Sumit Kumar Jha

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Citizenship: United States

BIOGRAPHICAL DATA

Name Sumit Kumar Jha

Florida International University	*Miami, FL*
Eminent Scholar Chaired Professor of Computer Science	*present*

Carnegie Mellon University	*Pittsburgh, PA*
Ph.D., Computer Science	*August 2004 - May 2010*
M.S., Computer Science	*August 2004 - May 2009*

Indian Institute of Technology Kharagpur	*Kharagpur, India*
B.Tech. (Honors), Computer Science and Engineering	*August 2000 - May 2004*

Other Employment

Professor, Florida International University, Miami, FL	*2023 - present*
Visiting Faculty, Air Force Research Laboratory,	*2013, 2014, 2018, 2020*
Professor, University of Texas at San Antonio, TX	*2020 - 2023*
Associate/Assistant Professor, University of Central Florida, Orlando, FL,	*2010 - 2020*
Microsoft Research, Bangalore, India	*Summer 2006*
Internship, General Motors R&D, Warren, MI	*Summer 2005*
Internship, INRIA, Nancy, France	*Summer 2003*

RESEARCH OVERVIEW

I have published a total of **20 journal** and **91 conference papers** in peer-reviewed venues. Over the last 5 years, this includes **17** publications on the prestigious **Computer Science Rankings** list at conferences such as DAC, ICCAD, AAAI, IJCAI and NeurIPS. I have secured **25 projects** from the National Science Foundation (NSF), Defense Advanced Research Projects Agency (DARPA), Department of Energy (DOE), Air Force Research Laboratory (AFRL), Air Force Office of Scientific Research (AFOSR), the National Nuclear Security Administration (NNSA) and others. The grants total over **$19.6M** with my share as lead PI over **$17.1M**. My research interests lie within the following broad areas:

Research Interests:
- Artificial Intelligence and Machine Learning
- Emerging Computing Paradigms
- Cybersecurity and AI
- Formal Methods and Logic

SELECTED HONORS, RECOGNITIONS, AND AWARDS

Best Paper Awards and Nominations

- **Best Paper Award Nomination**, Military Communications Conference (MILCOM), 2023.
- **Best Paper Award Nomination**, International Conference on Computer-Aided Design (ICCAD), 2022.
- **Best Paper Award Nomination**, Design Automation and Test in Europe (DATE), 2021.
- **Best Paper Award Nomination**, Workshop on Artificial Intelligence Safety (AISafety) at International Joint Conference on Artificial Intelligence (IJCAI) 2019
- **Best Paper Award**, The 10th International Symposium on Foundations & Practice of Security (FPS), 2018.
- **Best Paper Award**, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS), 2014.
- **Best Paper Award**, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS), 2011.

Other Selected Awards

- Eminent Scholar Chair Professor from Florida International University, Miami, 2024.
- University-level Nomination for the "UTSA Research Achievement Award", 2023.
- **Air Force Young Investigator Program Award**, 2016.
- IEEE Orlando Section Outstanding Engineering Educator Award, 2013.
- Elected Full Member of the Sigma Xi Honor Society, 2012.

Fellowships

- US Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research, 2020.
- Air Force Research Laboratory Visiting Faculty Research Program, 2018.
- UCF Predictive Analytics Innovation Fellow, 2017.
- US Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research, 2014.
- Air Force Research Laboratory Visiting Faculty Research Program, 2013.
- Carnegie Mellon School of Computer Science Graduate Fellowship, 2004-2010.

Selected Student Awards

- Sven Thijssen, University of Central Florida ORC Fellowship, 2020
- Alvaro Velasquez, "University of Central Florida 30 under 30", 2019.
- Alvaro Velasquez, "National Science Foundation Graduate Research Fellowship", 2015.
- Alvaro Velasquez, "Outstanding Thesis Award", 2014.
- Emily Rebecca Sassano, "National Science Foundation Graduate Research Fellowship", 2012.

PEER-REVIEWED PUBLICATIONS

Selected Publications in the Last 5 Years:

[S26] Ismail Alkhouri, Sumit Kumar Jha, Andre Beckus, George Atia, Susmit Jha, Rickard Ewetz, Alvaro Velasquez: Exploring The Predictive Capabilities of AlphaFold Using Adversarial Protein Sequences. In **IEEE Transactions on Artificial Intelligence (IEEE TAI)**, 2024.

[S25] Sven Thijssen, Muhammed Rashed, Sumit Kumar Jha, Rickard Ewetz: PATH: Evaluation of Boolean Logic using Path-based In-Memory Computing Systems. In **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (IEEE TCAD)**, 2024.

[S24] Chase Walker, Sumit Kumar Jha, Kenny Chen, Rickard Ewetz: Integrated Decision Gradients: Compute Your Attributions Where the Model Makes Its Decision. In **Thirty-Eighth AAAI Conference on Artificial Intelligence (AAAI)**, 2024.

[S23] Sven Thijssen, Muhammad Rashed, Md. Rubel Ahmed, Suraj Singireddy, Sumit Kumar Jha, Rickard Ewetz: Equivalence Checking for Flow-Based Computing using Iterative SAT Solving. In **International Conference on Computer-Aided Design (ICCAD)**, 2024.

[S22] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, and Alvaro Velasquez: On the Design of Novel Attention Mechanism for Enhanced Efficiency of Transformers. In **Design Automation Conference (DAC)**, 2024.

[S21] Sven Thijssen, Muhammad Rashed, Sumit Kumar Jha, Rickard Ewetz: Synthesis of Compact Flow-based Computing Circuits from Boolean Expressions. In **Design Automation Conference (DAC)**, 2024.

[S20] Muhammad Rashed, Sven Thijssen, Dominic Simon, Sumit Kumar Jha, Rickard Ewetz: Execution Sequence Optimization for Processing In-Memory using Parallel Data Preparation. In **Design Automation Conference (DAC)**, 2024.

[S19] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Fan Yao, Rickard Ewetz: STREAM: Toward READ-Based In-Memory Computing for Streaming-Based Processing for Data-Intensive Applications. In **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (IEEE TCAD)**, 2023.

[S18] Sven Thijssen, Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: UpTime: Towards Flow-based In-Memory Computing with High Fault-Tolerance. In **Design Automation Conference (DAC)**, 2023.

[S17] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: Automated Synthesis for In-Memory Computing. In **International Conference on Computer-Aided Design (ICCAD)**, 2023.

[S16] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Hao Zheng, Rickard Ewetz: Path-Based Processing using In-Memory Systolic Arrays for Accelerating Data-Intensive Applications. In **International Conference on Computer-Aided Design (ICCAD)**, 2023.

[S15] Sven Thijssen, Muhammad Rashed, Sumit Kumar Jha, Rickard Ewetz: Verification of Flow-Based Computing Systems Using Bounded Model Checking. In **International Conference on Computer-Aided Design (ICCAD)**, 2023.

[S14] Necati Uysal, Baogang Zhang, Sumit Kumar Jha, Rickard Ewetz: XMAP: Programming Memristor Crossbars for Analog Matrix-Vector Multiplication: Toward High Precision Using Representable Matrices. In **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (IEEE TCAD)**, 2022.

[S13] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: COMPACT: Flow-Based Computing on Nanoscale Crossbars With Minimal Semiperimeter and Maximum Dimension. In **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (IEEE TCAD)**, 2022.

[S12] Sumit Kumar Jha, Rickard Ewetz, Alvaro Velasquez, Arvind Ramanathan, Susmit Jha: Shaping Noise for Robust Attributions in Neural Stochastic Differential Equations. In **AAAI Conference on Artificial Intelligence (AAAI)**, 2022.

[S11] Muhammad Rashedul Haq Rashed, Amro Awad, Sumit Kumar Jha, Rickard Ewetz: Towards Resilient Analog In-Memory Deep Learning via Data Layout Re-Organization. In **Design Automation Conference (DAC)**, 2022.

[S10] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: PATH: Evaluation of Boolean Logic Using Path-Based In-Memory Computing. In **Design Automation Conference (DAC)**, 2022.

[S9] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Fan Yao, Rickard Ewetz: Hybrid Digital-Digital In-Memory Computing. In **Design, Automation Test in Europe Conference (DATE)**, 2022.

[S8] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Logic Synthesis for Digital In-Memory Computing. In **International Conference on Computer-Aided Design (ICCAD)**, 2022. Best Paper Award Nomination.

[S7] Sumit Kumar Jha, Alvaro Velasquez, Rickard Ewetz, Laura Pullum, Susmit Jha: ExplainIt!: A Tool for Computing Robust Attributions of DNNs. In **International Joint Conference on Artificial Intelligence (IJCAI)**, 2022.

[S6] Sarah Rafiq, Jubin Hazra, Maximilian Liehr, Karsten Beckmann, Minhaz Abedin, Jodh S. Pannu, Sumit Kumar Jha, Nathaniel C. Cady: Investigation of ReRAM Variability on Flow-Based Edge Detection Computing Using HfO2-Based ReRAM Arrays. In **IEEE Transactions on Circuits and Systems I: Regular Papers (IEEE TCAS-I)**, 2021.

[S5] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: COMPACT: Flow-Based Computing on Nanoscale Crossbars with Minimal Semiperimeter. In **Design, Automation & Test in Europe Conference (DATE)**, 2021. Best Paper Award Nomination.

[S4] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Hybrid Analog-Digital In-Memory Computing. In **International Conference on Computer-Aided Design (ICCAD)**, 2021.

[S3] Sumit Kumar Jha, Rickard Ewetz, Alvaro Velasquez, Susmit Jha: On Smoother Attributions Using Neural Stochastic Differential Equations. In **International Joint Conference on Artificial Intelligence (IJCAI)**, 2021.

