

Dr. Shakthi Weerasinghe

Telephone: +1 213 332 5407 | **Email:** shakthi.weerasinghe@csun.edu

Website: <https://sites.google.com/view/shakthi-weerasinghe>

LinkedIn: <https://www.linkedin.com/in/shakthiweerasinghe94>

Research Interests

Distributed Systems, Software Engineering, Context-aware computing, Applied Machine Learning, Internet of Things, Cyber-physical systems, and Data Analysis.

Work Experience

California State University, Northridge

Northridge, CA, USA

Assistant Professor (Tenure-Track)

Aug 2026 – Present

- **Supervisor:** Dean of the College of Engineering and Computer Science
- Teaching and conducting research related to distributed systems and software engineering.

University of Arizona

Tucson, AZ, USA

Postdoctoral Research Associate

July 2025 – Aug 2026

- **Supervisor:** A/Prof. Tomas Cerny
- As a postdoctoral researcher, I am investigating on developing tools and techniques to manage the integrity and performance of cloud native systems.
- I am the Principal Architect/Developer of the Microservice System Analysis Pipeline Creator tool – a novel tool to create holistic, parallel analysis pipelines.
- I mentor several undergraduate and graduate student research (including PhD candidates).
- I also deliver graduate/undergraduate courses: (i) SFWE 410 Cloud-native Systems, and (ii) SFWE 513 Research Methods in place of faculty on sabbatical or leave.

Swinburne University of Technology

Melbourne, Australia

Research Fellow

June 2024 – July 2025

Sessional Academic – Teaching

July 2024 – June 2025

- **Supervisors:** Prof. P.P. Jayaraman, Prof. Mohsin Malik, & Dr. Abdur Forkan
- As a research fellow, I investigated developing a robust mechanism to estimate the carbon footprint of merchants and consumers based on transactional data. This approach focuses on applied machine learning, graph theory, and Large Language Models. The project was funded by *Sphere For Good*.
- Further, I conducted a comprehensive data analysis on digital music consumption in Spotify and effects of algorithmic bias on visibility of Australian artists. The project was funded by the *Victorian Music Development Office (VMDO)*.
- As a sessional academic, I was responsible for teaching over 100 undergraduates on applied artificial intelligence for engineering tasks.

Deakin University

Melbourne, Australia

Sessional Academic – Teaching

July 2024 – June 2025

Research Assistant (Professional)

October 2022 – July 2025

Casual Academic – Teaching

July 2022 – June 2024

- As a sessional academic, I was responsible for teaching and marking for: (i) SIT 740 Research & Development in Information Technology for master's students, (ii) SIT 350 Distributed & Parallel Computing, (iii) MIS 202 Managing Data and Information, and (iv) MIS 770 Fundamentals of Data Analysis for over 420 undergraduate students.
- As a research assistant, I investigated developing a distributed contextual information system. This system is designed and developed for based on the edge computing paradigm.

IN Manawadu & Company

Colombo, Sri Lanka

Consultant – Information Technology

November 2020 – July 2021

- As a consultant, I was responsible for planning and consulting the information technology requirements for efficient business handlings of the clients. I also developed an integrated inventory management, point of sale, and accounting system, which is commercially sold by the company.

University of Moratuwa

Katubedda, Sri Lanka

Assistant Professor

November 2020 – July 2021

- As an assistant professor, I taught IS 4650 Software Management, and mentored undergraduate students under IN 2901, IS2901 Software Development Project and IN 4911, IS 4990 Comprehensive Research Project. As a result, I have taught more than 600 undergraduate students during this time.
- I developed course modules in software engineering, project management, and cloud computing.
- I actively conducted research during this tenure in applied machine learning, and interdisciplinary uses of information technology.
- I also introduced several course modules and revamped existing course modules to align with the current state of the art. This effort involved a thorough industry collaboration which I led in the department.

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Software Engineer

Trainee Software Engineer

Colombo, Sri Lanka

February 2019 – October 2020

August 2017 – March 2018

- As a software engineer, I was responsible as a full-stack software product developer on aspects of software development and delivery for Boligmappa.no and Culture Engine. I was also the technical lead in the development of the Culture Engine system.
- In parallel, I was the head of the internship program, thereby leading recruitment, management, and evaluation of all interns in the company. While I developed the internship program, I have also mentored over 120 early career software engineers.
- As a trainee software engineer, I was involved as a full-stack developer for Boligmappa.no.

