

Setareh Rafatirad

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Machine Learning and Knowledge Representation (MLKR) Lab
Computer Science Department
University of California at Davis

EDUCATION

- **PhD**

Donald Bren School of Information and Computer Science, Department of Computer Science, University of California Irvine

- Thesis: Context-based Event Ontology Extension in Multimedia Applications, January 2009 – December 2012. Advisor: Ramesh C. Jain.

- **Master of Science**

Donald Bren School of Information and Computer Science, Department of Computer Science, University of California Irvine

- Research area in Event Composition Operations and Event Modeling, January 2008 – December 2009. Advisor: Ramesh C. Jain.

- **Bachelor of Science**

Tehran Azad University of Technology

- Department of Software Engineering, September 2000 – December 2005.

EMPLOYMENT

- **Assistant Professor of Teaching** (75% teaching responsibility, 25% research responsibility), Computer Science Department, University of California Davis, November 2020 – Present.
- **Associate Professor of Teaching** (75% teaching responsibility, 25% research responsibility), Department of Information Sciences and Technology, George Mason University, December 2018 – 2020.
- **Assistant Professor of Teaching** (75% teaching responsibility, 25% research responsibility), Department of Information Sciences and Technology, George Mason University, January 2013 – 2018.
- **Graduate Research Assistant**, University of California Irvine, Department of Computer Science, June 2011-December 2012.
- **Graduate Research Assistant**, University of California Irvine, Department of Computer Science, July 2009-October 2009.
- **Intern**, System Ara Co., Adding Database Modules and Web Server to Manage Information System using Java, ASP.net and SQL, July 2002- November 2002.
- **Intern**, Pishrocom Rayane Co., Cooperating in Design and Implementation of HMI for Management Information System Server and Client Application, December 2003- February 2004.

GRANTS AND PROPOSALS

- NSF SaTC:EDU, AIPerf: AI-Assisted Performance Evaluation with Visualization Aid for Education in Computer Architecture Security, Submitted, 2021, Total: \$400K, PI portion (\$140K), PI Role: lead the development of machine learning and data analytics tools for computer security education and training, and develop curriculum to provide computer security specialization for undergraduate/graduate students.
- CHEST INDUSTRY SPONSORS, NATE: A Neural Network Assisted Timing Profiling for Hardware Trojan Detection, \$75K, 2020-2021. Co-PI Role: Leading the development of a neural network hardware trojan detection model.
- CHEST INDUSTRY GRANT (Raytheon), Do you trust standard cell library? \$75K, 2021-2022. Co-PI Role: Developing machine learning techniques to detect trojan in the standard cell.
- CHEST INDUSTRY SPONSORS (Raytheon), SHERLOCK: Power Side Channel Attack Resilient Hardware using Emerging Reconfigurable Devices and Logic locking. \$75K, 2021-2022. Co-PI Role: Leading the machine learning efforts of the project.
- NSF EAGER: Run-Time Hardware-Assisted Malware Detection Using Machine Learning, Funded, 2021, Total: \$237K, Co-PI portion (\$80K), Co-PI Role: Developing advanced machine learning model to detect stealthy malware at run-time.
- DARPA, Logical Vanishable Design to Prevent Reverse Engineering, Funded, 2017, Total: \$1.5M, PI portion (\$420,000), 2017-2020. PI Role: Leading the machine learning efforts of the project including developing and analyzing various robust machine learning classifiers including eager, lazy, ensemble, and deep learning to accurately model the execution time of various types of reverse engineering attacks.
- Wiley Online Course Redesign Grant, Online Master's Program (MSAIT) for AIT582 (Applications of Metadata in Complex Big Data Problems²⁴) and AIT624 (Knowledge Mining from Big Data), George Mason University, 2018 and 2019, PI portion (\$16,000).
- GMU-OSCAR Teaching Award, Undergraduate Research Curriculum Development, George Mason University, 2016 and 2017, PI portion (\$10,000).
- Equipment Support, Nvidia Corporation, Tesla K40 GPU for DNN training, (\$11,000).

RESEARCH INTERESTS

- **Applied Machine Learning**
 - Detecting and containing malware epidemic in IoT network
 - Applied machine learning for cloud workload management, scheduling and tuning
 - Anomaly detection
 - Real Estate Housing Analytics
- **Computer System Cybersecurity**
 - Machine learning security and adversarial ML
 - Detecting and containing malware epidemic in IoT network
 - Side-channel processor architecture defense and attack
- **Knowledge Discovery and Knowledge Representation**
 - Ontology-based Concept Modeling

- Multimedia Information Retrieval
- Personal Image Annotation
- **Big Data Computing**
 - Algorithms for energy-efficient acceleration of Big Data applications
 - Deep machine learning and data mining acceleration on heterogeneous platforms
 - Applied machine learning for cloud workload management, scheduling and tuning
 - Emerging big data application benchmarking and characterization on heterogeneous architectures
- **Race and Gender Equity in Education**
 - Sentiment Analysis for Bias Detection in Educational Course Content
 - Machine Learning-Assisted Framework for Equity-Driven Education
 - Gamification to Diversify Education

HONORS/AWARDS

- NSF EAGER Award, \$237K, machine learning assist for malware detection, 2021.
- DARPA Research Grant, \$1.5M, machine learning assist for IC reverse engineering, 2015-2020.
- ASSIP Recognition Award, for inspiring and guiding undergraduate and high school students in high quality original STEM research, George Mason University, 2020.
- Best Paper Award, 19th IEEE International Conference on Data Mining (ICDM), 2019.
- Best Paper Award Nominee, International Conference on Computer Aided Design (ICCAD), 2019.
- Wiley Online Course Redesign Grant, Online Master's Program (MSAIT) for AIT582 and AIT624, George Mason University, \$16K, 2018-2019.
- OSCAR Award for Undergraduate Research Curriculum Development, \$10K, 2016- 2017.
- Grad Cohort Program Fellowship, Boston, Massachusetts, 2011.
- ICS Chair Fellowship (three consecutive years), University of California Irvine, 2008-2011.
- International Graduate Student Entrance Scholarship, University of Manitoba, Canada, 2007.
- Philips Semiconductors Microelectronics Scholarship, TU-Delft University, Netherlands, 2006.
- Entrance Scholarship, McMaster University, Canada, 2006.

JOURNAL PUBLICATION

- (1) "Enabling Micro AI for Securing Edge Devices at Hardware Level", Han Wang, Hossein Sayadi, Sai Manoj Pudukotai Dinakarrao, Avesta Sasan, **Setareh Rafatirad**, Houman Homayoun, IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2021.
- (2) "Towards accurate run-time hardware-assisted stealthy malware detection: a lightweight, yet effective time series CNN-based approach", Hossein Sayadi, Yifeng Gao, Hosein Mohammadi Makrani, Jessica Lin, Paulo Cesar Costa, **Setareh Rafatirad**, Houman Homayoun, MDPI , 2021.
- (3) "Imitating functional operations for mitigating side-channel leakage", Abhijitt Dhavlle, **Setareh Rafatirad**, Khaled Khasawneh, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2021.
- (4) "Adaptive performance modeling of data-intensive workloads for resource provisioning in virtualized environment", Hosein Mohamamdi Makrani, Hossein Sayadi, Najmeh Nazari, Sai Mnoj Pudukotai Dinakarrao, Avesta Sasan, Tinoosh Mohsenin, **Setareh Rafatirad**,

Houman Homayoun, ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS), 2021.

