Jaganmohan Chandrasekaran Ph.D.

Research Assistant Professor
Sanghani Center for Artificial Intelligence and Data Analytics
Virginia Tech

🌐 https://cjaganmohan.github.com

✉ jagan@vt.edu

RESEARCH OVERVIEW

My research is at the intersection of software engineering and artificial intelligence. My work addresses the test and evaluation challenges in AI-enabled software systems by adapting established software testing principles and developing novel methodologies to evaluate unique characteristics of AI-enabled software systems. My work spans test and evaluation of machine learning algorithms, deep neural network models, and large language models, creating test methods and frameworks that address the challenges each technology presents. Through my research, I contribute to the development of methods, frameworks, and metrics for systematic assessment of AI-enabled software systems, enabling reliable and trustworthy AI deployment across diverse applications. Additionally, I am exploring how AI techniques can enhance traditional software testing practices, particularly through LLM-augmented test generation.

EDUCATION

2015.08 - 2021.08	**Ph.D. in Computer Science** The University of Texas at Arlington, TX, USA *Advisor*: Dr. Jeff (Yu) Lei *Dissertation*: Testing Artificial Intelligence-Based Software Systems
2013.08 - 2015.08	**M.S. in Computer Science** The University of Texas at Arlington, TX, USA *Advisor*: Dr. Jeff (Yu) Lei *Thesis*: Evaluating the effectiveness of BEN in localizing different types of software fault
2004.09 - 2008.04	**B.Tech. in Information Technology** Anna University, Chennai, India

PROFESSIONAL EXPERIENCE

2024 - Present	**Research Assistant Professor**, Virginia Tech
2024 - Present	**Working Group Participant,** The Center for AI Standards and Innovation, NIST *Contributed to university's successful application for institutional participation* *Active participation in Working Group #3: Capability Evaluations, and Zero drafts policy project*
2021 - 2024	**Postdoctoral Associate - AI**, Virginia Tech
2021	**Research Associate**, Computer Science and Engineering, UT Arlington
2021	**Summer Dissertation Fellow**, Computer Science and Engineering, UT Arlington
2020 - 2021	**Graduate Research Assistant**, Computer Science and Engineering, UT Arlington
2015 - 2020	**Graduate Teaching Assistant**, Computer Science and Engineering, UT Arlington
2014 - 2015	**Graduate Teaching Assistant**, Computer Science and Engineering, UT Arlington
2009 - 2012	**Analyst Programmer**, India/USA

Awards

2024   **⚥ 2024 Publication Award - International Test and Evaluation Organization (ITEA)**
Testing Machine Learning: Best Practices for the Life Cycle published in Naval Engineers Journal

2018   **⚥ Outstanding Graduate Teaching Assistant (Finalist)**
Dept. of Computer Science, UT Arlington (1 of 2 finalists from 75+ GTAs)

Fellowships

2015–2021   **STEM Doctoral Fellowship** Dept. of CSE, College of Engineering, UT Arlington

2021   **Summer Dissertation Fellowship** *Graduate School, UT Arlington*
1 of 5 recipients from Dept. of Computer Science
Competitive Fellowship Award Amount : $7,000

Research Grants / Contracts

2024–2025   **DoD/Department of Test & Evaluation (DoTE)**
Served in Co-PI-like role, led project on LLM T&E
PI: Dr. Laura Freeman; Total Award: $3.5 million and My Share: $212,000

2024–2024   **DoD/Department of Test & Evaluation (DoTE)**
Served in Co-PI-like role, led project on developing AI Test Harness for LLMs
PI: Dr. Laura Freeman; Total Award: $670,000 and My Share: $120,000

2023–2024   **DoD/Department of Test & Evaluation (DoTE)**
Served as a Senior Personal, led project on T&E of ML
PI: Dr. Laura Freeman

2021   **College of Engineering/UT Arlington, Research Experience for Undergraduates (REU) Grant**
Served as Co-PI: Responsible for Proposal development, Mentoring and Project Execution
Project Title - A Software Fault Localization Approach to Explainable AI
PI: Dr. Jeff (Yu) Lei; Total Award: $2000

Travel Grants

2020   **Dean's Travel Grant** *College of Engineering, UT Arlington [Did not travel due to SARS-CoV-2]*

2016   **Dean's Travel Grant** *College of Engineering, UT Arlington*

Peer-reviewed Proceedings (* indicate students formally or informally co-mentored)

C.23   Erin Lanus, Brian Lee, Dylan Steburg, **Jaganmohan Chandrasekaran**, and Laura Freeman. CODEX: Testing Machine Learning with the Coverage of Data Explorer Tool. In 2025 IEEE International Conference on Artificial Intelligence Testing (AITest), pp. 94-101. IEEE.