Education

Deakin University

PhD in Computer Science (Context-aware computing)

Melbourne, Australia

July 2021 – June 2024

- **Thesis:** Adaptive Context Caching for Fast Concurrent Access for the Internet of Things.
- **Supervisors:** Arkady Zaslavsky, Seng W. Loke, Alireza Hassani, & Christian Becker.
- **Collaborative Research Exchange:** At the Institute for Parallel and Distributed Systems (IPVS), University of Stuttgart, Germany in 2023.

University of Moratuwa

BSc (Hons) in Information Technology

Postgraduate Certificate in Scientific Research

Katubedda, Sri Lanka

December 2014 – February 2019

April 2021 – August 2021

- **Honors Thesis:** Novel Method to Analyze and Forecast Social Impact on Micro and Macro Economies using Social Media Data
- **Supervisors:** Upeksha Ganegoda, and Lochandaka Ranathunga.
- **Grade Point Average:** 3.97 (First Class Honors) – Valedictorian

Chartered Institute of Management Accountants

Advanced Diploma in Management Accountancy

London, Great Britain

September 2013 – November 2014

- Qualified management accountant.

Teaching Experience

Courses at University of Moratuwa

Software Development Project

IN 2901, IS2901

Comprehensive Research Project

IN 4911, IS 4990

Software Management

IS 4650

Courses at Deakin University

Distributed and Parallel Computing

SIT 315

Research and Development in Information Technology

SIT 740

Managing Data and Information

MIS 202

Fundamentals of Data Analysis

MIS 770

Courses at Swinburne University of Technology

Artificial Intelligence for Engineering

COS40007

Courses at University of Arizona

Cloud-native Systems

SFWE 410

Research Methods

SFWE 513

Software Architecture and Design

SFEW 405/505

Courses at California State University, Northridge

Database Design

COMP 440

Parallel and Distributed Systems (with Lab)

COMP 535/L

Software Engineering (with Lab)

COMP 380/L

Research Project Supervision

Undergraduate Research

University of Moratuwa

- Event driven share price forecasting based on change-based impact analysis (2021-2022).

University of Arizona

- Resilient distributed architectures for digital IoT-data twins (2025-Present).

Graduate Research

Deakin University

- Distributed contextual intelligence system (2024-2025).

University of Moratuwa

- Agentic ML-driven duplicate detection for ERP product catalogs (2025-Present).

University of Arizona

- Formal verification of large distributed systems (2025-2026)
- Architectural & design patterns in Quantum Software (2025-Present)
- Automated test suite generation for microservice systems (2025-Present)
- AI-assisted Infrastructure-as-Code generation (2026-Present)

CSUN

- Hybrid LLM-based Microservice Architecture Extraction (2026-Present)

Research Grants

(Funded) ARC Postgraduate Research Scholarship for the Discovery Project from the Australian Research Council. Project Duration: 07/07/2021 – 05/07/2024.

Role: PhD Researcher (DU)

(Funded) Tech Launch Arizona Seed Funding for our start-up AridNova: The microservice analysis toolkit: \$115,000 during 2026/27.

Role: Principal Architect, Postdoctoral Research Associate (UoA)

(Under-Review) US National Science Foundation Grant proposal for the project titled “CASTLE: Continuously Adapting Small Language Model for Testing in Local Environments”. Submitted to FutureCORE (SHF) Fall 2026.

Role: Principal Investigator, Assistant Professor (CSUN)

(Under-Review) US National Science Foundation Grant proposal for the project titled “Human-Centered Multi-Agent Intelligence for Predicting and Validating Microservice Evolution”. Submitted to FutureCORE Fall 2026.

Role: Co-Principal Investigator, Assistant Professor (CSUN)

(Under-Review) US National Science Foundation Grant proposal for the project titled “Authorization-Preserving Evolution of Microservice Systems”. Submitted to SaTC 2.0 Fall 2026.

Role: Co-Principal Investigator, Assistant Professor (CSUN)

(Under-Review) US National Science Foundation Grant proposal for the project titled “LEASH – Verifiable Authorization under Changing Delegation and Task Contracts”. Submitted to SaTC 2.0 Fall 2026.