- (5) "Cognitive and Scalable Technique for Securing IoT Networks Against Malware Epidemics." Sai Manoj Pudukotai Dinakarrao, Xiaojie Guo, Hossein Sayadi, Cameron Nowzari, Avesta Sasan, **Setareh Rafatirad**, Liang Zhao, Houman Homayoun, IEEE Access (2020).
- (6) "System and Architecture Level Characterization of Big Data Applications on Big and Little Core Server Architectures". Maria Malik, Katayoun Neshatpour, **Setareh Rafatirad**, Houman Homayoun. ACM Transactions on Modeling and Performance Evaluation of Computing Systems, (TOMPECS) 2018. *Length: 13 pages.*
- (7) "Programmable Gates Using Hybrid CMOS-STT Design to Prevent IC Reverse Engineering". Ted Winograd, Gaurav Shenoy, Hassan Salmani, Hamid Mahmoodi, **Setareh Rafatirad**, Houman Homayoun. ACM Transactions on Design Automation of Electronic Systems, Special issue on Internet of Things System Performance, Reliability, and Security, TODAES 2018. *Length: 21 pages.*
- (8) "Hardware Accelerated Mappers for Hadoop MapReduce Streaming". Katayoun Neshatpour, Maria Malik, Avesta Sasan, **Setareh Rafatirad**, Houman Homayoun. IEEE Transactions on Multi-Scale Computing Systems, 2018. *Length: 15 pages.*
- (9) "Optimal Allocation of Computation and Communication in an IoT Network". Abhimanyu Chopra, Hakan Aydin, **Setareh Rafatirad**, Houman Homayoun. ACM Transactions on Design Automation of Electronic Systems (TODAES), 2018. *length: 14 pages.*
- (10) "Energy-Efficient Acceleration of MapReduce Applications Using FPGAs". Katayoun Neshatpour, Maria Malik, Houman Homayoun, **Setareh Rafatirad**, Elsevier Journal of Parallel and Distributed Computing, Special Issue on Systems for Learning, Inferencing, and Discovering (SLID), 2018. *Length: 17 pages.*
- (11) "Hadoop Workloads Characterization for Performance and Energy Efficiency Optimizations on Microservers" Maria Malik, Katayoun Neshatpour, Avesta Sasan, **Setareh Rafatirad**, Houman Homayoun, IEEE Transactions on Multi-Scale Computing Systems, (TMSCS) 2018. *Length: 14 pages.*
- (12) "Big vs Little Core for Energy-Efficient Hadoop Computing" Maria Malik, Katayoun Neshatpour; **Setareh Rafatirad**; Rajiv V Joshi; Houman Homayoun, Journal of Parallel and Distributed Computing (JPDC), 2017. *length: 15 pages.*
- (13) "A comprehensive study of visual event computing", WeiQi Yan, Declan F. Kieran, **Setareh Rafatirad** and Ramesh Jain. Multimedia Tools and Applications, July 2010. *My role: research on Event modeling and event ontologies. Length: 39 pages.*

CONFERENCE PUBLICATION

- (1) "Machine Learning to the Rescue: ML-Assisted Framework for Equity-Driven Education", Xiyu Zhang, Wooyoung Chung, Hossein Sayadi, **Setareh Rafatirad**, EDUCON 2022.
- (2) "Ontology-Driven Scientific Literature Classification using Clustering and Self-Supervised Learning", Zhengtong Pan, Patrick Soong, **Setareh Rafatirad**, ICDMAI 2022.

- (3) "Accelerated Machine Learning for On-Device Hardware-Assisted Cybersecurity in Edge Platforms", Hosein Mohammadi Makrani, Zhangying He, **Setareh Rafatirad**, Hossein Sayadi, 23rd International Symposium on Quality Electronic Design (ISQED) 2022.
- (4) "RAFeL-Robust and Data-Aware Federated Learning-inspired Malware Detection in Internet-of-Things (IoT) Networks", Sanket Shukla, Gaurav Kolhe, Houman Homayoun, **Setareh Rafatirad**, Sai Manoj PD, Proceedings of the Great Lakes Symposium on VLSI 2022.
- (5) "Pain Level Modeling of Intensive Care Unit patients with Machine Learning Methods: An Effective Congeneric Clustering-based Approach", Ruijie Fang, Ruoyu Zhang, Sayed M Hosseini, Mahya Faghih, Soheil Rafatirad, **Setareh Rafatirad**, Houman Homayoun, 4th International Conference on Intelligent Medicine and Image Processing, 2022.
- (6) "CR-spectre: defense-aware ROP injected code-reuse based dynamic spectre", Abhijitt Dhavlle, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, Design, Automation & Test in Europe Conference & Exhibition (DATE), 2022.
- (7) "REPTTACK: Exploiting Cloud Schedulers to Guide Co-Location Attacks", Chongzhou Fang, Han Wang, Najmeh Nazari, Behnam Omid, Avesta Sasan, Khaled N. Khasawneh, **Setareh Rafatirad**, Houman Homayoun, Network and Distributed System Security Symposium (NDSS)2022. 13 pages. Acceptance Rate: 15%.
- (8) "A Gender-Aware Sentiment Classification Framework to Promote Gender Equity in Educational Content", **Setareh Rafatirad**, Wooyoung Chung, Xiyu Zhang, SOTL 2021.
- (9) "HosNa: A DPC++ Benchmark Suite for Heterogeneous Architectures", Najmeh Nazari Bavarsad, Hosein Mohammadi Makrani, Hossein Sayadi, Lawrence Landis, **Setareh Rafatirad**, Houman Homayoun, IEEE 39th International Conference on Computer Design (ICCD), 2021.
- (10) "A Neural Network-based Cognitive Obfuscation Towards Enhanced Logic Locking", Rakibul Hassan, Gaurav Kolhe, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2021.
- (11) "Cloak & co-locate: adversarial railroading of resource sharing-based attacks on the cloud", Hosein Mohammadi Makrani, Hossein Sayadi, Najmeh Nazari, Khaled N Khasawneh, Avesta Sasan, **Setareh Rafatirad**, Houman Homayoun, International Symposium on Secure and Private Execution Environment Design (SEED), 2021.
- (12) "Power Swapper: Approximate Functional Block Assisted Cryptosystem Security", Abhijitt Dhavlle, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, IEEE 34th International System-on-Chip Conference (SOCC), 2021.
- (13) "Demography-aware COVID-19 Confinement with Game Theory", S. Kasarapu, Rakibul Hassan, **Setareh Rafatirad**, Houman Homayoun and Sai. M. P. Dinakarrao, 2021 IEEE 3rd International Conference on Artificial Intelligence Circuits and Systems (AICAS), 2021, pp. 1-4, doi: 10.1109/AICAS51828.2021.9458525.
- (14) "Defense-Aware Code-Reuse based Dynamic Spectre", Abhijitt Dhavlle, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, Design Automation Conference 2021 (WiP-DAC 2021).

- (15) "Ontology-Driven Automated Supervised Topic Modeling Framework for Hardware Vulnerabilities", Rakibul Hassan, Charan Bandi, Soheil Salehi, **Setareh Rafatirad**, (WiP)-Design Automation Conference 2021 (DAC 2021).
- (16) "AdvProtect: Effective Adversarial Learning-based Protection against Hardware-Assisted Website Fingerprinting Attacks" Sai Manoj P. D., **Setareh Rafatirad**, Houman Homayoun, Design Automation Conference (DAC'21), San Francisco, CA, USA, July 11-15, 2021.
- (17) "On-device Malware Detection using Performance-Aware and Robust Collaborative Learning", Sanket Shukla, **Setareh Rafatirad** , Sai Manoj P. D., *Design Automation Conference (DAC'21)*, San Francisco, CA, USA, July 11-15, 2021.
- (18) "Performance-aware Malware Epidemic Confinement in Large-Scale IoT Networks", Rakibul Hassan, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, ICC 2021-IEEE International Conference on Communications, 2021.
- (19) "Energy-Efficient and Adversarially Robust Machine Learning with Selective Dynamic Band Filtering", Neha Nagarkar, Khaled Khasawneh, **Setareh Rafatirad**, Avesta Sasan, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, 2021 on Great Lakes Symposium on VLSI, 2021.
- (20) "Evaluation of Machine Learning-based Detection against Side-Channel Attacks on Autonomous Vehicle", Han Wang, Soheil Salehi, Hossein Sayadi, Avesta Sasan, Tinoosh Mohsenin, PD Sai Manoj, **Setareh Rafatirad**, Houman Homayoun, 2021 IEEE 3rd International Conference on Artificial Intelligence Circuits and Systems (AICAS), 2021.
- (21) "Securing Hardware via Dynamic Obfuscation Utilizing Reconfigurable Interconnect and Logic Blocks", Gaurav Kolhe, Soheil Salehi, T. Sheaves, Sai Manoj P. D., **Setareh Rafatirad**, Avesta Sasan, and Houman Homayoun, *Proceedings of ACM Design Automation Conference (DAC'21)*, San Francisco, CA, USA, July 11-15, 2021.
- (22) "Machine Learning-Assisted Website Fingerprinting Attacks with Side-Channel Information: A Comprehensive Analysis and Characterization", Han Wang, Hossein Sayadi, Avesta Sasan, PD Sai Manoj, **Setareh Rafatirad**, Houman Homayoun, 22nd International Symposium on Quality Electronic Design (ISQED), 2021.
- (23) "Ontology creation model based on attention mechanism for a specific business domain", Maryam Heidari, Samira Zad, Brett Berlin, **Setareh Rafatirad**, IEEE International IOT, Electronics and Mechatronics Conference (IEMTRONICS), 2021.
- (24) "Ensemble of supervised and unsupervised learning models to predict a profitable business decision", Maryam Heidari, Samira Zad, **Setareh Rafatirad**, IEEE International IOT, Electronics and Mechatronics Conference (IEMTRONICS), 2021.
- (25) "Ontology-Driven Automated Supervised Topic Modeling Framework for Hardware Vulnerabilities", Charan Bandi, Rakibul Hassan, Soheil Salehi, Sai Manoj P. D., Houman Homayoun, **Setareh Rafatirad**," *Proceedings of ACM Design Automation Conference (DAC'21)*, San Francisco, CA, USA, July 11-15, 2021.
- (26) "Ontology-Driven Framework for Trend Analysis of Vulnerabilities and Impacts in IoT Hardware",Charan Bandi, Rakibul Hassan, Soheil Salehi, Sai Manoj Pudukotai Dinakarrao, Houman Homayoun , **Setareh Rafatirad**, IEEE International Conference on Semantic Computing, ICSC 2021, 4 pages, Acceptance Rate: 30%.