[S2] Jodh S. Pannu, Sunny Raj, Steven Lawrence Fernandes, Dwaipayan Chakraborty, Sarah Rafiq, Nathaniel C. Cady, Sumit Kumar Jha: Design and Fabrication of Flow-Based Edge Detection Memristor Crossbar Circuits. In **IEEE Transactions on Circuits and Systems II: Express Briefs (IEEE TCAS-II)**, 2020.

[S1] Susmit Jha, Sunny Raj, Steven Lawrence Fernandes, Sumit Kumar Jha, Somesh Jha, Brian Jalaian, Gunjan Verma, Ananthram Swami: Attribution-Based Confidence Metric For Deep Neural Networks. In **Conference on Neural Information Processing Systems (NeurIPS)**, 2019.

Refereed Journal Papers:

[J20] Ismail Alkhouri, Sumit Kumar Jha, Andre Beckus, George Atia, Susmit Jha, Rickard Ewetz, Alvaro Velasquez, "Exploring The Predictive Capabilities of AlphaFold Using Adversarial Protein Sequences", in IEEE Trans. on Artificial Intelligence (TAI) (2024). CiteScore: 5.94

[J19] Sven Thijssen, Muhammed Rashed, Sumit Kumar Jha, Rickard Ewetz, "PATH: Evaluation of Boolean Logic using Path-based In-Memory Computing Systems", in IEEE Trans. on Computer-Aided Design of Integrated Circuits and Systems (TCAD) (2024). Impact Factor: 2.7, CiteScore: 5.1

[J18] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Fan Yao, Rickard Ewetz: "STREAM: Toward READ-Based In-Memory Computing for Streaming-Based Processing for Data-Intensive Applications". IEEE Trans. Comput. Aided Des. Integr. Circuits Syst. (TCAD) 42(11): 3854-3867 (2023) Impact Factor: 2.7, CiteScore: 5.1

[J17] Andy Michel, Sumit Kumar Jha, Rickard Ewetz: "A Survey on the Vulnerability of Deep Neural Networks Against Adversarial Attacks". Prog. Artif. Intell. 11(2): 131-141 (2022) Impact Factor: 2.0, CiteScore: 8.4

[J16] Necati Uysal, Baogang Zhang, Sumit Kumar Jha, Rickard Ewetz: "XMAP: Programming Memristor Crossbars for Analog Matrix-Vector Multiplication: Toward High Precision Using Representable Matrices". IEEE Trans. Comput. Aided Des. Integr. Circuits Syst. (TCAD) 41(6): 1827-1841 (2022) Impact Factor: 2.7, CiteScore: 5.1

[J15] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: "COMPACT: Flow-Based Computing on Nanoscale Crossbars With Minimal Semiperimeter and Maximum Dimension". IEEE Trans. Comput. Aided Des. Integr. Circuits Syst. (TCAD) 41(11): 4600-4611 (2022) Impact Factor: 2.7, CiteScore: 5.1

[J14] Sumit Kumar Jha, Ion I. Mandoiu, Sanguthevar Rajasekaran, Pavel Skums, Alexander Zelikovsky: "Special Issue: 10th International Computational Advances in Bio and Medical Sciences (ICCABS 2020)". J. Comput. Biol. (JCB) 28(11): 1033-1034 (2021) Impact Factor: 1.5, CiteScore: 3.6

[J13] Sarah Rafiq, Jubin Hazra, Maximilian Liehr, Karsten Beckmann, Minhaz Abedin, Jodh S. Pannu, Sumit Kumar Jha, Nathaniel C. Cady: "Investigation of ReRAM Variability on Flow-Based Edge Detection Computing Using HfO2-Based ReRAM Arrays". IEEE Trans. Circuits Syst. I Regul. Pap. (TCAS-I) 68(7): 2900-2910 (2021) Impact Factor: 3.69, CiteScore: 6.0

[J12] Sunny Raj, Jodh S. Pannu, Steven Lawrence Fernandes, Arvind Ramanathan, Laura L. Pullum, Sumit Kumar Jha: "Attacking NIST Biometric Image Software Using Nonlinear Optimization". Pattern Recognition Letters (PRL) 131: 79-84 (2020) Impact Factor: 3.9, CiteScore: 12.4

[J11] Jodh S. Pannu, Sunny Raj, Steven Lawrence Fernandes, Dwaipayan Chakraborty, Sarah Rafiq, Nathaniel C. Cady, Sumit Kumar Jha: "Design and Fabrication of Flow-Based Edge Detection Memristor Crossbar Circuits". IEEE Trans. Circuits Syst. II Express Briefs (TCAS-II) 67-II(5): 961-965 (2020) Impact Factor: 3.69, CiteScore: 6.0

[J10] Dwaipayan Chakraborty, Sunny Raj, Steven Lawrence Fernandes, Sumit Kumar Jha: "Input-Aware Flow-Based Computing on Memristor Crossbars With Applications to Edge Detection". IEEE J. Emerg. Sel. Topics Circuits Syst. (JETCAS) 9(3): 580-591 (2019) Impact Factor: 4.6, CiteScore: 10.5

[J9] Amad Ul Hassen, Dwaipayan Chakraborty, Sumit Kumar Jha: "Free Binary Decision Diagram-Based Synthesis of Compact Crossbars for In-Memory Computing". IEEE Trans. Circuits Syst. II Express Briefs (TCAS-II) 65-II(5): 622-626 (2018) Impact Factor: 3.69, CiteScore: 6.0

[J8] Sunny Raj, Faraz Hussain, Zubir Husein, Neslisah Torosdagli, Damla Turgut, Narsingh Deo, Sumanta N. Pattanaik, Chung-Che Jeff Chang, Sumit Kumar Jha: "A Theorem Proving Approach for Automatically Synthesizing Visualizations of Flow Cytometry Data". BMC Bioinform. 18(8): 245:1-245:11 (2017) Impact Factor: 2.9, CiteScore: 5.9

[J7] Faraz Hussain, Christopher J. Langmead, Qi Mi, Joyeeta Dutta-Moscato, Yoram Vodovotz, Sumit Kumar Jha: "Automated Parameter Estimation for Biological Models Using Bayesian Statistical Model Checking". BMC Bioinform. 16(S17): S8 (2015) Impact Factor: 2.9, CiteScore: 5.9

[J6] Faraz Hussain, Sumit Kumar Jha, Susmit Jha, Christopher James Langmead: "Parameter Discovery in Stochastic Biological Models Using Simulated Annealing and Statistical Model Checking". Int. J. Bioinform. Res. Appl. 10(4/5): 519-539 (2014) Impact Factor: 0.6

[J5] Arup Kumar Ghosh, Faraz Hussain, Susmit Jha, Christopher James Langmead, Sumit Kumar Jha: "Discovering Rare Behaviors in Stochastic Differential Equations Using Decision Procedures: Applications to a Minimal Cell Cycle Model". Int. J. Bioinform. Res. Appl. 10(4/5): 540-558 (2014) Impact Factor: 0.6

[J4] Sumit Kumar Jha, Christopher James Langmead: "Exploring Behaviors of Stochastic Differential Equation Models of Biological Systems Using Change of Measures". BMC Bioinform. 13(S-5): S8 (2012) Impact Factor: 2.9, CiteScore: 5.9

[J3] Sumit Kumar Jha, Raj Gautam Dutta, Christopher James Langmead, Susmit Jha, Emily Sassano: "Synthesis of Insulin Pump Controllers from Safety Specifications Using Bayesian Model Validation". Int. J. Bioinform. Res. Appl. 8(3/4): 263-285 (2012) Impact Factor: 0.6

[J2] Sumit Kumar Jha, Christopher James Langmead: "Synthesis and Infeasibility Analysis for Stochastic Models of Biochemical Systems Using Statistical Model Checking and Abstraction Refinement". Theoretical Computer Science (TCS) 412(21): 2162-2187 (2011) Impact Factor: 0.9, CiteScore: 2.6

[J1] Christopher James Langmead, Sumit Kumar Jha: "Symbolic Approaches for Finding Control Strategies in Boolean Networks". J. Bioinform. Comput. Biol. (JBCB) 7(2): 323-338 (2009) Impact Factor: 1.5, CiteScore: 3.6

Book Chapters and Edited Volumes:

[B2] Sumit Kumar Jha, Ion I. Mandoiu, Sanguthevar Rajasekaran, Pavel Skums, Alex Zelikovsky: Computational Advances in Bio and Medical Sciences - 10th International Conference, ICCABS 2020, December 10-12, 2020. Lecture Notes in Computer Science, Vol. 12686, Springer, 2021. ISBN 978-3-030-79289-3.

[B1] Edmund Clarke, Ansgar Fehnker, Sumit Kumar Jha, Helmut Veith: Temporal Logic Model Checking. In: Handbook of Networked and Embedded Control Systems, Springer Nature, pp. 539-558, 2005.