Role: Co-Principal Investigator, Assistant Professor (CSUN)

(Submitting) Amazon Research Awards proposal for the project titled “Owner-Centric Authorization and Neuro-Symbolic Policy Mediation for Self-Forming Context Meshes”. Submitting in Fall 2026.

Role: Principal Investigator, Assistant Professor (CSUN)

(Submitting) US National Science Foundation Grant proposal for the project titled “Proactive Policy Governance and Owner-Centric Authorization in Self-Forming Distributed Context Meshes”. AI-Engage Fall 2026. Submitting in Fall 2026.

Role: Principal Investigator, Assistant Professor (CSUN)

(Not Funded) Amazon Research Awards proposal for the project titled “Neuro-symbolic Security Introspection for Distributed Systems: An Automated Quantifier of Authorization Risk in CI/CD Pipelines”. Submitted in Fall 2025.

Role: Principal Investigator, Postdoctoral Research Associate (UoA)

(Not Funded) US National Science Foundation Grant proposal submitted for the project titled “Contextual Formal Verification and Explainable Governance for Microservice Authorization”. SaTC 2.0 Fall 2025. Submitted in 2025.

Role: Investigator, Postdoctoral Research Associate (UoA)

(Not Funded) US National Science Foundation Grant proposal submitted for the project titled “A Neuro-Symbolic Risk Calculus for Quantifying Security Posture in Microservice Systems”. SaTC 2.0 Spring 2026. Submitted in 2026.

Role: Principal Investigator, Postdoctoral Research Associate (UoA)

(Not Funded) Amazon Research Awards proposal for the project titled “A Self-Adaptive Neuro-Symbolic Framework for Latent Vulnerability Discovery and Automated Validation in Microservice Architectures”. Submitted in May 2026.

Role: Co-Principal Investigator, Postdoctoral Research Associate (UoA)

Patents

(Pending) US Patent for the neuro-symbolic calculus developed for quantifying security posture in microservice systems. Submitted in 2025.

Role: Inventor, Postdoctoral Research Associate

(Pending) US Patent for LLM-generated authorization tests for microservices. Submitted in 2025.

Role: Inventor, Postdoctoral Research Associate

(Pending) US Patent for Socio-Technical Early Warning System for Microservice Architecture Degradation. Submitted in 2026.

Role: Inventor, Postdoctoral Research Associate

Academic Honors and Awards

Nominated for Best Postdoctoral Researcher at University of Arizona 2025-26.

Organizer: University of Arizona, Tucson, AZ.

Championship of the SCATS Student Traffic Data Innovation Challenge in 2023 for the development of AdTrac a distributed adaptive traffic management system.

Organizers: iMove Australia, Transport New South Wales, Amazon Web Services

Best Paper Award at 7th International Conference on Information Technology Research 2022 for “Event Driven Share Price Forecasting based on Change based Impact Analysis”; Chathurya Bombuwela, Ravindi Kumaranayaka, Shakthi Weerasinghe, Kaushika Kahatapitiya, Upeksha Ganegoda, and Isuru Manawadu.

Organizer: University of Moratuwa, Sri Lanka

Top 10 Research at the School of Information Technology in 2023; Selected to represent the school at the 1st Industry Forum of School of Information Technology.

Organizer: Deakin University, Australia

Most Outstanding Graduate (Valedictorian) at the General Convocation of University of Moratuwa in 2019 for the most all-round performance in both academics and extra-curricular activities during undergraduate studies.

Gold Medal for Best Academic Performance in BSc (Hons) in Information Technology

Examinations at the General Convocation of University of Moratuwa in 2019 for obtaining the highest-Grade Point Average among the graduates.

Growing Disruptively Excellence Award at the AIESEC Asia Pacific Leadership Summit 2017 for exhibiting the best performance in incoming Global Entrepreneurship in the region.

Invited Talks

United States of America

- **Adaptive Context Caching for Concurrent Access of the Internet of Things** at the Henri Samuelli School of Engineering, University of California Los Angeles on 11th of January 2024.
- **Securing the Blindspots: From Formal Verification to Generative Validation** at the School of Engineering & Technology, University of Washington – Tacoma on 23rd of January 2026.
- **Ensuring Security in the Cloud: Automated Formal Verification of Microservice Authorization** at the College of Engineering and Computer Science, California State University, Northridge on 18th February 2026.
- **Ensuring Security in the Cloud: Automated Formal Verification of Microservice Authorization** at the College of Engineering and Computer Science, Baylor University, Waco, Texas on 18th March 2026.