- (27) "A Cognitive SAT to SAT-Hard Clause Translation-based Logic Obfuscation", Rakibul Hassan, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao. Design, Automation and Test in Europe Conference, DATE 2021. 6 pages. Acceptance Rate: 22%.
- (28) "Hmd-hardener: Adversarially robust and efficient hardware-assisted runtime malware detection", Abhijit Dhavle, Sanket Shukla, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, Design, Automation & Test in Europe Conference & Exhibition (DATE), 2021.
- (29) "Deep Graph Learning for Circuit Deobfuscation", Zhiqian Chen, Lei Zhang, Gaurav Kolhe, Hadi Mardani Kamali, **Setareh Rafatirad**, Sai Manoj Pudukotai Dinakarrao, Houman Homayoun, Chang-Tien Lu, Liang Zhao, Frontiers in big Data, 2021.
- (30) "Hybrid-Shield: Accurate and Efficient Cross-Layer Countermeasure for Run-Time Detection and Mitigation of Cache-Based Side-Channel Attacks", Han Wang, Hossein Sayadi, Avesta Sasan, **Setareh Rafatirad**, Tinoosh Mohsenin, Houman Homayoun. ICCAD 2020.
- (31) "Semantic convolutional neural network model for safe business investment by using bert", Maryam Heidari, **Setareh Rafatirad**, Seventh International Conference on Social Networks Analysis, Management and Security (SNAMS), 2020.
- (32) "Bidirectional transformer based on online text-based information to implement convolutional neural network model for secure business investment", Maryam Heidari, **Setareh Rafatirad**, IEEE International Symposium on Technology and Society (ISTAS), 2020.
- (33) "Comprehensive Evaluation of Machine Learning Countermeasures for Detecting Microarchitectural Side-Channel Attacks", Han Wang, Hossein Sayadi, Avesta Sasan, **Setareh Rafatirad**, Tinoosh Mohsenin, Houman Homayoun, Proceedings of the 2020 on Great Lakes Symposium on VLSI. 2020. 6 pages. Acceptance Rate: 29%.
- (34) "StealthMiner: Specialized Time Series Machine Learning for Run-Time Stealthy Malware Detection based on Microarchitectural Features." Hossein Sayadi, Yifang Gao, Hosein M. Makrani, Avesta Sasan, **Setareh Rafatirad**, Jessica Lin, Houman Homayoun, Proceedings of the 2020 on Great Lakes Symposium on VLSI. 2020. 6 pages. Acceptance Rate: 29%.
- (35) "Using Transfer Learning Approach to Implement Convolutional Neural Network model to Recommend Airline Tickets by Using Online Reviews." Maryam Heidari, **Setareh Rafatirad**, 15th International Workshop on Semantic and Social Media Adaptation and Personalization, SMA. IEEE, 2020. 6 pages.
- (36) "Recent Advancements in Microarchitectural Security: Review of Machine Learning Countermeasures." Hossein Sayadi, Han Wang, Tahereh Miari, Hosein M. Makrani, Mehrdad Aliasgari, **Setareh Rafatirad**, Houman Homayoun. 2020 IEEE 63rd International Midwest Symposium on Circuits and Systems (MWSCAS). IEEE, 2020. 4 pages.
- (37) "Scarf: Detecting side-channel attacks at real-time using low-level hardware features.", Han Wang, Hossein Sayadi, **Setareh Rafatirad**, Avesta Sasan, Houman Homayoun, 2020 IEEE 26th International Symposium on On-Line Testing and Robust System Design (IOLTS). IEEE, 2020. 6 pages. Acceptance Rate: 30%.

- (38) "Entropy-Shield: Side-Channel Entropy Maximization for Timing-based Side-Channel Attacks.", Abhijit Dhavle, Raj Mehta, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, 2020 21st International Symposium on Quality Electronic Design (ISQED). IEEE, 2020. 6 pages. Acceptance Rate: 35%.
- (39) "SATConda: SAT to SAT-Hard Clause Translator.", Rakibul Hassan, Gaurav Kolhe, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao, 2020 21st International Symposium on Quality Electronic Design (ISQED). IEEE, 2020.6 pages. Acceptance Rate: 36%.
- (40) "HybridDG: Hybrid Dynamic Time Wrapping and Gaussian Distribution Model for Detecting Emerging Zero-day Microarchitectural Side-Channel Attacks", Han Wang, **Setareh Rafatirad**, Houman Homayoun. International Conference in Machine Learning Applications, ICMLA 2020. 8 pages. Acceptance Rate: 22%.
- (41) "Estimating the Circuit Deobfuscating Runtime based on Graph Deep Learning", Zhiqian Chen, Gaurav Kolhe, Chang-Tien Lu, Sai Manoj Pudukotai Dinakarrao, Houman Homayoun, Liang Zhao, **Setareh Rafatirad**. Design, Automation and Test in Europe Conference, DATE 2020. 6 pages. Acceptance Rate: 22%.
- (42) "Mitigating Cache-Based Side-Channel Attacks through Randomization: A Comprehensive System and Architecture Level Analysis", Han Wang, Hossein Sayadi, Avesta Sasan, Houman Homayoun, Liang Zhao, Tinoosh Mohsenin, **Setareh Rafatirad**. Design, Automation & Test in Europe, DATE 2020. 6 pages. Acceptance Rate: 22%.
- (43) "Deep Multi-attributed Graph Translation with Node-Edge Co-evolution", Xiaojie Guo, Liang Zhao, Cameron Nowzari, **Setareh Rafatirad**, Houman Homayoun, and Sai Manoj Pudukotai Dinakarrao. IEEE International Conference on Data Mining. ICDM 2019. Acceptance Rate: 9%. **(Best Paper Award out of 1037 submissions)**.
- (44) "Security and Complexity Analysis of LUT-based Obfuscation: From Blueprint to Reality", Gaurav Kolhe, Hadi Mardani Kamali, Miklesh Naicker, Tyler David Sheaves, Hamid Mahmoodi, Sai Manoj Pudukotai Dinakarrao, Houman Homayoun, **Setareh Rafatirad**, Avesta Sasan, International Conference On Computer Aided Design (ICCAD), 2019. Acceptance Rate: 24%. **(Best Paper Nominee)**.
- (45) "Pyramid: Machine Learning Framework to Estimate the Optimal Timing and Resource Usage of a High-Level Synthesis Design". Hosein Mohammadi Makrani, Farnoud Farahmand, Hossein Sayadi, Sara Bondi, Sai Manoj Pudukotai Dinakarrao, Liang Zhao, Avesta Sasan, Houman Homayoun, **Setareh Rafatirad**. 29th International Conference on Field Programmable Logic and Applications (FPL), 2019. Acceptance Rate: 27%.
- (46) "RNN-based Classifier to Detect Stealthy Malware using Localized Features and Complex Symbolic Sequence", Sanket Shukla, Gaurav Kolhe, Sai Manoj Pudukotai Dinakarrao, **Setareh Rafatirad**. International Conference on Machine Learning and Applications. ICMLA 2019. 4 pages, Acceptance Rate: 14%.
- (47) "Design Space Exploration for Hardware Acceleration of Machine Learning Applications in MapReduce", Katayoun Neshatpour, Hosein Makrani, Avesta Sasan, Hassan Ghasemzadeh, **Setareh Rafatirad** and Houman Homayoun, IEEE 27th Annual International Symposium on Field-Programmable Custom Computing Machines (FCCM), 2019.