Refereed Publication in Conference Proceedings:

[C91] Chase Walker, Sumit Kumar Jha, Kenny Chen, Rickard Ewetz: Integrated Decision Gradients: Compute Your Attributions Where the Model Makes Its Decision. Thirty-Eighth AAAI Conference on Artificial Intelligence (AAAI), 2024. Acceptance Rate: 23.75%

[C90] Sven Thijssen, Muhammad Rashed, Md. Rubel Ahmed, Suraj Singireddy, Sumit Kumar Jha, and Rickard Ewetz: Equivalence Checking for Flow-Based Computing using Iterative SAT Solving. International Conference on Computer-Aided Design (ICCAD), 2024. Acceptance Rate: 23.9%

[C89] Sven Thijssen, Muhammad Rashed, Sumit Kumar Jha, and Rickard Ewetz: Synthesis of Compact Flow-based Computing Circuits from Boolean Expressions. Design Automation Conference (DAC), 2024. Acceptance Rate: 26.4%

[C88] Muhammad Rashed, Sven Thijssen, Dominic Simon, Sumit Kumar Jha, and Rickard Ewetz: Execution Sequence Optimization for Processing In-Memory using Parallel Data Preparation. Design Automation Conference (DAC), 2024. Acceptance Rate: 26.4%

[C87] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, and Alvaro Velasquez: On the Design of Novel Attention Mechanism for Enhanced Efficiency of Transformers. Design Automation Conference (DAC), 2024. Acceptance Rate: 26.4%

[C86] Sumit Kumar Jha, Susmit Jha, Muhammad Rashed, Rickard Ewetz, and Alvaro Velasquez: Automated Synthesis of Hardware Designs using Symbolic Feedback and Large Language Models. In 2024 IEEE National Aerospace and Electronics Conference (NAECON), 2024.

[C85] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, and Alvaro Velasquez: Solving Mystery Planning Problems Using Category Theory, Functors, and Large Language Models. In 3rd International Conference on Assured Autonomy (ICAA), 2024. Acceptance Rate: 64%

[C84] William English, Dominic Simon, Md. Rubel Ahmed, Sumit Kumar Jha, and Rickard Ewetz: Neuro-Symbolic Program Synthesis for Multi-Hop Natural Language Navigation. In 3rd International Conference on Assured Autonomy (ICAA), 2024. Acceptance Rate: 64%

[C83] Md. Shafiul Hossain, Chase Walker, Sumit Kumar Jha, and Rickard Ewetz: Out-of-Distribution Detection for Contrastive Models using Angular Distance Measures. In 23rd International Conference on Machine Learning and Applications (ICMLA), 2024. Acceptance Rate: 24.3%

[C82] William English, Dominic Simon, Sumit Kumar Jha, and Rickard Ewetz: NSP: A Neuro-Symbolic Natural Language Navigational Planner. In 23rd International Conference on Machine Learning and Applications (ICMLA), 2024. Acceptance Rate: 24.3%

[C81] Sven Thijssen, Muhammad Rashed, Sumit Kumar Jha, and Rickard Ewetz: Towards Area-Efficient Path-Based In-Memory Computing using Graph Isomorphisms. In 29th IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC), 2024. Acceptance Rate: 28.8%

[C80] Sven Thijssen, Muhammad Rashed, Sumit Kumar Jha, and Rickard Ewetz: READ-based In-Memory Computing using Sentential Decision Diagrams. In 29th IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC), 2024. Acceptance Rate: 28.8%

[C79] Kavita Kumari, Murtuza Jadliwala, Sumit Kumar Jha, and Anindya Maiti: Towards a Game-theoretic Understanding of Explanation-based Membership Inference Attacks. In 15th Conference on Game Theory and AI for Security (GameSec), 2024. Historical Acceptance Rate: 50%

[C78] Sumit Kumar Jha, Susmit Jha, Muhammad Rashedul Haq Rashed, Rickard Ewetz, Alvaro Velasquez: Automated Synthesis of Hardware Designs using Symbolic Feedback and Grammar-Constrained Decoding in Large Language Models. IEEE National Aerospace and Electronics Conference (NAECON) 2024. Acceptance Rate: N/A

[C77] Laura Pullum, Sumit Kumar Jha, Rickard Ewetz: Intelligence, Surveillance and Reconnaissance Task Specifications in Temporal Logics. IEEE Military Communications Conference (MILCOM 2024). Historical Acceptance Rate: 49.2%

[C76] Sven Thijssen, Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: UpTime: Towards Flow-based In-Memory Computing with High Fault-Tolerance. Design Automation Conference (DAC) 2023: 1-6. Acceptance Rate: 22.7%

[C75] Susmit Jha, Sumit Kumar Jha, Patrick Lincoln, Nathaniel D. Bastian, Alvaro Velasquez, Sandeep Neema: Dehallucinating Large Language Models Using Formal Methods Guided Iterative Prompting. International Conference on Assured Autonomy (ICAA) 2023: 149-152. Acceptance Rate: 59.2%

[C74] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: Automated Synthesis for In-Memory Computing. International Conference on Computer-Aided Design (ICCAD) 2023: 1-9. Acceptance Rate: 23.9%

[C73] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Hao Zheng, Rickard Ewetz: Path-Based Processing using In-Memory Systolic Arrays for Accelerating Data-Intensive Applications. International Conference on Computer-Aided Design (ICCAD) 2023: 1-9. Acceptance Rate: 23.9%

[C72] Sven Thijssen, Suraj Singireddy, Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Verification of Flow-Based Computing Systems Using Bounded Model Checking. International Conference on Computer-Aided Design (ICCAD) 2023: 1-9 Acceptance Rate: 23.9%

[C71] Suraj Singireddy, Muhammad Rashedul Haq Rashed, Sven Thijssen, Rickard Ewetz, Sumit Kumar Jha: Input-Aware Flow-Based In-Memory Computing. IEEE International Conference on Computer Design (ICCD) 2023: 523-530. Acceptance Rate: 28.5%

[C70] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, Alvaro Velasquez: Neural SDEs for Robust and Explainable Analysis of Electromagnetic Unintended Radiated Emissions. IEEE Military Communications Conference (MILCOM) 2023: 655-660. Historical Acceptance Rate: 49.2%

[C69] Chase Walker, Dominic Simon, Sumit Kumar Jha, Rickard Ewetz: Adversarial Pixel and Patch Detection Using Attribution Analysis. IEEE Military Communications Conference (MILCOM) 2023: 710-715. Historical Acceptance Rate: 49.2%

[C68] Sumit Kumar Jha, Susmit Jha, Patrick Lincoln, Nathaniel D. Bastian, Alvaro Velasquez, Rickard Ewetz, Sandeep Neema: Counterexample Guided Inductive Synthesis Using Large Language Models and Satisfiability Solving. IEEE Military Communications Conference (MILCOM) 2023: 944-949. Historical Acceptance Rate: 49.2%

[C67] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Discovering the in-Memory Kernels of 3D Dot-Product Engines. Asia and South Pacific Design Automation Conference (ASP-DAC) 2023: 240-245. Acceptance Rate: 31%

[C66] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: FLOW-3D: Flow-Based Computing on 3D Nanoscale Crossbars with Minimal Semiperimeter. Asia and South Pacific Design Automation Conference (ASP-DAC) 2023: 775-780. Acceptance Rate: 31%

[C65] Sumit Kumar Jha, Rickard Ewetz, Alvaro Velasquez, Arvind Ramanathan, Susmit Jha: Shaping Noise for Robust Attributions in Neural Stochastic Differential Equations. Association for the Advancement of Artificial Intelligence Conference on Artificial Intelligence (AAAI) 2022: 9567-9574. Acceptance Rate: 19.6%

[C64] Suraj Singireddy, Rickard Ewetz, Sumit Kumar Jha: Deep Learning Toolkit-Driven Equivalence Checking of Flow-Based Computing Systems. IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS) 2022: 50-53. Acceptance Rate: 39.89%

[C63] Muhammad Rashedul Haq Rashed, Sven Thijssen, Sumit Kumar Jha, Fan Yao, Rickard Ewetz: STREAM: Towards READ-based In-Memory Computing for Streaming based Data Processing. Asia and South Pacific Design Automation Conference (ASP-DAC) 2022: 690-695. Acceptance Rate: 30.6%

[C62] Muhammad Rashedul Haq Rashed, Amro Awad, Sumit Kumar Jha, Rickard Ewetz: Towards resilient analog in-memory deep learning via data layout re-organization. Design Automation Conference (DAC) 2022: 859-864. Acceptance Rate: 22.7%

[C61] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: PATH: evaluation of boolean logic using path-based in-memory computing. Design Automation Conference (DAC) 2022: 1129-1134. Acceptance Rate: 22.7%

[C60] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Fan Yao, Rickard Ewetz: Hybrid Digital-Digital In-Memory Computing. Design, Automation & Test in Europe (DATE) 2022: 1177-1180. Historical Acceptance Rate: 35%.

[C59] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Logic Synthesis for Digital In-Memory Computing. International Conference on Computer-Aided Design (ICCAD) 2022: 90:1-90:9 Acceptance Rate: 23.9%

[C58] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: Equivalence Checking for Flow-Based Computing. IEEE International Conference on Computer Design (ICCD) 2022: 656-663. Acceptance Rate: 30.2%

[C57] Sumit Kumar Jha, Alvaro Velasquez, Rickard Ewetz, Laura Pullum, Susmit Jha: ExplainIt!: A Tool for Computing Robust Attributions of DNNs. International Joint Conference on Artificial Intelligence (IJCAI) 2022: 5916-5919. Acceptance Rate: 15%

[C56] Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: COMPACT: Flow-Based Computing on Nanoscale Crossbars with Minimal Semiperimeter. Design, Automation & Test in Europe (DATE) 2021: 232-237. Acceptance Rate: 24%

[C55] Shravya Channamadhavuni, Sven Thijssen, Sumit Kumar Jha, Rickard Ewetz: Accelerating AI Applications using Analog In-Memory Computing: Challenges and Opportunities. Great Lakes Symposium on VLSI (GLSVLSI) 2021: 379-384. Acceptance Rate: 27%

[C54] Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Rickard Ewetz: Hybrid Analog-Digital In-Memory Computing. International Conference on Computer-Aided Design (ICCAD) 2021: 1-9. Acceptance Rate: 23.5%

[C53] Sumit Kumar Jha, Rickard Ewetz, Alvaro Velasquez, Susmit Jha: On Smoother Attributions using Neural Stochastic Differential Equations. International Joint Conference on Artificial Intelligence (IJCAI) 2021: 522-528. Acceptance Rate: 13.9%

[C52] Alvaro Velasquez, Sumit Kumar Jha, Rickard Ewetz, Susmit Jha: Automated Synthesis of Quantum Circuits Using Symbolic Abstractions and Decision Procedures. IEEE International Symposium on Circuits and Systems (ISCAS) 2021: 1-5   Historical Acceptance Rate: 53.3%

[C51] Dwaipayan Chakraborty, Andy Michel, Jodh S. Pannu, Sunny Raj, Suresh Chandra Satapathy, Steven Lawrence Fernandes, Sumit Kumar Jha: Automated Synthesis of Memristor Crossbars Using Deep Neural Networks. Frontiers in Intelligent Computing: Theory and Applications (FICTA) (2) 2020: 345-357

[C50] Necati Uysal, Baogang Zhang, Sumit Kumar Jha, Rickard Ewetz: DP-MAP: Towards Resistive Dot-Product Engines with Improved Precision. International Conference on Computer-Aided Design (ICCAD) 2020: 151:1-151:9. Acceptance Rate: 27%

[C49] Steven Lawrence Fernandes, Sunny Raj, Eddy Ortiz, Iustina Vintila, Sumit Kumar Jha: Directed Adversarial Attacks on Fingerprints using Attributions. International Joint Conference on Biometrics (IJCB) 2019: 1-8. Historical Acceptance Rate: 35.3%.