Australia

- **Adaptive Context Caching for Fast Concurrent Access of the Internet of Things** at the Annual HDR Conference, Deakin University, on the 17th of November 2023.

Germany

- **Adaptive Context Caching** at the Institute of Parallel and Distributed Systems, University of Stuttgart on the 20th of March 2023.

Sri Lanka

- **Enhancing Machine Intelligence: The Role of Context-Awareness in IoT Ecosystem** at 9th International Conference on Information Technology Research (ICITR) workshops on 5th of December 2024.
- **Context Aware Computing: An Introduction** at the Faculty of Information Technology, University of Moratuwa on 17th April 2023.
- **Research and Development in Internet of Things** at the Computer Society of Sri Lanka in 2022.
- **Essential for Successful Project** at the IEEE Student Chapter of Kothalawala Defense University in 2020.

Professional Memberships

IEEE

Professional Member (Since 2023)

ACM

Member (Since 2022)

Professional Services

Guest Editor Assistant

- MDPI Sensors (Special Issue)

Journal Paper Reviewing

- Nature Scientific Reports (Q1)
- IEEE Access (Q1)
- IEEE Transactions on Computers (Q1)
- IEEE Transactions on Network Science and Engineering (Q1)
- Springer Cluster Computing (Q1)
- Springer Journal of Super Computing (Q2)
- Springer Discover Applied Sciences (Q2)
- Springer Computing (Q2)

Technical Program Committee Memberships (Conferences)

- International Conference on Information Systems Development (ISD) 2026
- IEEE Consumer Communications & Networking Conference (CCNC) 2024-2027
- IEEE Conference on Computer Science and Intelligence Systems FedCSIS 2023
- International Conference on Artificial Intelligence 2019, 2020
- International Conference on Information Technology Research 2025

Conference Organization

- IEEE International Congress on Intelligent and Service-Oriented Systems (CISOSE) 2025
- EAI International Conference on Mobile and Ubiquitous Systems (Mobiquitous) 2023
- IEEE International Conference in Information Technology Research (ICITR) 2016, 2018
- International Conference on Artificial Intelligence 2016

Hackathon Organizing

- Hacktitude for 99X Technology (Pvt) Limited 2017
- CodeRush for University of Moratuwa 2016
- IEEE Code Experts 3.0 at University of Moratuwa 2015

University Services

- Member of the Faculty Academic Committee at University of Moratuwa: November 2020 – July 2021.
- Sports Ambassador for Deakin University: January 2022 – December 2023.
- Sports Team Manager (Badminton) for Deakin University: June 2022 – October 2023.
- General Committee Member for Deakin University Badminton Association: February 2022 – February 2023.
- Editor in Chief for the FIT Chronicles magazine of the University of Moratuwa: June 2017 – August 2018.
- Manager (Global Entrepreneurship) for AIESEC in University of Moratuwa: May 2016 – April 2017.
- Managing Editor for the FIT Chronicles magazine of the University of Moratuwa: November 2015 – May 2017.