- (48) "A+Tuning: Architecture+Application Auto-tuning for In-Memory Data-Processing Frameworks", Han Wang, **Setareh Rafatirad** and Houman Homayoun, ICPADS 2019. *Acceptance Rate: 30%*.
- (49) "CHASE: A Customized Time Series Machine Learning Approach for Hardware-Based Stealthy Malware Detection", Hossein Sayadi, Yifeng Gao, Hosein Mohammadi Makrani, Sai Manoj P D, Avesta Sasan, Jessica Lin, **Setareh Rafatirad** and Houman Homayoun, IEEE International Conference on Computer Design (ICCD), 2019.
- (50) "Stealthy Malware Detection using RNN-based Automated Localized Feature Extraction and Classifier", Sanket Shukla, Gaurav Kolhe, Sai Manoj Pudukotai Dinakarrao, **Setareh Rafatirad**. International Conference on Tools and Artificial Intelligence. ICTAI 2019. 8 pages, *Acceptance Rate: 31%*.
- (51) "MicroArchitectural Events and Image Processing-based Hybrid Approach for Robust Malware Detection", Sanket Shukla, Gaurav Kolhe, Sai Manoj Pudukotai Dinakarrao, **Setareh Rafatirad**. International Conference on Compilers, Architecture, and Synthesis for Embedded Systems. CASES-ESWEEK 2019. 8 pages, *Acceptance Rate: 25%*.
- (52) "Sequence-Crafter: Side-Channel Entropy Minimization to Thwart Timing-based Side-Channel Attacks", Abhijit Dhavle, Sahil Bhat, **Setareh Rafatirad**, Houman Homayoun, Sai Manoj Pudukotai Dinakarrao. International Conference on Compilers, Architecture, and Synthesis for Embedded Systems. CASES-ESWEEK 2019. 8 pages, *Acceptance Rate: 25%*.
- (53) "Lightweight Node-level Malware Detection and Network-level Malware Confinement in IoT Networks". Sai Manoj Pudukotai Dinakarrao, Hossein Sayadi, Hosein Mohammadi Makrani, Cameron Nowzari, **Setareh Rafatirad** and Houman Homayoun. Design, Automation & Test in Europe, DATE 2019. 6 pages. *Acceptance Rate: 22%*.
- (54) "2SMaRT: A Two-Stage Machine Learning-Based Approach for Run-Time Specialized Hardware-Assisted Malware Detection". Hossein Sayadi, Hosein Mohammadi Makrani, Sai Manoj Pudukotai Dinakarrao, Tinoosh Mohsenin, Avesta Sasan, **Setareh Rafatirad** and Houman Homayoun. Design, Automation & Test in Europe, DATE 2019. 6 pages. *Acceptance Rate: 22%*.
- (55) "XPPE: Cross-Platform Performance Estimation of Hardware Accelerators Using Machine Learning". Hosein Makrani, Hossein Sayadi, Sara Bondi, Tinoosh Mohsenin, **Setareh Rafatirad**, Avesta Sasan, Houman Homayoun. 24th Asia and South Pacific Design Automation Conference, ASPDAC 2019. 6 pages. *Acceptance Rate: 28%*.
- (56) "ECoST: Energy-Efficient Co-Locating and Self-Tuning MapReduce Applications". Maria Malik, Hassan Ghasemzadeh, Tinoosh Mohsenin, Rosario Cammarota, Liang Zhao, Avesta Sasan, Houman Homayoun, **Setareh Rafatirad**. Proceedings of the 48th International Conference on Parallel Processing. ICPP 2019. 11 pages. *Acceptance Rate: 29%*.
- (57) "Mitigating the Performance and Quality of Parallelized Compressive Sensing Reconstruction Using Image Stitching". Mahmoud Namazi, Hosein Mohammadi Makrani, Zhi Tian, **Setareh Rafatirad**, Mohamad Hosein Akbari, Avesta Sasan, Houman Homayoun. Proceedings of the 2019 on Great Lakes Symposium on VLSI. ACM, 2019. 6 pages. *Acceptance Rate: 27%*.

- (58) "On Custom LUT-based Obfuscation". Gaurav Kolhe, Sai Manoj PD, **Setareh Rafatirad**, Hamid Mahmoodi, Avesta Sasan, Houman Homayoun. Proceedings of the 2019 on Great Lakes Symposium on VLSI. ACM, 2019. *6 pages. Acceptance Rate: 27%.*
- (59) "Adversarial Attack on Microarchitectural Events based Malware Detectors". Sai Manoj Pudukotai Dinakarrao, Sairaj Amberkar, Sahil Bhat, Abhijitt Dhavlle, Hossein Sayadi, Avesta Sasan, Houman Homayoun, **Setareh Rafatirad**. Proceedings of the 56th Annual Design Automation Conference. DAC 2019. *length: 6 pages. Acceptance Rate: 22.6%.*
- (60) "Real-Estate Price Prediction Using Time Series Forecasting Methods.", Arnav, Wadehra, **Setareh Rafatirad**, Journal of Student-Scientists' Research, George Mason University (2019).
- (61) "Customized machine learning-based hardware-assisted malware detection in embedded devices". Hossein Sayadi, Hosein Makrani, Sai Manoj Pudukotai Dinakarrao, **Setareh Rafatirad**, Houman Homayoun. 17th IEEE International Conference On Trust, Security And Privacy In Computing And Communications/12th IEEE International Conference On Big Data Science And Engineering. TrustCom/BigDataSE 2018.
- (62) "Ensemble Learning for Hardware-Based Malware Detection: A Comprehensive Analysis and Classification". Hossein Sayadi, Nisarg Patel, Sai Manoj P. D., Avesta Sasan, **Setareh Rafatirad**, Houman Homayoun. ACM/IEEE 55th Design Automation Conference. DAC 2018. *length: 6 pages. Acceptance Rate: 22.6%.*
- (63) "Efficient Utilization of Adversarial Training towards Robust Machine Learners and its Analysis". Sai Manoj P D, Sairaj Amberkar, **Setareh Rafatirad**, Houman Homayoun. IEEE/ACM International Conference on Computer Aided Design, Special Session, ICCAD 2018. *length: 8 pages. Acceptance Rate: 25%.*
- (64) "Hardware-Assisted Security: Understanding Security Vulnerabilities, Emerging Attacks and Existing Defenses". Sai Manoj Pudukotai Dinakarrao, Ferdinand Brasser, Lucas Davi, Abhijitt Dhavlle, Tommaso Frassetto, **Setareh Rafatirad**, Ahmad-Reza Sadeghi, Hossein Sayadi, and Shaza Zeitouni, Houman Homayoun. In Proceedings of the 2018 International Conference on Compilers, Architecture, and Synthesis for Embedded Systems, CASES 2018. *length: 10 pages. Acceptance Rate: 25% .*
- (65) "Main-Memory Requirements of Big Data Applications on Commodity Server Platform". Hosein Mohammadi Makrani, **Setareh Rafatirad** and Houman Homayoun. 18th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, (CCGRID 2018). *length: 2 pages. Acceptance Rate: 32.4%.*
- (66) "Energy-aware and Machine Learning-based Resource Provisioning of In-Memory Analytics on Cloud". Hosein Mohammadi Makrani, Hossein Sayadi, Devang Motwani, Han Wang, **Setareh Rafatirad**, Houman Homayoun. ACM Symposium on Cloud Computing 2018 (SoCC 2018). *length: 1 page. Acceptance Rate: 20%.*
- (67) "Comprehensive Assessment of Run-Time Hardware-Supported Malware Detection Using General and Ensemble Learning". Hossein Sayadi, Sai Manoj, **Setareh Rafatirad**, Houman Homayoun. ACM International Conference on Computing Frontiers (CF 2018). *Acceptance Rate: 53%.*
- (68) "Architectural Considerations for FPGA Acceleration of Machine Learning Applications in MapReduce". Katayoun Neshatpour, Hosein Mohammadi Mokrani, Avesta Sasan, Hassan Ghasemzadeh, **Setareh Rafatirad**, Houman Homayoun. International