[C48] Susmit Jha, Sunny Raj, Steven Lawrence Fernandes, Sumit Kumar Jha, Somesh Jha, Brian Jalaian, Gunjan Verma, Ananthram Swami: Attribution-Based Confidence Metric For Deep Neural Networks. Conference on Neural Information Processing Systems (NeurIPS) 2019: 11826-11837. Acceptance Rate: 21.2%

[C47] Arfeen Khalid, Sumit Kumar Jha: Calibration of Rule-Based Stochastic Biochemical Models using Statistical Model Checking. IEEE International Conference on Bioinformatics and Biomedicine (BIBM) 2018: 179-184

[C46] Alvaro Velasquez, Sumit Kumar Jha: In-memory computing using paths-based logic and heterogeneous components. Design, Automation & Test in Europe (DATE) 2018: 1512-1515

[C45] Susmit Jha, Sunny Raj, Sumit Kumar Jha, Natarajan Shankar: Duality-Based Nested Controller Synthesis from STL Specifications for Stochastic Linear Systems. Formal Modeling and Analysis of Timed Systems (FORMATS) 2018: 235-251

[C44] Arfeen Khalid, Sumit Kumar Jha: Parameter Estimation of Stochastic Biochemical Models using Multiple Hypothesis Testing. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2018: 1

[C43] Alvaro Velasquez, Sumit Kumar Jha: 3D Crosspoint Memory as a Parallel Architecture for Computing Network Reachability. IEEE International Conference on Computer Design (ICCD) 2018: 171-178

[C42] Amad Ul Hassen, Salman Anwar Khokhar, Haseeb Aslam Butt, Sumit Kumar Jha: Free BDD based CAD of Compact Memristor Crossbars for in-Memory Computing. IEEE/ACM International Symposium on Nanoscale Architectures (NANOARCH) 2018: 107-113

[C41] Alvaro Velasquez, Sumit Kumar Jha: Brief Announcement: Parallel Transitive Closure Within 3D Crosspoint Memory. Symposium on Parallelism in Algorithms and Architectures (SPAA) 2018: 95-98

[C40] Dwaipayan Chakraborty, Sumit Kumar Jha: Automated synthesis of compact crossbars for sneak-path based in-memory computing. Design, Automation & Test in Europe (DATE) 2017: 770-775

[C39] Sunny Raj, Sumit Kumar Jha, Arvind Ramanathan, Laura L. Pullum: Testing autonomous cyber-physical systems using fuzzing features from convolutional neural networks: work-in-progress. International Conference on Embedded Software (EMSOFT) Companion 2017: 1:1-1:2

[C38] Sunny Raj, Laura Pullum, Arvind Ramanathan, Sumit Kumar Jha: SATYA : Defending Against Adversarial Attacks Using Statistical Hypothesis Testing. Foundations and Practice of Security (FPS) 2017: 277-292

[C37] Arvind Ramanathan, Laura L. Pullum, Zubir Husein, Sunny Raj, Neslisah Torosdagli, Sumanta N. Pattanaik, Sumit Kumar Jha: Adversarial attacks on computer vision algorithms using natural perturbations. International Conference on Contemporary Computing (IC3) 2017: 1-6

[C36] Sumit Kumar Jha, Arfeen Khalid: Calibration of stochastic biochemical models against behavioral temporal logic specifications. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2017: 1

[C35] Dwaipayan Chakraborty, Sunny Raj, Julio Cesar Gutierrez, Troyle Thomas, Sumit Kumar Jha: In-Memory Execution of Compute Kernels Using Flow-Based Memristive Crossbar Computing. IEEE International Conference on Rebooting Computing (ICRC) 2017: 1-6

[C34] Dwaipayan Chakraborty, Sumit Kumar Jha: Design of compact memristive in-memory computing systems using model counting. IEEE International Symposium on Circuits and Systems (ISCAS) 2017: 1-4

[C33] Alvaro Velasquez, Sumit Kumar Jha: Computation of Boolean matrix chain products in 3D ReRAM. IEEE International Symposium on Circuits and Systems (ISCAS) 2017: 1-4

[C32] Dwaipayan Chakraborty, Sunny Raj, Sumit Kumar Jha: A compact 8-bit adder design using in-memory memristive computing: Towards solving the Feynman Grand Prize challenge. IEEE/ACM International Symposium on Nanoscale Architectures (NANOARCH) 2017: 67-72

[C31] Arvind Ramanathan, Laura L. Pullum, Faraz Hussain, Dwaipayan Chakrabarty, Sumit Kumar Jha: Integrating symbolic and statistical methods for testing intelligent systems: Applications to machine learning and computer vision. Design, Automation & Test in Europe (DATE) 2016: 786-791

[C30] Amad Ul Hassen, Brigadesh Chandrasekar, Sumit Kumar Jha: Automated synthesis of stochastic computational elements using decision procedures. IEEE International Symposium on Circuits and Systems (ISCAS) 2016: 1678-1681

[C29] Zahiruddin Alamgir, Karsten Beckmann, Nathaniel C. Cady, Alvaro Velasquez, Sumit Kumar Jha: Flow-based computing on nanoscale crossbars: Design and implementation of full adders. IEEE International Symposium on Circuits and Systems (ISCAS) 2016: 1870-1873

[C28] Alvaro Velasquez, Sumit Kumar Jha: Parallel boolean matrix multiplication in linear time using rectifying memristors. IEEE International Symposium on Circuits and Systems (ISCAS) 2016: 1874-1877

[C27] Alvaro Velasquez, Piotr Wojciechowski, Kumar Subramani, Steven L. Drager, Sumit Kumar Jha: The cardinality-constrained paths problem: Multicast data routing in heterogeneous communication networks. IEEE Network Computing and Applications (NCA) 2016: 126-130

[C26] Faraz Hussain, Zubir Husein, Neslisah Torosdagli, Narsingh Deo, Sumanta N. Pattanaik, Chung-Che Chang, Sumit Kumar Jha: SANJAY: Automatically synthesizing visualizations of flow cytometry data using decision procedures. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2015: 1

[C25] Alvaro Velasquez, Sumit Kumar Jha: Fault-tolerant in-memory crossbar computing using quantified constraint solving. IEEE International Conference on Computer Design (ICCD) 2015: 101-108

[C24] Alvaro Velasquez, Sumit Kumar Jha: Automated synthesis of crossbars for nanoscale computing using formal methods. IEEE/ACM International Symposium on Nanoscale Architectures (NANOARCH) 2015: 130-136

[C23] Ratul Saha, Javier Esparza, Sumit Kumar Jha, Madhavan Mukund, P. S. Thiagarajan: Distributed Markov Chains. Verification, Model Checking, and Abstract Interpretation (VMCAI) 2015: 117-134

[C22] Faraz Hussain, Christopher James Langmead, Qi Mi, Joyeeta Dutta-Moscato, Yoram Vodovotz, Sumit Kumar Jha: Parameter discovery for stochastic computational models in systems biology using Bayesian model checking. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2014: 1-2

[C21] Faraz Hussain, Arvind Ramanathan, Laura L. Pullum, Sumit Kumar Jha: EpiSpec: A formal specification language for parameterized agent-based models against epidemiological ground truth. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2014: 1-6

[C20] Faraz Hussain, Alvaro Velasquez, Emily Sassano, Sumit Kumar Jha: Putting humpty-dumpty together: Mining causal mechanistic biochemical models from big data. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2014: 1-6

[C19] Alvaro Velasquez, Sumit Kumar Jha: Parallel computing using memristive crossbar networks: Nullifying the processor-memory bottlenecKumar International Conference on Design & Technology of Integrated Systems in Nanoscale Era (IDT) 2014: 147-152

[C18] Aditya Reddy Kolli, Frank Sommerhage, Peter Molnar, Jonathan E. Hood, Jerry J. Jenkins, Faraz Hussain, Arup Kumar Ghosh, Sumit Kumar Jha, James J. Hickman: A computational metabolic model of the NG108-15 cell for high content drug screening with electrophysiological readout. ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB) 2012: 530-532

[C17] Arup Kumar Ghosh, Faraz Hussain, Sumit Kumar Jha, Christopher James Langmead, Susmit Jha: Decision procedure based discovery of rare behaviors in Stochastic Differential Equation models of biological systems. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2012: 1-6