Publications

Journal Papers

- Conner Wojtak, **S. Weerasinghe**, Nilesh Rao, & Tomas Cerny, “On Automated Formal Verification of Authorization Policy in Microservice Systems”, Springer Cluster Computing (Special Issue: Advancements in Service-Oriented Software), August 2026.
- **S. Weerasinghe** & Tomas Cerny, “A Neuro-Symbolic Calculus for Quantifying Security Posture in Microservice Architectures”, Springer Cluster Computing, 2026, doi: 10.1007/s10586-026-06292-6.
- Md Arfan Uddin, **Shakthi Weerasinghe**, Darek Gajewski, Melika Akbarsharifi, Roxana Akbarsharifi, Christopher Stoner, Sen He, & Tomas Cerny, “Microservice Logs Analysis Employing AI: A Systematic Literature Review,” Journal of Systems and Software, p. 112786, Jan. 2026, doi: 10.1016/j.jss.2026.112786.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Abken, A. Hassani, and G.-L. Huang, “Reinforcement Learning Based Approaches to Adaptive Context Caching in Distributed Context Management Systems”, ACM Trans. IoT, p. 30, Feb. 2024, doi: 10.1145/3648571.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Medvedev, A. Abken, and A. Hassani, “Context Caching for IoT-Based Applications: Opportunities and Challenges”, IEEE Internet Things M., vol. 6, no. 4, pp. 96–102, Dec. 2023, doi: 10.1109/IOTM.001.2200247.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Hassani, A. Medvedev, and A. Abken, “Adaptive Context Caching for IoT-Based Applications: A Reinforcement Learning Approach”, Sensors, vol. 23, no. 10, p. 4767, May 2023, doi: 10.3390/s23104767.
- A. Medvedev, A. Hassani, G. Belov, **S. Weerasinghe**, G. Huang, A. Zaslavsky, S. W. Loke, and P. Jayaraman, “Refresh Rate Based Caching and Prefetching Strategies for Internet of Things Middleware”, Sensors, vol. 23, no. 21, p. 8779, October 2023, doi: 10.3390/s23218779.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Medvedev, and A. Abken, “Estimating the dynamic lifetime of transient context in near real-time for cost-efficient adaptive caching”, SIGAPP Appl. Comput. Rev., vol. 22, no. 2, pp. 44–58, Jun. 2022, doi: 10.1145/3558053.3558057.

Full Conference Papers

- Nariman Mani, Xiaozhou Li, **Shakthi Weerasinghe**, and Tomas Cerny “SENTRY: Drift-Aware Validation Placement for AI Services in the Cloud-Edge Continuum”, CEC Workshops at the 34th IEEE International Conference on Network Protocols (ICNP), October 2026, Tempe, AZ, USA.
- Nariman Mani, Amr. S. Abdelfattah, **Shakthi Weerasinghe**, Xiaozhou Li, and Tomas Cerny, “Multi-Agent Change Impact Analysis and Test Optimization for AI-Enabled Software Systems”, IEEE CISOSE (Invited Track), July 2026, Fukuoka, Japan.
- Md Arfan Uddin, **Shakthi Weerasinghe**, Deuslirio Silva-Junior, Manoel Verissimo dos Santos Neto, Mateus Eduardo S. Ribeiro, Tomas Cerny, & Amr S. Abdelfattah, “Automated Generation of Microservice Authorization Tests Using Large Language Models”. IEEE Symposium on Software Engineering (SOSE), July 2026, Fukuoka, Japan.
- **S. Weerasinghe** & Tomas Cerny, “A Neuro-Symbolic Calculus for Quantifying Security Posture in Microservice Architectures”, EASE 2026, June 9-12, Glasgow, Scotland.
- **S. Weerasinghe**, Amr Abdelfattah, & Tomas Cerny, “GADM-Oracle: A Domain-Adaptive Oracle for Detecting ‘Data Bugs’ in Enterprise Data Stacks”, in the International Workshop on Data Intensive Software Engineering (DISE) at the 34th ACM Symposium on the Foundations of Software Engineering (FSE’26), June 5-9, 2026, Montreal, Canada.
- **S. Weerasinghe**, B.D. Mach, A. Zaslavsky, and V. Moghaddam, ‘Unlocking Contextual Intelligence – Anywhere, Anytime, and Everywhere’, in 2025 26th IEEE International Conference on Mobile Data Management (MDM), Irvine, California, USA: IEEE, Jun. 2025, pp. 1-7, doi: 10.1109/MDM65600.2025.00050.
- **S. Weerasinghe**, K. S. Jagarlamudi, A. Zaslavsky, S. W. Loke, K. Lee and G. -L. Huang, “Improving the Usefulness of Context Information for IoT Applications: A Middleware-based Approach”, 2024 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops), Biarritz, France, 2024, pp. 1-7, doi: 10.1109/PerComWorkshops59983.2024.10503179.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, and G. Li-Huang, “Proactive Context Caching Based on Situation Prediction for Real-Time Mobile IoT Applications”, in 2024 25th IEEE International Conference on Mobile Data Management (MDM), Brussels, Belgium: IEEE, Jun. 2024.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, V. Moghaddam, and C. Becker, “Towards World Wide Context Management: Architecting Distributed Contextual Intelligence Systems for Real-Time IoT Applications”, in 2023 24th IEEE International Conference on Mobile Data Management (MDM), Singapore, Singapore: IEEE, Jul. 2023, pp. 340–345. Doi: 10.1109/MDM58254.2023.00062.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Abken, A. Hassani, and A. Medvedev, “Adaptive Context Caching for Efficient Distributed Context Management Systems”, in ACM Symposium on Applied Computing, Tallinn, Estonia: ACM, Mar. 2023, p. 10. Doi: 10.1145/3555776.3577602.

