Via Social Media Photos.* ACM Multimedia (ACMMM) 2017. October 2017. Paper talk & poster. (Travel funded by ACMMM)

[5] *Twitter Popularity Diffusion of Presidential Candidates through Detection of Twitter Bots.* MIT IEEE Undergraduate Research Conference (URTC). November 2016. Poster.

[6] *Reeb Graph Based Validation of Statistical Predictive Models for Spread of AIDS.* Grace Hopper Celebration of Women in Computing (GHC). October 2015. Poster.

[7] *Reeb Graph Based Validation of Statistical Predictive Models for Spread of AIDS.* New York Celebration of Women in Computing (NYCWIC). April 2015. Short talk.

AWARDS AND HONORS

NSF Travel Grant for WiML 2019	Dec 2019
NSF Graduate Research Fellowship Program Honorable Mention	Apr 2019
Lori A. Clarke Scholarship in Computer Science	Jun 2018
CRA-W Grad Cohort 2018 Invitation and Travel Grant	Apr 2018
Lita and Stephen Greenwald Research Fund Award	May 2017
ISO President's Medal for Exemplary Leadership	Apr 2017
Spellman Top Academic Achievement Award	Apr 2017
CRA-W Research Scholar (for Grace Hopper Celebration)	Oct 2016
Bruce B. and Louise Steen Gravitt Scholarship	May 2016
Spellman Top Academic Achievement Award	Mar 2016
Tau Sigma National Honor Society Scholarship	Jan 2016
Women and Technology Award and Scholarship	Jun 2015
Ross A. Johnston Entrance Scholarship in Math and Statistics	Sep 2013

SERVICE

CICS Committee Against Racism and for Equity: Sustaining	*Chair*	Jun 2020 - Present
CICS Community Outreach Student Team	*Chair/Founder*	Apr 2019 - Present
ACM E-Energy	*Volunteer*	Jun 2020
ACM/IEEE IoTDI	*Volunteer*	Apr 2020
CS Social Committee (UMass Amherst)	*Chair*	Sep 2019 - May 2020
CS New Student Committee (UMass Amherst)	*Chair*	Sep 2017 - May 2020
Indian Student Association (UMass Amherst)	*Vice President*	Apr 2018 - May 2019
CS Social Committee (UMass Amherst)	*Chair*	Sep 2017 - May 2018
Indian Student Organization (UAlbany)	*Vice President*	Jun 2016 - Dec 2016
Tau Sigma National Honor Society (UAlbany)	*President*	Mar 2016 - Dec 2016
Office of Undergraduate Education (UAlbany)	*Peer Mentor*	Sep 2015 - Dec 2016
Tau Sigma National Honor Society (UAlbany)	*Secretary*	Mar 2015 - Mar 2016
Asian Pacific American Conference (UAlbany)	*Logistics Chair*	Jan 2015 - Apr 2015