[C16] Faraz Hussain, Raj Gautam Dutta, Sumit Kumar Jha, Christopher James Langmead, Susmit Jha: Parameter discovery for stochastic biological models against temporal behavioral specifications using an SPRT based Metric for simulated annealing. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2012: 1-6

[C15] Sumit Kumar Jha, Christopher James Langmead, Swarup Mohalik, S. Ramesh: When to stop verification?: Statistical trade-off between expected loss and simulation cost. Design, Automation & Test in Europe (DATE) 2011: 1309-1314

[C14] Sumit Kumar Jha, Christopher James Langmead: Exploring behaviors of SDE models of biological systems using change of measures. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2011: 111-116

[C13] Sumit Kumar Jha, Christopher James Langmead: Poster: Synthesis of biochemical models. International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2011: 248

[C12] Sumit Kumar Jha, Edmund M. Clarke, Christopher James Langmead, Axel Legay, André Platzer, Paolo Zuliani: A Bayesian Approach to Model Checking Biological Systems. International Conference on Computational Methods in Systems Biology (CMSB) 2009: 218-234

[C11] Christopher James Langmead, Sumit Kumar Jha: Symbolic Approaches for Finding Control Strategies in Boolean Networks. Asia-Pacific Bioinformatics Conference (APBC) 2008: 307-320

[C10] Edmund M. Clarke, James R. Faeder, Christopher James Langmead, Leonard A. Harris, Sumit Kumar Jha, Axel Legay: Statistical Model Checking in BioLab: Applications to the Automated Analysis of T-Cell Receptor Signaling Pathway. International Conference on Computational Methods in Systems Biology (CMSB) 2008: 231-250

[C9] Susmit Jha, Sumit Kumar Jha: Randomization Based Probabilistic Approach to Detect Trojan Circuits. IEEE International Symposium on High Assurance Systems Engineering (HASE) 2008: 117-124

[C8] Sumit Kumar Jha, Susmit Jha: Random Relaxation Abstractions for Bounded Reachability Analysis of Linear Hybrid Automata: Distributed Randomized Abstractions in Model Checking. IEEE International Symposium on High Assurance Systems Engineering (HASE) 2008: 147-153

[C7] Goran Frehse, Sumit Kumar Jha, Bruce H. Krogh: A Counterexample-Guided Approach to Parameter Synthesis for Linear Hybrid Automata. Hybrid Systems: Computation and Control (HSCC) 2008: 187-200

[C6] Sumit Kumar Jha: d-IRA: A Distributed Reachability Algorithm for Analysis of Linear Hybrid Automata. Hybrid Systems: Computation and Control (HSCC) 2008: 618-621

[C5] Sumit Kumar Jha, Bruce H. Krogh, James E. Weimer, Edmund M. Clarke: Reachability for Linear Hybrid Automata Using Iterative Relaxation Abstraction. Hybrid Systems: Computation and Control (HSCC) 2007: 287-300

[C4] Krishna Kumar Mehra, Sriram Kumar Rajamani, A. Prasad Sistla, Sumit Kumar Jha: Verification of Object Relational Maps. Software Engineering and Formal Methods (SEFM) 2007: 283-292

[C3] Christopher James Langmead, Sumit Kumar Jha: Predicting Protein Folding Kinetics Via Temporal Logic Model Checking. Algorithms in Bioinformatics (WABI) 2007: 252-264

[C2] Shengbing Jiang, Thomas E. Fuhrman, Sumit Kumar Jha: Model Checking For Fault Explanation. IEEE Conference on Decision and Control (CDC) 2006: 404-409

[C1] Ansgar Fehnker, Edmund M. Clarke, Sumit Kumar Jha, Bruce H. Krogh: Refining Abstractions of Hybrid Systems Using Counterexample Fragments. Hybrid Systems: Computation and Control (HSCC) 2005: 242-257

Publications in Prestigious Peer-Reviewed Workshop Proceedings:

[W13] E. Bethany, M. Bethany, J.A. Nolazco Flores, S.K. Jha, and P. Najafirad: Jailbreaking Large Language Models with Symbolic Mathematics. In Workshop on Socially Responsible Language Modelling Research (SoLaR) at Neural Information Processing Systems (NeurIPS), 2024.

[W12] A. Nunez, N.T. Islam, S.K. Jha, and P. Najafirad: AutoSafeCoder: A Multi-Agent Framework for Securing LLM Code Generation through Static Analysis and Fuzz Testing. In The First Workshop on Safe & Trustworthy Agents (SATA) at Neural Information Processing Systems (NeurIPS), 2024.

[W11] Jason Brogan, Oliver Kotevska, Alberto Torres, Michael Adams, and Sumit Kumar Jha: Improving Robustness of Spectrogram Classifiers with Neural Stochastic Differential Equations. In 2024 IEEE International Workshop on Machine Learning for Signal Processing (MLSP), 2024.

[W10] M. Shifat Hossain, Md Rubel Ahmed, Laura Pullum, Sumit Kumar Jha, Rickard Ewetz: Neuro-Symbolic Representations of 3D Scenes using Universal Scene Description Language. Neuro-Symbolic Learning and Reasoning in the era of Large Language Models workshop at the AAAI Conference on Artificial Intelligence 2023.

[W9] Sumit Kumar Jha, Rickard Ewetz, Antonio Velasquez, Susmit Jha: Responsible Reasoning with Large Language Models and the Impact of Proper Nouns. Workshop on Trustworthy and Socially Responsible Machine Learning, NeurIPS 2022.

[W8] Steven Lawrence Fernandes, Senka Krivic, Poonam Sharma, Sumit Kumar Jha: Attribution-Based Confidence Metric for Detection of Adversarial Attacks on Breast Histopathological Images. European Conference on Computer Vision (ECCV) Workshops (1) 2022: 501-516

[W7] Arvind Ramanathan, Sumit Kumar Jha: Adversarial Attacks against AI-driven Experimental Peptide Design Workflows. Workshop on eXtreme Scale Programming Models and Middleware (XLOOP) at International Conference for High Performance Computing, Networking, Storage, and Analysis (SC) 2021: 30-35

[W6] Steven Lawrence Fernandes, Sunny Raj, Rickard Ewetz, Jodh Singh Pannu, Sumit Kumar Jha, Eddy Ortiz, Iustina Vintila, Margaret Salter: Detecting Deepfake Videos using Attribution-Based Confidence Metric. Conference on Computer Vision and Pattern Recognition (CVPR) Workshops 2020: 1250-1259

[W5] Steven Lawrence Fernandes, Sumit Kumar Jha: Adversarial Attack on Deepfake Detection Using RL Based Texture Patches. European Conference on Computer Vision (ECCV) Workshops (1) 2020: 220-235

[W4] Steven Lawrence Fernandes, Sunny Raj, Eddy Ortiz, Iustina Vintila, Margaret Salter, Gordana Urosevic, Sumit Kumar Jha: Predicting Heart Rate Variations of Deepfake Videos using Neural ODE. International Conference on Computer Vision (ICCV) Workshops 2019: 1721-1729

[W3] Mesut Ozdag, Sunny Raj, Steven Lawrence Fernandes, Alvaro Velasquez, Laura Pullum, Sumit Kumar Jha: On the Susceptibility of Deep Neural Networks to Natural Perturbations. Workshop on Artificial Intelligence Safety (AISafety) at International Joint Conference on Artificial Intelligence (IJCAI) 2019

[W2] Sunny Raj, Sumit Kumar Jha: Predicting Success in Undergraduate Parallel Programming via Probabilistic Causality Analysis. IEEE International Parallel and Distributed Processing Symposium (IPDPS) Workshops 2018: 347-352

[W1] Xuandong Li, Sumit Kumar Jha, Lei Bu: Towards an Efficient Path-Oriented Tool for Bounded Reachability Analysis of Linear Hybrid Systems using Linear Programming. In: Ofer Strichman, Armin Biere (eds.), Proceedings of the Fourth International Workshop on Bounded Model Checking, BMC@FLoC 2006, Seattle, WA, USA, August 15, 2006. Electronic Notes in Theoretical Computer Science, Vol. 174, No. 3, pp. 57-70, Elsevier, 2006. DOI: 10.1016/J.ENTCS.2006.12.023.

Preprints:

[P15] Emily Bethany, Max Bethany, Jose A. N. Flores, Sumit Kumar Jha, Payam Najafirad: Jailbreaking Large Language Models with Symbolic Mathematics. arXiv preprint arXiv:2409.11445, 2024.

[P14] Alexander Nunez, Nazmul T. Islam, Sumit Kumar Jha, Payam Najafirad: AutoSafeCoder: A Multi-Agent Framework for Securing LLM Code Generation through Static Analysis and Fuzz Testing. arXiv preprint arXiv:2409.10737, 2024.

[P13] James Brogan, Olivera Kotevska, Alejandro Torres, Sumit Kumar Jha, Mark Adams: Improving Robustness of Spectrogram Classifiers with Neural Stochastic Differential Equations. arXiv preprint arXiv:2409.01532, 2024.

[P12] Farhana Rahat, Md. Saiful Islam Hossain, Md. Rakibul Ahmed, Sumit Kumar Jha, Rickard Ewetz: Data Augmentation for Image Classification using Generative AI. arXiv preprint arXiv:2409.00547, 2024.

[P11] Kavita Kumari, Murtuza Jadliwala, Sumit Kumar Jha, Anindya Maiti: Towards a Game-theoretic Understanding of Explanation-based Membership Inference Attacks. CoRR abs/2404.07139, 2024.

[P10] Ismail Alkhouri, Sumit Kumar Jha, Andre Beckus, George K. Atia, Alvaro Velasquez, Rickard Ewetz, Arvind Ramanathan, Susmit Jha: On the Robustness of AlphaFold: A COVID-19 Case Study. CoRR abs/2301.04093, 2023.