Symposium on Systems, Systems, Architectures, Modeling and Simulation. SAMOS XVIII 2018, Samos, Greece. *length: 8 pages.*

- (69) "A comprehensive Memory Analysis of Data Intensive Workloads on Server Class Architecture". Hosein Mohammadi Makrani, Hossein Sayadi, Sai Manoj Pudukotai Dinakarra, **Setareh Rafatirad**, Houman Homayoun. The International Symposium on Memory Systems. MEMSYS 2018. *length: 10 pages. Acceptance Rate: 17%.*
- (70) "Compressive Sensing on Storage Data: An Effective Solution to Alleviate I/O Bottleneck in Data Intensive Workloads". Hosein Mohammadi Makrani, Hossein Sayadi, Sai Manoj Pudukotai Dinakarra, **Setareh Rafatirad**, Houman Homayoun. The 29th Annual IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP 2018). *length: 6 pages.*
- (71) "Towards Runtime Hardware-Assisted Malware Detection: Challenges and Solutions", *Under Blind Review*, ACM CCS 2018. *length: 12 pages.*
- (72) "Advances and throwbacks in hardware-assisted security: special session". Ferdinand Brasser, Lucas Davi, Abhijit Dhavle, Tommaso Frassetto, Sai Manoj Pudukotai Dinakarra, **Setareh Rafatirad**, Ahmad-Reza Sadeghi, Avesta Sasan, Hossein Sayadi, Shaza Zeitouni, Houman Homayoun. International Conference on Compilers, Architectures and Synthesis for Embedded Systems. CASES 2018. *10 pages. Acceptance Rate: 25%.*
- (73) "Understanding the Role of Memory Subsystem on Performance and Energy-Efficiency of Hadoop Applications". Hosein Makrani, Shahab Tabatabaei, **Setareh Rafatirad** and Houman Homayoun. The Eighth International Green and Sustainable Computing Conference, (IGSC), 2017. *length: 6 pages. Acceptance Rate: 27%.*
- (74) "Characterizing Hadoop Applications on Microservers for Performance and Energy Efficiency Optimizations". Maria Malik, **Setareh Rafatirad**, Rajiv Joshi, Houman Homayoun. IEEE International Symposium on Performance Analysis of Systems and Software, (ISPASS) 2016. *length: 2 pages. Acceptance Rate: 30%.*
- (75) "Big Biomedical Image Processing Hardware Acceleration: A Case Study for K-means and Image Filtering". Katayoun Neshatpour, Arezou Koochi, Maria Malik, Avesta Sasan. **Setareh Rafatirad**, Houman Homayoun. IEEE International Symposium on Circuits and Systems, (ISCAS) 2016. *length: 4 pages. Acceptance Rate: 35%.*
- (76) "System and Architecture Level Characterization of Big Data Applications on Big and Little Core Server Architectures". Maria Malik, **Setareh Rafatirad**, Houman Homayoun. IEEE BigData Conference 2015. *length: 10 pages. Acceptance Rate: 18.7%.*
- (77) "Personalized Storytelling Using Photo-Sharing Applications". **Setareh Rafatirad**, Technical Report, TC-GMU-1114, 2014. *length: 10 pages.*
- (78) "Context Correlation Using Probabilistic Semantics". **Setareh Rafatirad**, Kathryn Laskey, Paulo Costa, 8th International Conference on Semantic Technologies for Intelligence, Defense, and Security (STDIS 2013), VA, November 2013. *length: 8 pages. Acceptance Rate: 43%.*
- (79) "Context-based Event Ontology Extension in Multimedia Applications". **Setareh Rafatirad**, Ramesh Jain, 7th IEEE International Conference on Semantic Computing, ICSC 2013. *length: 8 pages. Acceptance Rate: 30%.*

- (80) "Transforming Personal Artifacts into Probabilistic Narratives". **Setareh Rafatirad**, Kathryn Laskey, UAIW on Big Data Meets Complex Model, in conjunction with the 29th International Conference on Uncertainty in Artificial Intelligence, Bellevue, July 2013, WA. *length: 10 pages. Acceptance Rate: 25%*.
- (81) "Contextual Augmentation of Ontology for Multimedia Applications" (Doctoral dissertation). **Setareh Rafatirad**, Available from ProQuest Dissertation & Theses database. (Order No. 11904), 2012.
- (82) "Contextual Augmentation of Ontology for Recognizing Sub-Events". **Setareh Rafatirad** and Ramesh Jain. IEEE ICSC Workshop on Ontologies for System Integration and Standards in conjunction with The Fifth IEEE International Conference On Semantic Computing, Palo Alto, CA, September 2011. *length: 8 pages. Acceptance Rate: 30%*.
- (83) "Extractable Mobile Photo Tags". Ramesh Jain, Mingyan Gao, **Setareh Rafatirad**, Pinaki Sinha. International Workshop on Mobile Location-Based Service (MLBS 2011), Beijing, CA, September 2011. *length: 7 pages*.
- (84) "Event Composition Operators: ECO". **Setareh Rafatirad**, Amarnath Gupta and Ramesh Jain. ACM international Workshop on Events in Multimedia, Beijing, EiMM 2009. *length: 8 pages*.
- (85) "MEDIALIFE: from images to a life chronicle". Amarnath Gupta, **Setareh Rafatirad**, Mingyan Gao and Ramesh Jain. SIGMOD Conference, 2009. *length: 3 pages. Acceptance Rate: 27%*.
- (86) "Thread Scheduling Based on Low-Quality Instruction Prediction for Simultaneous Multithreaded processors". Houman Homayoun, Kin F.Li and **Setareh Rafatirad**. IEEE International NEWCAS Conference, Montreal, Canada, 2005. *length: 4 pages*.
- (87) "Functional Unit Power gating in Simultaneous Multithreaded Processors". Houman Homayoun, Kin F.Li and **Setareh Rafatirad**. IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, Victoria, Canada, IEEE-PACRIM, 2005. *length: 4 pages*.

RESEARCH PROJECTS

- **Applied Machine Learning**, applying machine learning and deep learning techniques on the following domains:
 - Energy efficiency and processor power and performance prediction for incoming unknown applications in cloud infrastructures
 - Malware Detection in IoT systems
 - Prevent reverse engineering on chips
- **Computer System Cybersecurity**
 - Detecting malware epidemic in IoT network
 - Side-channel processor architecture defense and attack
 - Secure information systems
- **Semi-Automated Ontology Acquisition**, Constructing Domain Ontology using Deep Machine Learning and NLP Techniques for the following domains:
 - Security and Malware Analytics: Malware Ontology

- Learning Analytics: Research Ontology
- **Knowledge Discovery from Photo Streams and Knowledge Graphs**, Constructing Domain-Event Ontologies through Image metadata analysis, using a combination of ML-techniques and Semantic Web technologies.
- **Personalized Photo Annotation** (Doctoral Thesis), Developing Event Ontologies and semi-automated methods, used to annotate geo-tagged personal photo streams.
- **Event Composition Operators**, Designing Event Operators to support creating hierarchical event-structures. The hierarchical structure is used to compute/infer/propagate multiple aspects of a super event from its direct and indirect subevents in event-based information systems.