- Ashish Manchanda, Prem Prakash Jayaraman, Abhik Banerjee, Arkady Zaslavsky, **Shakthi Weerasinghe**, and Guang-Li Huang, “A Hybrid Approach to Monitor Context Parameters for Optimizing Caching for Context-Aware IoT Applications”, in EAI MobiQuitous, Melbourne, Australia: Springer, November 2023, p. 16.
- C. Bombuwala, K. Kahatapitiya, R. Kumaranayaka, **S. Weerasinghe**, U. Ganegoda, and I. Manawadu, “Event Driven Share Price Forecasting based on Change based Impact Analysis”, in 2022 7th International Conference on Information Technology Research (ICITR), Moratuwa, Sri Lanka: IEEE, Dec. 2022, pp. 1–6. Doi: 10.1109/ICITR57877.2022.9992415.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Medvedev, and A. Abken, “Estimating the Lifetime of Transient Context for Adaptive Caching in IoT Applications”, in ACM Symposium on Applied Computing, Brno, Czech Republic: ACM, Apr. 2022, p. 10. Doi: 10.1145/3477314.3507075.
- **S. Weerasinghe** and S. Ahangama, “Predictive Maintenance and Performance Optimization in Aircrafts using Data Analytics”, in 2018 3rd International Conference on Information Technology Research (ICITR), Moratuwa, Sri Lanka: IEEE, Dec. 2018, pp. 1–8. Doi: 10.1109/ICITR.2018.8736157.

Short Conference Papers

- **S. Weerasinghe**, “A No-Code Composable Pipeline for Holistic Microservice Assurance”, Early Career Research Forum at ICSA 2026, June 22-29, Amsterdam, Netherland.
- **S. Weerasinghe** & Tomas Cerny, “A Holistic Risk Calculus for Microservice Systems using Multi-Source Signal Fusion”, in the International Workshop on Data Intensive Software Engineering (DISE) at the 34th ACM Symposium on the Foundations of Software Engineering (FSE’26), June 5-9, 2026, Montreal, Canada.

Book Chapters

- **S. Weerasinghe**, A. Udadeniya, N. Waduge, R. de Zoysa, and U. Ganegoda, ‘Novel Method to Analyze and Forecast Social Impact on Macro- and Micro-Economies Using Social Media Data’, in Proceedings of International Conference on Sustainable Expert Systems, S. Shakya, V. E. Balas, W. Haoxiang, and Z. Baig, Eds., in Lecture Notes in Networks and Systems, vol. 176. Singapore: Springer Singapore, 2021, pp. 261–277. doi: 10.1007/978-981-33-4355-9_21.

Only-as-Preprints

- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Abken, and A. Hassani, “Reinforcement Learning Based Approaches to Adaptive Context Caching in Distributed Context Management Systems”. arXiv, Dec. 22, 2022. [Online]. Available: <http://arxiv.org/abs/2212.11709>.
- **S. Weerasinghe**, A. Zaslavsky, S. W. Loke, A. Hassani, A. Abken, and A. Medvedev, “From Traditional Adaptive Data Caching to Adaptive Context Caching: A Survey”, arXiv:2211.11259 [cs.HC], p. 35, Nov. 2022.
- **S. Weerasinghe**, U. Ganegoda, C. Bombuwela, K. Kahatapitiya, and R. Kumaranayaka, “Architecting an event-driven forecasting model for stock market variations”, p. 9, Sep. 2022.
- **S. Weerasinghe** and U. Ganegoda, “Review on detecting and scoring hate speech in bilingual text in building a similar strategy for Sinhala-English tweets”, p. 9, Dec. 2018.