[P9] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, Alvaro Velasquez: Neural Stochastic Differential Equations for Robust and Explainable Analysis of Electromagnetic Unintended Radiated Emissions. CoRR abs/2309.15386, 2023.

[P8] Sumit Kumar Jha, Susmit Jha, Patrick Lincoln, Nathaniel D. Bastian, Alvaro Velasquez, Rickard Ewetz, Sandeep Neema: Neuro Symbolic Reasoning for Planning: Counterexample Guided Inductive Synthesis using Large Language Models and Satisfiability Solving. CoRR abs/2309.16436, 2023.

[P7] Suraj Singireddy, Andre Beckus, George K. Atia, Sumit Kumar Jha, Alvaro Velasquez: Automaton Distillation: Neuro-Symbolic Transfer Learning for Deep Reinforcement Learning. CoRR abs/2310.19137, 2023.

[P6] Kazi Abu Zubair, Sumit Kumar Jha, David Mohaisen, Clayton Hughes, Amro Awad: FAT-PIM: Low-Cost Error Detection for Processing-In-Memory. CoRR abs/2207.12231, 2022.

[P5] Max Zvyagin, Thomas S. Brettin, Arvind Ramanathan, Sumit Kumar Jha: CrossedWires: A Dataset of Syntactically Equivalent but Semantically Disparate Deep Learning Models. CoRR abs/2108.12768, 2021.

[P4] Sumit Kumar Jha, Arvind Ramanathan, Rickard Ewetz, Alvaro Velasquez, Susmit Jha: Protein Folding Neural Networks Are Not Robust. CoRR abs/2109.04460, 2021.

[P3] Jason W. Bentley, Daniel Gibney, Gary Hoppenworth, Sumit Kumar Jha: Quantifying Membership Inference Vulnerability via Generalization Gap and Other Model Metrics. CoRR abs/2009.05669, 2020.

[P2] Sumit Kumar Jha, Susmit Jha, Rickard Ewetz, Sunny Raj, Alvaro Velasquez, Laura L. Pullum, Ananthram Swami: An Extension of Fano's Inequality for Characterizing Model Susceptibility to Membership Inference Attacks. CoRR abs/2009.08097, 2020.

[P1] Susmit Jha, Sunny Raj, Steven Lawrence Fernandes, Sumit Kumar Jha, Somesh Jha, Gunjan Verma, Brian Jalaian, Ananthram Swami: Attribution-driven Causal Analysis for Detection of Adversarial Examples. CoRR abs/1903.05821, 2019.

Peer-Reviewed Undergraduate Publications and Poster Presentations:

[U5] Sathish Kumar, Swaroop Damodaran, Sumit K. Jha, Arvind Ramanathan: Image-Based Goal Conditioned Reinforcement Learning with a Gflownet Planner and Transformer Policy. Presented at the SIAM Conference on Mathematics of Data Science (MDS24), Atlanta, Georgia, U.S., October 21-25, 2024.

[U4] Sunny Raj, Sumit K. Jha, Pranav Sinha, Arvind Ramanathan: Low-Cost Robotic Arms and Large Language Models for Autonomous Scientific Laboratories. Presented at the SIAM Conference on Mathematics of Data Science (MDS24), Atlanta, Georgia, U.S., October 21-25, 2024.

[U3] Sreenivasan Ramasamy Ramamurthy, Sumit K. Jha, Arvind Ramanathan: Mitigating Hallucinations in Large Language Models Using Meta-Cognition. Presented at the SIAM Conference on Mathematics of Data Science (MDS24), Atlanta, Georgia, U.S., October 21-25, 2024.

[U2] Gabriel Hubner Ferreira Lucchesi: Explainability in AI for Robustness in Autonomous Control Systems. National Conference on Undergraduate Research (NCUR) 2024.

[U1] Dwaipayan Chakraborty, Sunny Raj, Julio Cesar Gutierrez, Troyle Thomas, Sumit Kumar Jha: In-Memory Execution of Compute Kernels Using Flow-Based Memristive Crossbar Computing. IEEE International Conference on Rebooting Computing (ICRC) 2017: 1-6

GRANTS AND CONTRACTS

I have secured **25 projects** from the National Science Foundation (NSF), Defense Advanced Research Projects Agency (DARPA), Department of Energy (DOE), Air Force Research Laboratory (AFRL), Air Force Office of Scientific Research (AFOSR), the National Nuclear Security Administration (NNSA), and others. The grants total over **$19.6M** with my share as lead PI over **$17.1M**.

Funded Grants and Contracts:

[G25] Project Title: Mobilizing the Emerging Diverse AI Talent (MEDAL) through Design and Automated Control of Autonomous Scientific Laboratories
Funding Agency: DOE
Award: $5.1M
Role: **Lead PI** of the overall project across six institutions, including Argonne National Laboratory
Dates: October 2023 - September 2026

[G24] Project Title: AI-CRAFT: Artificial Intelligence Cybersecurity Readiness and Future Training
Funding Agency: DARPA
Award: $4.5M
Role: **Lead PI** of the overall project across three institutions
Dates: September 2023 - August 2025

[G22] Project Title: Collaborative Research: FMitF: Track I: Synthesis and Verification of In-Memory Computing Systems using Formal Methods
Funding Agency: NSF
Award: $750,000 (My share is $250,000)
Role: Principal Investigator at FIU – credit 100% of $250,000
Dates: September 2023 - September 2026

[G21] Project Title: Collaborative Research: SaTC-EDU: Integrating Cybersecurity in Computing Curricula: A Software PBL-Driven Approach with Focus on Identity and Access Management
Funding Agency: NSF
Award: $100,001.00 (Transferred after award)
Role: Principal Investigator – credit 33%
Dates: September 2023 - September 2026

[G20] Project Title: INSTA-AI
       Funding Agency: DARPA/University of Central Florida
       Award: $2.7M (My share is $990,797)
       Role: Principal Investigator on the FIU proposal – credit 100% of $990,797
       Dates: January 2023 - January 2027
[G19] Project Title: Bayesian Reasoning and Adaptive Integration of Neuro-Symbolic Code Assurance in Large
       Language Models (BRAIN-Code)
       Funding Agency: AFRL/OSU
       Award: $200,000
       Role: Principal Investigator – credit 100%
       Dates: September 2024 - September 2026
[G18] Project Title: RL-CAP: Explaining RL using Logical Rules, Constraints, Automata, and Program Synthesis
       Funding Agency: AFRL/OSU
       Award: $140,000
       Role: Principal Investigator – credit 100%
       Dates: May 2023 - April 2025
[G17] Project Title: PolySAT: Solving for Polyglots using Satisfiability Solving and Automated Abstractions
       Funding Agency: AFRL/OSU
       Award: $80,000
       Role: Principal Investigator – credit 100%
       Dates: May 2023 - April 2025
[G16] Project Title: Robust Explanations using Diverse Adversarially Trained Ensembles, Multi-Modal Contrastive
       Learning, and Attribution-based Confidence Metrics
       Funding Agency: Department of Energy/University of Central Florida
       Award: $400,000 (My share is $160,000)
       Role: Principal Investigator on the FIU proposal – credit 100% of $160,000
       Dates: September 2022 - August 2024
[G15] Project Title: Explainable High-Confidence Models for Dynamical Systems
       Funding Agency: DOE National Nuclear Security Administration/Oak Ridge National Laboratory
       Award: $200,000
       Role: Principal Investigator – credit 100%
       Dates: October 2021 - September 2023
[G14] Project Title: Leveraging Big Data to Achieve Equity
       Funding Agency: United Negro College Fund (UNCF) Special Programs Corp
       Award: $22,500
       Role: Co-PI – credit 33%
       Dates: July 2021 - June 2022
[G13] Project Title: Predictive Maintenance using Neural ODEs, Deep Koopman and Attribution Analysis PANDA
       Funding Agency: ONR Office of Naval Research Science of AI Program
       Award: $260,000
       Role: Principal Investigator – credit 100%
       Dates: April 2021 - September 2023
[G12] Project Title: Attributions and Learning Dynamics based Adaptive Defense and Robustness Metric (ALARM)
       Funding Agency: DARPA GARD Program
       Award: $983,694 (Awarded to me as its sole PI)
       Role: Principal Investigator – credit 100%
       Dates: February 2020 - February 2024
       Status: Transferred to Dr. Rickard Ewetz at UCF and a sub-award to UTSA and then FIU negotiated.
[G11] Project Title: FHTCC: Automated Design of Adversarial Fingerprints and Robust Fingerprint Detection
       Algorithms: Extensions to Facial Recognition and Verifying Identity via Automated Synthesis of Patterns of
       Life Queries
       Funding Agency: Florida High-Tech Corridor Council
       Award: $51,747.00
       Role: Principal Investigator – credit 100%
       Dates: November 2019 - December 2020
[G10] Project Title: Automated Design of Adversarial Fingerprints and Robust Fingerprint Detection Algorithms:
       Extensions to Facial Recognition and Verifying Identity via Automated Synthesis of Patterns of Life Queries
       Funding Agency: Royal Bank of Canada

Award: $155,249.00
Role: Principal Investigator – credit 100%
Dates: January 2019 - January 2021

[G9] Project Title: Undisclosed
Funding Agency: Undisclosed
Award: Undisclosed
Role: Principal Investigator – credit 100%
Dates: January 2019 - December 2020

[G8] Project Title: Collaborative Cybersecurity Research at Florida SUS Institutions
Funding Agency: Florida Center for Cybersecurity (CyberFlorida)
Award: $74,838
Role: Lead PI across two institutions – credit 100%
Dates: January 2018 - December 2019