RESEARCH HIGHLIGHTS AND PROPOSALS/GRANTS

- CO-PI on Machine Learning Assist for Malware Detection, funded by NSF EAGER,2021, Total: \$237K, PI portion (\$80K). *Awarded.*
- PI on Logical Vanishable Design to Prevent Reverse Engineering, funded by DARPA, 2017, Total: \$1.5M, PI portion (\$420K). *Awarded.*
- PI on Wiley Online Course Redesign Grant, Online Master's Program (MSAIT) for AIT582 and AIT624, George Mason University, 2018 and 2019, (\$16K). *Awarded.*
- PI on Teaching Award for Undergraduate Research Curriculum Development, OSCAR-GMU, 2016 and 2017, (\$10K). *Awarded.*
- Equipment Support, Nvidia Corporation, Tesla K40 GPU for DNN training, (\$11K). *Awarded.*

TEACHING EXPERIENCE

- **Instructor**, Machine Learning (ECS 171), Undergraduate Course, Computer Science Department, University of California Davis, Fall 2021.
Number of students:174, Number of responses: 91
Overall Teaching rating: 4.0/5
Overall for the course: 4.2/5
- **Instructor**, Machine Learning (ECS 171), Undergraduate Course, Computer Science Department, University of California Davis, Spring 2021.
Number of students:139, Number of responses: 83
Overall Teaching rating: 3.7/5
Overall for the course: 4.0/5
- **Instructor**, Algorithm Design and Analysis (ECS 122B), Undergraduate Course, Computer Science Department, University of California Davis, Spring 2021.
Number of students: 99, Number of responses: 75
Overall Teaching rating: 3.8/5
Overall for the course: 4.1/5
- **Instructor**, Machine Learning (ECS 171), Undergraduate Course, Computer Science Department, University of California Davis, Fall 2020.
Number of students: 145, Number of responses: 55
Overall Teaching rating: 3.9/5
Overall for the course: 4.0/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation

Undergraduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Fall 2019.

Number of students: 52, Number of responses: 24

Overall Teaching rating: 4.25/5, Department Mean: 3.97/5

Overall for the course: 4.21/5 , Department Mean: 3.81/5

- **Instructor**, Applications of Metadata in Complex Big Data Problems (AIT 582), Graduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Fall 2019.
 Number of students: 18, Number of responses: 8
 Overall Teaching rating: 3.9/5, Department Mean: 3.97/5
 Overall for the course: 3.9/5 , Department Mean: 3.81/5
- **Instructor**, Knowledge Mining from Big Data (AIT 624), Graduate Course, Department of Information Sciences and Technology, George Mason University, Spring 2019.
 Number of students: 8, Number of responses: 6
 Overall Teaching rating: 4.7/5, Department Mean: 4.35/5
 Overall for the course: 4.17/5 , Department Mean: 3.95/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation Undergraduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Spring 2019.
 Number of students: 54, Number of responses: 15
 Overall Teaching rating: 3.73/5, Department Mean: 3.95/5
 Overall for the course: 4.0/5 , Department Mean: 3.74/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation Undergraduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Fall 2018.
 Number of students: 55, Number of responses: 17
 Overall Teaching rating: 3.7/5, Department Mean: 3.84/5
 Overall for the course: 3.8/5 , Department Mean: 3.8/5
- **Instructor**, Knowledge Mining from Big Data (AIT 624), Graduate Course, Department of Information Sciences and Technology, George Mason University, Fall 2018.
 Number of students: 19, Number of responses: 16
 Overall Teaching rating: 4.25/5, Department Mean: 4.33/5
 Overall for the course: 4.2/5 , Department Mean: 3.97/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation Undergraduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Summer 2018.
 Number of students: 22, Number of responses: 11
 Overall Teaching rating: 4.20/5, Department Mean: 3.88/5
 Overall for the course: 4.10/5 , Department Mean: 3.67/5
- **Instructor**, Applications of Metadata in Complex Big Data Problems (AIT 582), Graduate Course, Department of Information Sciences and Technology, George Mason University, Spring 2018.
 Number of students: 28, Number of responses: 22
 Overall Teaching rating: 4.45/5, Department Mean: 4.37/5
 Overall for the course: 4.36/5 , Department Mean: 3.95/5

- **Instructor**, Program Design and Data Structures (AIT 306), Lab-based Undergraduate Concentration Course, Department of Information Sciences and Technology, George Mason University, Spring 2018.
 Number of students: 22, Number of responses: 19
 Overall Teaching rating: 4.0/5, Department Mean: 4.37/5
 Overall for the course: 3.94/5 , Department Mean: 3.95/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation Undergraduate Course, Online Distance Learning, Department of Information Sciences and Technology, George Mason University, Spring 2018.
 Number of students: 34, Number of responses: 8
 Overall Teaching rating: 4.0/5, Department Mean: 4.21/5
 Overall for the course: 3.8/5 , Department Mean: 3.98/5
- **Instructor**, Program Design and Data Structures (AIT 306), Lab-based Undergraduate Concentration Course, Department of Information Sciences and Technology, George Mason University, Fall 2017.
 Number of students: 18, Number of responses: 17
 Overall Teaching rating: 3.8/5, Department Mean: 4.23/5
 Overall for the course: 3.94/5 , Department Mean: 3.81/5
- **Instructor**, Knowledge Mining for Big Data Applications (AIT624), Graduate Course, Department of Information Sciences and Technology, George Mason University, Fall 2017.
 Number of students: 11, Number of responses: 7
 Overall Teaching rating: 4.3/5, Department Mean: 4.23/5
 Overall for the course: 3.75/5, Department Mean: 3.8/5
- **Instructor**, Applications of Metadata in Complex Big Data Problems (AIT 582), Graduate Course, Department of Information Sciences and Technology, George Mason University, Spring 2017.
 Number of students: 24, Number of responses: 16
 Overall Teaching rating: 4.5/5, Department Mean: 4.3/5
 Overall for the course: 4.0/5 , Department Mean: 3.78/5
- **Instructor**, Knowledge Mining for Big Data Applications (AIT624), Graduate Course, Department of Information Sciences and Technology, George Mason University, Fall 2016.
 Number of students: 6, Number of responses: 6
 Overall Teaching rating: 5.0/5, Department Mean: 4.2/5
 Overall for the course: 5.0/5, Department Mean: 3.77/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105), Foundation Undergraduate Course, Distance Learning, Department of Information Sciences and Technology, George Mason University, Summer 2016.
 Number of students: 12, Number of responses: 8
 Overall Teaching rating: 3.5/5, Department Mean: 3.6/5
 Overall for the course: 3.5/5 , Department Mean: 3.4/5
- **Instructor**, Hardware and Software Architecture Fundamentals (AIT 105),), Foundation Undergraduate Course, Distance Learning, Department of Information Sciences and

Technology, George Mason University, Fall 2016.
 Number of students: 30, Number of responses: 18
 Overall Teaching rating: 3.9/5, Department Mean: 4.0/5
 Overall for the course: 3.7/5 , Department Mean: 3.78/5

- **Instructor**, Program Design and Data Structures (AIT 306), Lab-based Undergraduate Concentration Course, Department of Information Sciences and Technology, George Mason University, Fall 2015.
 Number of students: 23, Number of responses: 14
 Overall Teaching rating: 4.3/5, Department Mean: 4.2/5
 Overall for the course: 3.71/5 , Department Mean: 3.72/5
- **Instructor**, Knowledge Mining for Big Data Applications (AIT624), Graduate Course, Department of Information Sciences and Technology, George Mason University, Fall 2015.
 Number of students: 6, Number of responses: 6
 Overall Teaching rating: 4.5/5, Department Mean: 4.2/5
 Overall for the course: 4.0/5, Department Mean: 3.72/5
- **Instructor**, Program Design and Data Structures (AIT 306), Lab-based Undergraduate Concentration Course, Department of Information Sciences and Technology, George Mason University, Spring 2015.
 Number of students: 21, Number of responses: 17
 Overall Teaching rating: 4.41/5, Department Mean: 4.27/5
 Overall for the course: 4.21/5 , Department Mean: 3.85/5
- **Instructor**, Multimedia & Web Design (AIT 213), Lab-based Undergraduate Foundation Course, Department of Information Sciences and Technology, George Mason University, Spring 2015.
 Number of students: 33, Number of responses: 20
 Overall Teaching rating: 4.16/5, Department Mean: 4.2/5
 Overall for the course: 3.7/5 , Department Mean: 3.85/4
- **Instructor**, Multimedia & Web Design (AIT 213), Lab-based Undergraduate Foundation Course, Department of Information Sciences and Technology, George Mason University, Fall 2014.
 Number of students: 21, Number of responses: 17
 Overall Teaching rating: 4.10/5, Department Mean: 4.27/5
 Overall for the course: 4.14/5 , Department Mean: 3.81/5
- **Instructor**, Program Design and Data Structures (AIT 306), Lab-based Undergraduate Concentration Course, Department of Information Sciences and Technology, George Mason University, Spring 2014.
 Number of students: 13, Number of responses: 8
 Overall Teaching rating: 4.13/5, Department Mean: 4.15/5
 Overall for the course: 3.6/5 , Department Mean: 3.71/5
- **Instructor**, Multimedia & Web Design (AIT 213), Lab-based Undergraduate Foundation Course, Department of Information Sciences and Technology, George Mason University, Spring 2014.
 Number of students: 28, Number of responses: 18
 Overall Teaching rating: 4.33/5, Department Mean: 4.15/5