Thesis

- **S. Weerasinghe**, “Adaptive Context Caching for Fast Concurrent Access in the Internet of Things”. Deakin University, Jul. 01, 2024. [Online]. Available: <https://hdl.handle.net/10779/DRO/DU:31368022>.
- **Shakthi Weerasinghe**, Aeshana Udadeniya, Nisal Waduge, and Randilu Zoysa. “Novel Method to Analyse and Forecast Social Impact on Macro & Micro Economies using Social Media Data”, University of Moratuwa, February 2019.

Technical Reports

- **Shakthi Weerasinghe**, Mohsin Malik, Guy Morrow, Amir Andargoli, Prem Prakash Jayaraman, and Abdur Forkan, ‘Examining Digital Platform Interactions to Assess the Performance of Australian Artists on Algorithmic Playlists’. Victorian Music Development Office (VMDO), Feb. 06, 2026. [Online]. Available: <https://www.vmdo.com.au/dsp-algorithm-research>.
- **Shakthi Weerasinghe**. “Technical Document on Carbon Footprint Estimation Project for Sphere”, Swinburne University of Technology, November 2024. (Handed over to Sphere for Good).
- **Shakthi Weerasinghe**, Aeshana Udadeniya, Nisal Waduge, Nilushika Gamage, and Randilu Zoysa. “Real Estate Management System: Web based solution for Real Estate Operations”, University of Moratuwa, April 2017.
- **Shakthi Weerasinghe**, Aeshana Udadeniya, Nisal Waduge, Nilushika Gamage, and Randilu Zoysa. “Expressway Life Saver: IoT based Multi-Functional Highway Driver Assistance System”. University of Moratuwa, December 2015.

Currently-in-Review

- Md Arfan Uddin, Nana Reinikainen, Hamza Bin Mazhar, **Shakthi Weerasinghe**, Yuqing Wang, Mika Mäntylä, Tomas Cerny and Ke Ping, “Train-Ticket as a Microservice Testing Benchmark: A Comparability and Reproducibility Audit”, Submitted to SANER 2027.
- Nariman Mani, Amr. S. Abdelfattah, **Shakthi Weerasinghe**, Xiaozhou Li, Jose Sosa Rodriguez, and Tomas Cerny, “TRACE-SELECT: Diagnosable Multi-Agent Change-Impact Test Selection for AI-Enabled Systems”, Submitted to SANER 2027.
- Nariman Mani, **Shakthi Weerasinghe**, Xiaozhou Li, Jose Sosa Rodriguez, and Tomas Cerny, “From Organizational Coupling to Operational Early Warnings for Microservice Architectural Degradation: A Multi-System Study”, Submitted to SANER 2027.
- Xiaozhou Li, **Shakthi Weerasinghe**, Nariman Mani, Rajat Shah, and Tomas Cerny, “Not All Cross-Service Work Is Harmful: Context-Aware Governance of Organizational Coupling in Microservice Systems”, Submitted to SANER 2026.
- Xiaozhou Li, Nariman Mani, **Shakthi Weerasinghe**, and Tomas Cerny, “From Single-Service to Cross-Service Implementation: A Multi-System Study of Scope Expansion in Microservice Maintenance”, Submitted to SANER 2026.
- Xiaozhou Li, **Shakthi Weerasinghe**, Nariman Mani, and Tomas Cerny, “Does Personality Add Value to Socio-Technical Congruence?”, Submitted to SANER 2026.
- Guy Morrow, **Shakthi Weerasinghe**, Mohsin Malik, Amir Andargoli, Prem Jayaraman, Abdur Forkan, “Does Size Matter in Music Streaming Playlisting?”, Submitted to Convergence, 2026.
- **Shakthi Weerasinghe**, Xiaozhou Li, Md Arfan Uddin, Deuslirio Silva-Junior, Manoel Veríssimo dos Santos Neto, Mateus Eduardo S. Ribeiro, Hamza Bin Mazhar, Melika Akbarsharif, Roxana Akbarsharif, Nariman Mani, Valdemar Vicente Graciano Neto, Mika Mäntylä, and Arlindo Galvão, “Beyond the Prompt: An Analysis of the Current State of Automated Test Generation with LLMs”. Available at SSRN: <http://dx.doi.org/10.2139/ssrn.6843081>
- **S. Weerasinghe**, Mohsin Malik, Guy Morrow, A.R.M. Forkan, & P.P. Jayaraman, “Are Algorithmic Biases in Recommendation Systems Real? The Effect of Online Music Streaming on Digital Music Consumption”, Submitted to Information Systems Research, 2025. (Preprint: <https://dx.doi.org/10.2139/ssrn.5784803>)