[G7] Project Title: SPX: Collaborative Research: Automated Synthesis of Extreme-Scale Computing Systems Using Non-Volatile Memory
Funding Agency: National Science Foundation, Scalable Parallelism in the Extreme
Award: $1 million (My share is $500,000)
Role: **Lead PI** across two institutions – credit 100% of $500,000
Dates: October 2018 - September 2022

[G6] Project Title: FASTER: Formal methods-based computer-Aided Synthesis of STochastic inExact in-memoRy computing systems
Funding Agency: Air Force Office of Scientific Research
Award: $360,000
Role: Principal Investigator – credit 100%
Dates: June 2016 - May 2019

[G5] Project Title: Automated Design of Adversarial Fingerprints and Robust Fingerprint Detection Algorithms
Funding Agency: Royal Bank of Canada
Award: $49,657.00
Role: Principal Investigator – credit 100%
Dates: March 2018 - May 2019

[G4] Project Title: Design and Validation of Cyber-security Applications for Mobile Banking Platforms
Funding Agency: Royal Bank of Canada
Award: $50,067.00
Role: Principal Investigator – credit 100%
Dates: February 2015 - February 2016

[G3] Project Title: Algorithmic Validation of Clustering, Classification, and Anomaly Detection Algorithms using Information Theoretic Measures and Bayesian Statistics
Funding Agency: UT-Battelle, LLC – Oak Ridge National Laboratory (ORNL)
Award: $99,994.00
Role: Principal Investigator – credit 100%
Dates: January 2015 - November 2015

[G2] Project Title: XPS: EXPL: FP: Collaborative Research: Formal methods based algorithmic synthesis of more-than-Moore nano-crossbars for extreme-scale computing
Funding Agency: National Science Foundation, Exploiting Parallelism and Scalability (XPS) Program
Award: $315,931 (My share is $231,035.00)
Role: **Lead PI** across two institutions – credit 100% of $231,035.00
Dates: August 2014 - July 2016

[G1] Project Title: SHF: Small: Exascale Formal Verification Algorithms for Parameterized Probabilistic Models of Complex Computational Systems
Funding Agency: National Science Foundation
Award: $503,627.00
Role: Principal Investigator – credit 100%
Dates: August 2014 - July 2017

TEACHING

List of Educational Contributions

- Served as the **founding co-director** of the Financial Technologies (FinTech) program at the University of Central Florida (2019-2020).
- Create a new 6000-level class on Trust in AI and taught it to about 50 students (2020-2024).
- Created 6000-level independent study on "Automated Synthesis" and "Satisfiability Solving" (2017-2020).
- Reviewed and suggested edits to chapters of the book on "Introduction to Computer Science" under the **Open Educational Resources** initiative OpenStax.org. (2024)

Postdoctoral researchers:

[P5] Prof. Priyanka Kumar	*2023*
Employment: Assistant Professor, University of Texas Permian Basin, Texas	
[P4] Prof. Lipismita Panigrahi	*2023*
Employment: University of Texas at San Antonio, Texas	
[P3] Prof. Sumit Tetarave	*2022*
Employment: Assistant Professor, Kalinga Institute of Industrial Technology, India	
[P2] Prof. Sunny Raj	*2020*
Employment: Assistant Professor, Oakland University, Michigan	
[P1] Prof. Steven Fernandes	*2020*
Employment: Assistant Professor, Creighton University, Nebraska	

Graduated Ph.D. students:

[D11] Dr. Jodh Singh Pannu (administratively co-advised by Dr. Sushil Prasad)	*2024*
Employment: Undisclosed	
[D10] Dr. Suraj Singireddy (administratively co-advised by Dr. Sushil Prasad)	*2023*
Employment: Machine Learning Scientist at PayPal	
[D9] Prof. Mesut Ozdag,	*2020*
Employment: Assistant Professor at the University of Central Florida, Orlando	
[D8] Prof. Sunny Raj,	*2020*
Employment: Assistant Professor at Oakland University, MI	
[D7] Dr. James Pyrich,	*2019*
Employment: CEO	
[D6] Dr. Arfeen Khalid,	*2019*
Employment: Senior Machine Learning Researcher, Comcast	
[D5] Prof. Dwaipayan Chakraborty,	*2019*
Employment: Oak Ridge National Laboratory and Assistant Professor at Rowan University	
[D4] Dr. Amad Ul Hassen,	*2019*
Employment: Research management at SUPARCO, Pakistan	
[D3] Prof. Alvaro Velasquez,	*2018*
Employment: Air Force Research Lab Information Directorate and Assistant Professor at the University of Colorado Boulder	
[D2] Dr. Emily Sassano,	*2018*
Employment: Sanofi Pasteur, Orlando	
[D1] Prof. Faraz Hussain (co-advised by Dr. Gary Leavens),	*2016*
Employment: Associate Professor at Clarkson University, New York	

Graduated Masters thesis students:

[M5] Junshuai Feng, MS,	*2019*
Employment: Data Scientist, Hertz	
[M4] Yuan Shao, MS,	*2019*
Employment: Database Analyst, Hannover	
[M3] Anagha Sivakumar, MS,	*2018*
Employment: Software Engineer, CLX Engineering	
[M2] Andy Michel, MS,	*2017*
Employment: Senior Engineer, F-35 Tactical Environment Simulation, Lockheed Martin, Orlando	

[M1] Arya Pourtabatabaie, MS,   *2016*
      Employment: Manager of Cybersecurity at the Royal Bank of Canada Innovation Lab, Orlando

List of Ph.D. Thesis Member Committees

[C13] Falonne Colbie   *2023*
[C12] Kavita Kumari   *2023*
[C11] Sahar Hooshmand   *2020*
[C10] John Singleton   *2018*
 [C9] Yuyan Bao   *2018*
 [C8] Rizwan Ashraf   *2015*
 [C7] Soumyabrata Dey   *2014*
 [C6] Aditya Reddy Kolli   *2014*
 [C5] Amir R. Zamir   *2014*
 [C4] Saptarshi Debroy   *2014*
 [C3] Berkan Solmaz   *2013*
 [C2] Mohammad Zubair Ahmad   *2012*
 [C1] Yuan Li   *2012*

Courses in Last 10 Years

Course Number	Course Title	Credits	Class	Semester	# of Students	student perception of instruction
CAP 6619	Advanced Topics in ML	3	Graduate	Spring 24	32	4.84 (instructor interaction)
CS 6463	Special Topics: Trust in AI	3	Graduate	Spring 23	18	4.90
CS 6463	Special Topics: Trust in AI	3	Graduate	Spring 22	8	5.00
CS 5633	Analysis of Algorithms	3	Graduate	Spring 21	22	COVID-19
COT 5405	Design & Analysis of Algorithms	3	Graduate	Spring 20	50	COVID-19
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 18	44	4.12
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 18	59	4.07
COT 5405	Design & Analysis of Algorithms	3	Graduate	Spring 17	62	4.28
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 16	45	4.17
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 15	57	4.32
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 14	43	4.00
COT 5405	Design & Analysis of Algorithms	3	Graduate	Spring 14	31	4.30
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 13	28	4.33
COT 6938	Special Topics	3	Graduate	Spring 13	9	4.67
COT 5405	Design & Analysis of Algorithms	3	Graduate	Fall 12	54	4.06
COP 3503C	Computer Science II	3	Undergraduate	Fall 12	193	3.98
COT 4210	Discrete Structures II	3	Undergraduate	Spring 11	61	4.67
COP 3503H	Computer Science II (Honors Section)	3	Undergraduate	Fall 10	17	4.50

Undergraduate Advisees:

[U24] Stephanie Painchault   *2024 – present*
[U23] Jonathan Mathurin   *2024 – present*
[U22] Dorreen Vahidiazar   *2024 – present*
[U21] Samuel Del Toro   *2024 – present*
[U20] Andres Fernandez   *2024 – present*
[U19] Trevor Werner   *2024 – present*
[U18] Gabriel Hubner Ferreira Lucchesi   *2023 – present*
[U17] Bernardin Dezius, (NSF REU)   *2018 - 2019*
[U16] Marcelino Galarza, (NSF REU)   *2018 - 2019*
[U15] Serra Abak, CS student (NSF REU)   *2018 - 2019*
[U14] Bernardin Dezius, (NSF REU)   *2017 - 2018*
[U13] Marcelino Galarza, (NSF REU)   *2017 - 2018*
[U12] Dena Alawi (NSF REU)   *2017 - 2018*
[U11] Angel Nunez, CS student   *2016 - 2016*

[U10]	Howell Remington, CS student (URE – Energy award extension from Duke)	*2015 - 2016*
[U9]	Ryan Gonyon, CS student (Office of Undergraduate Research OUR Award)	*2015 - 2016*
[U8]	Nauman Javed (MD/PhD student at Harvard Medical School)	*Summer 2015*
[U7]	Zubir Husein, CS student	*2015 - 2016*
[U6]	Vincenzo Marconi, CS student	*2014 - 2015*
[U5]	Alvaro Velasquez (UCF Outstanding Thesis Award 2015)	*2013 - 2014*
[U4]	Elias Davis, CS student (EXCEL Advisee)	*2013 - 2014*
[U3]	Michael Poplavski	*2012 - 2013*
[U2]	Jordan Dubique	*2012 - 2013*
[U1]	Daniel Vivas-Garcia (RAMP Advisee)	*2011 - 2013*

PROFESSIONAL ACTIVITIES

Community Service

- Chair, IEEE Computer Society Orlando Chapter, 2014, 2015.