Overall for the course: 4.11/5 , Department Mean: 3.71/5

- **Instructor**, Object Oriented IT Problem Solving (AIT 206), Lab-based Undergraduate Foundation Course, Department of Information Sciences and Technology, George Mason University, Spring 2014.
Number of students: 29, Number of responses: 20
Overall Teaching rating: 4.55/5, Department Mean: 4.15/5
Overall for the course: 3.9/5, Department Mean: 3.71/5
- **Instructor**, Object Oriented IT Problem Solving (AIT 206), Lab-based Undergraduate Foundation Course, Distance Learning, Department of Information Sciences and Technology, George Mason University, Summer 2013.
Number of students: 28, Number of responses: 18
Overall Teaching rating: 4.4/5, Department Mean: 4.02/5
Overall for the course: 3.0/5, Department Mean: 3.71/5
- **Teaching Assistant**, Entrepreneurship and Management, International Program, University of California Irvine, Summer 2010, 2011.
- **Teaching Assistant**, Discrete Mathematics, Computer Science Department, University of California Irvine, Fall 2010.
- **Teaching Assistant**, Concepts in Programming Languages, Computer Science Department, University of California Irvine, Winter 2010.
- **Teaching Assistant**, Network Systems, Computer Science Department, University of California Irvine, Winter 2010.
- **Teaching Assistant**, Projects in Database Management, Computer Science Department, University of California Irvine, Spring 2009.
- **Teaching Assistant**, Distributed Computer Systems, Computer Science Department, University of California Irvine, Winter 2009.
- **Teaching Assistant**, Principles of Data Management, Computer Science Department, University of California Irvine, Fall 2008.
- **Teaching Assistant**, Network Systems, Computer Science Department, University of California Irvine, Spring 2008.
- **Teaching Assistant**, Data Structures, Computer Science Department, University of California Irvine, Winter 2008.
- **Tutorial Instructor**, Introduction to Computer Networks, Software Engineering Department, Tehran Azad University of Technology, Fall 2004.
- **Tutorial Instructor**, Database Systems, Software Engineering Department, Tehran Azad University of Technology, Spring 2004.

UNIVERSITY/ DEPARTMENT SERVICE

- Served in the Professor Panel: AI/ML in Davis CS Club, UC Davis, 2022.

- Served in Lecturer recruitment committee, UC Davis , 2021-2022.
- Served as a faculty mentor and defined a (University Honors Program) UHP Capstone Project for undergraduate honor student, UC Davis, Winter 2021, Spring 2021.
- Served in AvenueE program and mentored an undergraduate student, Department of Computer Science, UC Davis, Summer 2021.
- Served as Undergraduate Research Advisor/Mentor for Special Study Course (ECS199 <https://icprai2022.sciencesconf.org> <https://icprai2022.sciencesconf.org>) and defined a Capstone Project for an undergraduate female student. UC Davis, 2020-present.
- Served as Graduate Research Advisor/Mentor for Research Course (ECS 299) and defined a project for two MS students. One topic on using gamification for equity in education, and another topic is using machine learning to create a recommendation system in the educational setting to address gender and race barriers.
- Served on Continuous Educational Improvement Committee, Department of Computer Science, UC Davis, Spring 2021-present.
- Served on Graduate Studies Fellowship Review Committee, Department of Computer Science, UC Davis, Summer 2022.
- Volunteered for Data Science Implementation Committee, Department of Computer Science, UC Davis, Summer 2021-present.
- Served in Comprehensive Exam Committee, Department of Computer Science, UC Davis, Sep 2021.
- Served in Qualifying Exam Committee, Department of Computer Science, UC Davis, 2020~2021.
- Served in Master's project committee, Department of Computer Science, UC Davis , May 2021, Summer 2022.
- ASSIP undergraduate student mentorship, 2017-2020.
- Undergraduate student academic advising, Department of IST, GMU, 2013-2019.
- Graduate student academic advising, Department of IST, GMU, 2015-2019.
- Member of curriculum revision of MS-AIT degree, Department of IST, GMU, 2015-2019.
- Member of graduate recruitment committee, Department of IST, GMU, 2016-2019.
- Served as a Member of PhD Committee: Department of IST, GMU 2016-2019 ; Computer Science Department, UC Davis 2022.
- Served as a Member of new faculty search committee, department of IST, GMU, 2015.
- Presentation judge, presenter and advisor, Louis Stokes Alliance for Minority Participation (LSAMP), 2015.
- Worked closely with the Office of Undergraduate Student Scholarship, Creative Activities, and Research (OSCAR), Mentored undergraduate students for research in self-paced learning, and data mining, 2015~2017. A sample evidence is posted on the university website: <http://studentsasscholarsgmu.blogspot.com/2016/03/ursp-student-highlights-milos-stevanovic.html>
- Course Coordinator of AIT 624 (Knowledge Mining for Big-Data Applications) in Cyber Human Systems and Cognitive Assistants concentrations in PhD and MS-AIT graduate curriculum, Department of IST, Responsible for course development, teaching, and coordination across all sections of the course taught by multiple instructors, GMU, 2015-2019.
- Course Coordinator of AIT 582 (Applications of Metadata in Complex Big-Data Problems) in Cyber Human Systems and Cognitive Assistants concentrations in PhD and MS-AIT graduate curriculum, Department of IST, Responsible for course development, teaching, and coordination across all sections of the course taught by multiple instructors, GMU, 2016-2019.
- Course Coordinator of face-to-face and online sections of AIT 105 (Hardware and Software Architecture Fundamentals) foundation course in AIT undergraduate curriculum, Department of IST, Responsible for course development, teaching, and coordination across all sections of the course taught by multiple instructors, GMU, 2015-2019.

- Course Coordinator of AIT306 (Algorithm and Data Structures in Java) database and programming concentration course in AIT undergraduate curriculum, Department of IST, Responsible for course development, teaching, and coordination across all sections of the course taught by multiple instructors, GMU, 2014-2019.
- Course Coordinator of AIT309 (Algorithm and Data Structures in Python) database and programming concentration course in AIT undergraduate curriculum, Department of IST, Responsible for course development, teaching, and coordination across all sections of the course taught by multiple instructors, GMU, 2014-2019.
- Active member of cyber human systems (CHS) graduate research cluster seminar, Department of IST, GMU, 2016-2019.