Ongoing Research

- Md Arfan Uddin, **Shakthi Weerasinghe**, Manoel Verissimo, Deuslirio Junior, Tomas Cerny, “LLMs or SLMs for Test Suite Generation: An Ablation Study”.
- Deuslirio Junior, **Shakthi Weerasinghe**, Md Arfan Uddin, and Tomas Cerny, “Synthetic Data Generation for Microservices Integration Testing”
- Md Arfan Uddin, Deuslirio Junior, **Shakthi Weerasinghe**, Tomas Cerny, Mika Mantyla, Valdmr Neto & Arlindo Galvao, “Train-Ticket as a Microservice Testing Benchmark”.
- Jose Sosa Rodriguez, Zeyuan Zhao, Yualong Zhang, Drake Kendell, Tomas Cerny, & **Shakthi Weerasinghe**, “Architectural and Design Patterns in Quantum Software Engineering”.
- Jaroslav Knápek, Tomas Cerny, **Shakthi Weerasinghe**, Nariman Mani, “Evaluating LLM-Based and Deterministic Techniques for Microservice Architecture IR Extraction”.
- Ashan Chandrasiri, **Shakthi Weerasinghe**, & Indika Perera, “Agentic ML-driven duplicate detection for ERP product catalogs”.

Press

Shakthi excels at Convocation of University of Moratuwa

<https://www.sundaytimes.lk/190908/education/shakthi-excels-at-convocation-of-university-of-moratuwa-367091.html>, September 2019

Data Analytic approach to Aviation: The Sri Lankan Context

<https://www.pressreader.com/sri-lanka/sunday-times-sri-lanka/20170521/283313227387883>, May 2017

Is Amphibian Aircraft a viable option for Search and Rescue and Maritime Reconnaissance operations in Sri Lanka

<https://www.pressreader.com/sri-lanka/sunday-times-sri-lanka/20160131/283527974842888>, January 2016

Is Spotify’s AI ‘killing’ Australian music? What we found from analyzing more than 2 million tracks

<https://theconversation.com/is-spotifys-ai-killing-australian-music-what-we-found-from-analysing-more-than-2-million-tracks-276984>

Technical Skills

Programming Database	Java, Python, C#, C++, C. MSSQL, MySQL, Oracle SQL, PostgreSQL, Redis, MongoDB, Neo4j.
Web Development	React, Angular, Angular JS, .NET Core, Java EE, Laravel, PHP, NodeJS, Flask, HTML5, CSS, SCSS, Bootstrap.
PaaS	Amazon Web Services, Microsoft Azure.
Data Analytics	Apache Spark, Weka, Rapid Miner, TensorFlow, PyTorch, Keras.
DevOps	Jenkins, Git, CI/CD.
Distributed Computing	OpenCL, MPI, Kafka, Docker, Serverless.

Referees

A/Prof (Dr) Tomas Cerny

Associate Professor, Department of Electrical and
Computer Engineering
University of Arizona, USA
Email: tcerny@arizona.edu
Telephone: +1 254 216 0436

Prof (Dr) Arkady Zaslavsky

Honorary Professor
Deakin University, Australia
Email: arkady.zaslavsky@deakin.edu.au
Telephone: +61 419 524 848

A/Prof (Dr) Mohsin Malik

Associate Professor, School of Business, Law and
Entrepreneurship
Swinburne University of Technology, Australia
Email: mmalik@swin.edu.au
Telephone: +61 392 148 710

Dr Amr S. Abdelfattah

Research Scientist
Meta Platforms, Inc.
Menlo Park, CA, USA
Email: amrs@meta.com
Telephone: +1 254 400 9998

Dr Upeksha Ganegoda

Senior Lecturer (Associate Professor), Head of the
Department of Interdisciplinary Studies
University of Moratuwa, Sri Lanka
Email: upekshag@uom.lk
Telephone: +94 71 996 8294

Sameera Gunasinghe

Chief Executive Officer and Co-founder
Corzent (Pvt) Limited, Sri Lanka
Email: sameerasrg@gmail.com
Telephone: +94 77 744 2099