Service to the University

- Co-chair of the Faculty Search Committee at the Florida International University, 2024.
- Elected as Senator to the Faculty Senate at the Florida International University, 2024.
- Graduate Advisor of Record (Graduate Chair) for the MS in CS program at the University of Texas at San Antonio, 2021–2023.
- Graduate Advisor of Record (Graduate Chair) for the MS in AI (CS concentration) program at the University of Texas at San Antonio, 2022–2023.
- University Faculty Awards Selection Committee at the University of Texas at San Antonio, 2022.
- Chair of the Computer Science Faculty Search Committee, Data-Driven Intelligence, 2022.
- Chair of the Computer Science Faculty Search Committee, Cybersecurity, 2022.
- Chair of the Computer Science Faculty Search Committee, Systems, 2022.
- Served on the Academic Review Committee for CS Department at the University of Texas at San Antonio, 2020.
- Elected as Senator to the Faculty Senate at University of Central Florida, 2020.
- Member, Computer Science Faculty Search Committee, 2018, 2016, 2015.
- Member, Big Data Faculty Search Committee for the Mathematics Department, 2015.
- College of Engineering & Computer Science Representative on the University Admissions and Standards Committee, 2014.

Service to the Profession - Proposal Reviews

- Reviewer, National Science Foundation, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024.
- Reviewer, Department of Energy, 2020, 2022, 2023, 2024.
- Reviewer, DOE Office of Science 2024-25 ASCR Leadership Computing Challenge (ALCC), 2024
- DOE Office of Science 2024-25 Early Career Research Program, 2024
- Reviewer, U.S. Army Research Lab, 2023.
- Reviewer, Open Educational Resources (OER) Course Development and Implementation Grant Program, Texas Higher Education Coordinating Board, 2021.
- Reviewer, Swiss National Science Foundation, 2018.
- Reviewer, Air Force Office of Scientific Research, 2016, 2017.

Service to the Profession - Paper Reviews

- Program Chair, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2024.
- Technical Program Committee, IEEE International Conference on Computer-Aided Design (ICCAD), 2024.
- Program Track Chair, IEEE ISQED 2024.
- Technical Program Committee, ECCV 2024.
- Technical Program Committee, NeurIPS 2024.
- Technical Program Committee, WACV 2022.
- Technical Program Committee, NeurIPS 2022.
- Technical Program Committee, AAAI 2022.
- Technical Program Committee, ECCV 2022.

- Technical Program Committee, NeurIPS Demonstration Track 2022.
- Program Track Chair, IEEE ICCD 2022.
- Program Chair, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2020.
- Program Committee, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS), 2014, 2015, 2016, 2017, 2018.

Journal Reviews

- Reviewer, Transactions on Architecture and Code Optimization, 2024.
- Reviewer, IEEE Transactions on Computers, 2023.
- Reviewer, Entropy, 2023.
- Reviewer, IEEE Micro, 2020.
- Reviewer, IEEE Open Journal of Circuits and Systems, 2020.
- Reviewer, ACM Transactions on Design Automation of Electronic Systems, 2020.
- Reviewer, ACM Transactions on Design Automation of Electronic Systems, 2018.
- Reviewer, IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2018.

INVITATION-ONLY MEETINGS OR INVITED TALKS

[2024] DOE Workshop on Analog Computing
DOE Workshop on Neuromorphic Computing
DARPA PI Meeting, September 2024
National Science Foundation Workshop on Autonomous and Unmanned Systems, Baltimore, Maryland.
Mini-Symposium on Trustworthiness and Privacy in Distributed Learning, SIAM Conference on Mathematics of Data Science (MDS24), 2024.
DoE PI Meeting, February 2024.
DARPA PI Meeting, April 2024.
ONR Science of AI PI Meeting, May 2024.

[2023] Invited Speaker at the Quantum Algorithm Design Automation (QADA) co-located with the IEEE International Conference on Quantum Computing and Engineering (QEC) 2023.

[2022] DoE ASCR Workshop on Visualization, January 2022.
DARPA PI Meeting, GARD Program April 2022
ONR Science of AI PI Meeting, April 2022

[2021] DARPA PI Meeting, GARD Program, September 2021.
DoE National Nuclear Security Agency (NNSA) Workshop on Next-Gen AI for Proliferation Detection: Domain-Aware Methods, February 2021.
ONR PI Meeting, Science of AI Program, April 2021.

[2020] DARPA PI Meeting, GARD Program, September 2021.
ONR PI Meeting, Science of AI Program, April 2020.

[2016] Invited Speaker at the SRC (Semiconductor Research Corporation) Workshop on EDA/BDA (Electronic and Biological Design Automation) Interaction Roadmap at Newcastle University, Newcastle upon Tyne, England, August 19-20, 2016.

[2014] "Verifying Parameterized Software Models in Computational Data Science against Behavioral Specifications," Invited Talk at the Numerical Software Verification (NSV) Workshop, Vienna Summer of Logic, Vienna, Austria, July 2014.

[2013] "Formal methods for analyzing epidemiological models," Invited Talk at the Data Analytics, Verification and Validation Approaches for Epidemiological Models mini-symposium, Society of Industrial and Applied Mathematics (SIAM), Southeastern Atlantic Section meeting organized jointly by Oak Ridge National Laboratory and University of Tennessee, Knoxville, March 2013.

"Validation and Parameter Discovery for Stochastic Computational Models from Behavioral Specifications," Invited Talk at the Computer Science Department Colloquium, University of Colorado, Boulder, January 2013.

[2012] "Exascale Algorithms for synthesizing parameters of stochastic computational models from qualitative and semi-quantitative specifications," Invited Talk at the 20th High Performance Computing Symposium (HPC) March 2012.

[2010] "Statistical Model Checking and Parameter Discovery for Biological Pathways," Invited Talk at the BioPathways SIG meeting held in conjunction with the Intelligent Systems for Molecular Biology (ISMB), July 2010.

PROFESSIONAL MEMBERSHIPS

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)

Full Member, Sigma Xi.

HONORS, RECOGNITIONS, AND AWARDS

Best Paper Awards and Nominations

- **Best Paper Award Nomination**, Military Communications Conference (MILCOM), 2023.
- **Best Paper Award Nomination**, International Conference on Computer-Aided Design (ICCAD), 2022.
- **Best Paper Award Nomination**, Design Automation and Test Europe (DATE), 2021.
- **Best Paper Award**, The 10th International Symposium on Foundations & Practice of Security (FPS), 2018.
- **Best Paper Nomination**, Workshop on Artificial Intelligence Safety (AISafety) at International Joint Conference on Artificial Intelligence (IJCAI) 2019
- **Best Paper Award**, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS), 2014.
- **Best Paper Award**, IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS), 2011.

Other Selected Awards

- Eminent Scholar Chair Professor from Florida International University, Miami, 2024.
- University-level Nomination for the "UTSA Research Achievement Award", 2023.
- **Air Force Young Investigator Program Award**, 2016.
- IEEE Orlando Section Outstanding Engineering Educator Award, 2013.
- Elected Full Member of the Sigma Xi Honor Society, 2012.

Fellowships

- US Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research, 2020.
- Air Force Research Laboratory Visiting Faculty Research Program, 2018.
- UCF Predictive Analytics Innovation Fellow, 2017.
- US Air Force Summer Faculty Fellowship, Air Force Office of Scientific Research, 2014.
- Air Force Research Laboratory Visiting Faculty Research Program, 2013.
- Carnegie Mellon School of Computer Science Graduate Fellowship, 2004-2010.

Selected Student Awards

- Sven Thijssen, University of Central Florida ORC Fellowship, 2020
- Alvaro Velasquez, "University of Central Florida 30 under 30", 2019.
- Alvaro Velasquez, "National Science Foundation Graduate Research Fellowship", 2015.
- Alvaro Velasquez, "Outstanding Thesis Award", 2014.
- Emily Rebecca Sassano, "National Science Foundation Graduate Research Fellowship", 2012.

COMMERCIALIZATION AND TECHNOLOGY TRANSFER EFFORTS

[P6] Rickard Ewetz, Sven Thijssen, Sumit Kumar Jha: "System and Method for Path-Based In-Memory Computing." United States Patent Application 20240311038 A1. Filed January 8, 2024. Published September 19, 2024. Assignee: University of Central Florida Research Foundation, Inc., and Board of Regents, University of Texas System.

[P5] Edison U Ortiz, Mohammad Abuzar Shaikh, Margaret Inez Salter, Sarah Rachel Waigh Yean Wilkinson, Arya Pourtabatabaie, Iustina-miruna Vintila, Steven Fernandes, Sumit Kumar Jha, "Systems and methods for dynamic passphrases," U.S. patent number 11,429,712. Granted August 20, 2022. Assignee: **Royal Bank of Canada**

[P4] Alvaro Velasquez and Sumit Kumar Jha, "3-D Crossbar Architecture for Fast Energy-Efficient In-Memory Computing of Graph Transitive Closure," U.S. patent number 11,538,989B2. Granted December 27, 2022.

[P3] Sumit Kumar Jha and Christopher James Langmead, "Stochastic computational model parameter synthesis system," Patent Grant US 9,558,300 B2, Patent granted January 31 2017, Assignee: Carnegie Mellon University and the University of Central Florida Research Foundation, Inc.

[P2] Sumit Kumar Jha, Dilia E. Rodriguez, Joseph E. van Nostrand, and Alvaro Velasquez*, "Computation of Boolean Formulas Using Sneak Paths in Crossbar Computing," Patent Grant US 9,319,047 B2, Assignee: The University of Central Florida Research Foundation, Inc. Provisional Patent filed by the **US Air Force Research Laboratory**. Granted: April 19, 2016.

[P1] Krishna Mehra, Sriram Kumar Rajamani, Aravinda P. Sistla, and Sumit Kumar Jha, "Object relational map verification system," Patent Grant US7702695 B2, Granted 20 Apr 2010, Assignee: **Microsoft Corporation**.