PROFESSIONAL SERVICE/OUTREACH/EDUCATIONAL ACTIVITIES

- **Research Proposal Reviewer**, NWO, the Dutch Research Council, June 2022.
- **Conference Committee Member**, International Conference on Intelligent Medicine and Image Processing, 2022-2023.
- **Book Author**, Machine Learning for Computer Scientists and Data Analysts, Springer, 2022.
- **Mentor**, Four students from my lab presented their work at the 32nd Annual UC Davis Undergraduate Research, Scholarship & Creative Activities Conference. Three research topics were covered: Trevor Carpenter presented our research on the topic of 2020 U.S. Twitter Analysis : A Knowledge Extraction of Events and Public Influence. Patrick Soong and Zhengtong Pan presented our research on the topic of Identifying Trends in Research and Technology using Natural Language Processing. Maksim Molchanov presented our research on the topic of Predicting Subject Relevance using N-gram Extraction. Summer 2021. <https://urc.ucdavis.edu/sites/g/files/dgvnsk3561/files/inline-files/2021%20URC%20CONF%20Abstract%20FINAL.pdf>
- **Reviewer**, International Conference on Computer Science and Application Engineering, CSAE, 2019.
- **Program Committee Member**, 29th edition of the ACM Great Lakes Symposium on VLSI, Machine learning and AI track, 2019.
- **Program Committee Member**, 28th edition of the ACM Great Lakes Symposium on VLSI, Machine learning and AI track, 2018.
- **Reviewer**, Computing Frontiers Conference, CF-17, 2017.
- **Program Committee Member**, International Conference on Semantic Technologies for Intelligence, Defense, and Security (STIDS), 2016.
- **Program Committee Member**, International Conference on Semantic Technologies for Intelligence, Defense, and Security (STIDS), 2015.
- **Program Committee Member**, International Conference on Semantic Technologies for Intelligence, Defense, and Security, STDIS, 2014.
- **Presenter**, DARPA workshop on using knowledge engineering in intelligence, Arlington, VA, 2013.
- **Presenter**, Poster Presentation, International Conference on Semantic Technologies for Intelligence, Defense, and Security, STDIS, 2013.
- **Reviewer**, International Conference on Semantic Technologies for Intelligence, Defense, and Security, STDIS, 2013.
- **Reviewer**, International Journal on Semantic Web and Information Systems, IJSWIS, 2011.
- **Reviewer**, Multimedia Tools and Applications Journal, MTAP, 2011.
- **Presenter**, Conference Presentation, Workshop of IEEE International Conference on Semantic Computing, Stanford, ICSC, 2011.
- **Member**, GWI (Graduate Women International), IEEE-WIE (Women in Engineering), IEEE, ACM.
- **Member**, Technical Committee on Semantic Computing (IEEE-TCSEM).

- **Presenter**, Poster Presentation, Grad Cohort Workshop, CRA-Woman, Boston, 2011.

PRESENTATIONS/INVITED TALKS

- **Invited Speaker**, AI/ML Research Panel with Davis CS Club- Professor Panel: AI/ML, , University of California Davis, 2022.
- **Presenter**, Conference Presentation, International Conference on Machine Learning and Applications, ICMLA 2019.
- **Presenter**, Conference Presentation, International Conference on Tools with Artificial Intelligence, Portland, Oregon, ICTAI 2019.
- **Presenter**, Poster Presentation, International Conference on Compilers, Architecture, and Synthesis for Embedded Systems, CASES ESWEEK 2019.
- **Guest Speaker**, AIT Undergraduate Junior Transition, Department of Information Sciences and Technology, George Mason University, 2019.
- **Guest Speaker**, AIT Undergraduate Junior Transition, Department of Information Sciences and Technology, George Mason University, 2018.
- **Guest Speaker**, AIT Undergraduate Junior Transition, Department of Information Sciences and Technology, George Mason University, 2017.
- **Guest Speaker**, AIT Undergraduate Junior Transition, Department of Information Sciences and Technology, George Mason University, 2016.
- **Guest Speaker**, AIT Undergraduate Junior Transition, Department of Information Sciences and Technology, George Mason University, 2015.
- **Guest Speaker**, Invited Talk, Virginia Tech. University, Department of Computer Science, Seminar on R-Ontology for Image Annotation, VA, 2014.
- **Presenter**, DARPA workshop on using knowledge engineering in intelligence, Arlington, VA, 2013.
- **Presenter**, Poster Presentation, International Conference on Semantic Technologies for Intelligence, Defense, and Security, STDIS, 2013.
- **Presenter**, Conference Presentation, Workshop of IEEE International Conference on Semantic Computing, Stanford, ICSC, 2011.
- **Presenter**, Poster Presentation, Grad Cohort Workshop, CRA-Woman, Boston, 2011.

STUDENTS

Alumni

PhD

1. Han Wang, (co-advised), Graduated Spring 2022.
2. Gaurav Kohle, (co-advised), Graduated Spring 2022.
3. Maryam Heidari, (co-advised), Graduated Fall 2021.
4. Hossein Sayadi, (co-advised), Graduated Summer 2019.
5. Maria Malik, (co-advised) – Graduated Spring 2018.

Master (with Thesis)

1. Felix Mikhalkov, Graduated Summer 2021.
Thesis: Malware Detection Through Packet Analysis.
2. Charan Bandi, Graduated Spring 2021.
Thesis: Storytelling and Data Analytics for Computer Security.
Current job: Software Engineer at NortonLifeLock.
3. Yilei Li, Graduated Spring 2019.
Thesis: Database Management for Android Mobile Application.
4. Tejasve Navnage, Graduated Fall 2019.
Thesis: Mobile Interface Design for Housing Analytics
5. Akhil Anto, Graduated Fall 2018.
Thesis: Learning Analytics on Google Scholar Data.

6. Saurabh S. Deshpande, Graduated Summer 2018.
Thesis: Android Development for Housing Analytics.
Current job: Software Engineer in Test - Android/IOS at The MathWorks.
7. Muktar Usman, Graduated Spring 2018.
Thesis: Server-side Mongo-Database for Android Mobile Application.
8. Onkar Randiv, Graduated Fall 2017.
Thesis: Malware Bivariate Classification.
Current job: USAID
9. Saad Azhar, Graduated Fall 2018.
Thesis: Data Analytics for cash flow and return on investment prediction.
10. Pranav Mahesh, Graduated Fall 2017.
Thesis: Developing interactive heat map for housing market data.
11. Prinkle Lopes, Graduated Fall 2017.
Thesis: Data Analytics for rent/price prediction.
12. Pragadheeswaran Somasundaram Vasudevan, Graduated Fall 2017.
Thesis: Image dimensionality reduction using Wordnet Ontology.

Bachelor/Highschool

1. Xiyu Zhang, Undergraduate Student, Developing Gender Classification Models from Textual Data.
2. Wooyoung Chung, Undergraduate Student, Developing Gender Classification Models from Image Data.
3. Yibo Yan, Undergraduate Student, Developing Prediction Models.
4. Zhengtong Pan, Undergraduate Student, Ontology-driven Scientific Literature Classification using Clustering and Self-Supervised Learning. Graduated Spring 2021.
5. Patrick Soong, Undergraduate Student, Ontology-driven Scientific Literature Classification using Clustering and Self-Supervised Learning. Graduated Spring 2021.
6. Trevor Carpenter, Undergraduate Student, ML-Assisted Knowledge Extraction of Events and Public Reception, Graduated Summer 2021.
7. Maksim Molchanov, Retraining of word2vec model for text classification. Graduated Summer 2021.
8. Arnav Wadehra, High School-ASSIP Program-Graduated Summer 2019.
9. Milos Stevanovic, Undergraduate Student., Graduated Spring 2015.
10. Angela Nie, Undergraduate Student, Graduated Spring 2015.
11. Khanh Nguyen, Undergraduate Student, Graduated Spring 2013.

Current PhD Students

- Ruijie Fang,(co-adviser), Spring 2024 (expected), Deep Reinforcement Learning for Optimal Critical Care Pain Management.
- Ruoyu Zhang, (co-advisor), Spring 2024 (expected), Wearable Ecosystem for Domain Specific Health Monitoring - Towards Chronic Pain Mental Health Assessment.
- Sanket Shukla, (co-advisor), Summer 2022 (expected), Constructing a Malware Ontology based on Hardware Performance Counter and Image Content Analysis.
- Abhijitt Dhavlle, (co-adviser), Winter 2023 (expected), Machine Learning Algorithm for Malware Stealthy Detection.

Current MS Students

- Brendan C. Baird, Fall 2021, Machine Learning based approach to remove gender and race barriers in education.
- Naveen Kanuri, Spring 2022, Gamification to promote race and gender equity in education.

Current Undergrad Students

- Namya Radesh, Undergraduate Student, Education Equity, Spring 2022.

Setareh Rafatirad

- Eden Tadesse, AvenueE Student, Racial and Gender Equity in Data Science and Computer Science, Spring 2022.
- Stephen Wong, Undergraduate Student, Fake News Identification, Spring 2022.
- Iftekhar Munrat, AvenueE Student, Python-based Data Collection Platform, Summer 2021.
- Zunaira Ahmad, Undergraduate Student, Gender and Racial Equity Research, Summer 2021.