C.22   **Jaganmohan Chandrasekaran**, Brian Mayer, Heather Frase, Erin Lanus, Patrick Butler, Stephen Adams, Jared Gregersen, Naren Ramakrishnan and Laura Freeman. Test and Evaluation of Large Language Models to Support Informed Government Acquistion, 22nd Annual Acquisition Research Symposium and Innovation Summit, May 2025.

C.21   Erin Lanus, Brian Lee, **Jaganmohan Chandrasekaran**, Laura Freeman, M S Raunak, Raghu Kacker and Rick Kuhn. Data Frequency Coverage Impact on AI Performance In 2025 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 258-267, IEEE.

C.20   **Jaganmohan Chandrasekaran**, Ankita Ramjibhai Patel, Erin Lanus, and Laura Freeman Evaluating Large Language Model Robustness Using Combinatorial Testing In 2025 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 300-309, IEEE.

C.19   Cho-Ting Lee, Andrew Nesser, Shengzhe Xu, Jay Katyan, Patrick Cross, Sharanya Pathakota, Marigold Norman, John Simeone, **Jaganmohan Chandrasekaran**, and Naren Ramakrishnan. Can an LLM find its way around a Spreadsheet? In 2025 IEEE/ACM 47th International Conference on Software Engineering (ICSE), Ottawa, ON, Canada, 2025, IEEE Computer Society

C.18   **Jaganmohan Chandrasekaran**, Erin Lanus, Tyler Cody, Laura Freeman, Raghu N. Kacker, M S Raunak and D.Richard Kuhn. Leveraging Combinatorial Coverage in the Machine Learning Product Lifecycle. In 2024 IEEE Computer, 57(6), pp 16 - 26

C.17   D.Richard Kuhn, M S Raunak, Raghu N. Kacker, **Jaganmohan Chandrasekaran**, Erin Lanus, Tyler Cody, and Laura Freeman. Assured Autonomy through Combinatorial Methods. In 2024 IEEE Computer, 57(5), pp 86 - 90.

C.16   **Jaganmohan Chandrasekaran**, Tyler Cody, Nicola McCarthy, Erin Lanus, Laura Freeman, and Kristen Alexander. Testing Machine Learning: Best Practices for the Life Cycle. Naval Engineers Journal, 2024.
🎗 **International Test and Evaluation Association (ITEA) 2024 Publications Award**.

C.15   Nicola McCarthy, Tyler Cody, **Jaganmohan Chandrasekaran**, Erin Lanus, Laura Freeman, Kristen Alexander, and Sandra Hobson. Key Steps to Fielding Combat Credible AI-Enabled Systems. Naval Engineers Journal, 2024

C.14   Krishna Kadhka*, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. A Combinatorial Approach to Hyperparameter Optimization. In the IEEE/ACM 3rd IEEE International Conference on AI Engineering (CAIN), pp. 140-149, 2024.
🎗 **Distinguished paper Award Candidate**

C.13   Krishna Kadhka*, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. Synthetic Data Generation Using Combinatorial Testing and Variational Autoencoder. In 2023 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 228-236, IEEE.

C.12   Yingjie Wang*, **Jaganmohan Chandrasekaran**, Flora Haberkorn*, Yan Don*, Munisamy Gopinath, and Feras Batarseh. DeepFarm: AI-Driven Management of Farm Production using Explainable Causality. In 29th Annual Software Technology Conference (STC), pp. 27-36, IEEE.

C.11   Sunny Shree*, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. DeltaExplainer: A Software Debugging Approach to Generating Counterfactual Explanations. In 2022 IEEE International Conference On Artificial Intelligence Testing (AITest), pp. 103-110, IEEE.

C.10   **Jaganmohan Chandrasekaran**, Feras Batarseh, Laura Freeman, Raghu Kacker, M S Raunak and D. Richard Kuhn. Enabling AI Adoption through Assurance. In The International FLAIRS Conference Proceedings 2022, Vol. 35. (Tutorial - Extended abstract).

C.9   Ankita Ramjibhai Patel*, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. A Combinatorial Approach to Fairness Testing of ML Models. In 2022 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 94-101, IEEE.

C.8   **Jaganmohan Chandrasekaran**, Ankita Ramjibhai Patel, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. Evaluation of T-Way Testing of DNNs in Autonomous Driving Systems. In 2021 IEEE International Conference On Artificial Intelligence Testing (AITest), pp. 17-18, IEEE.

C.7   **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. A Combinatorial Approach to Explaining Image Classifiers. In 2021 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 35-43, IEEE.

C.6   **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. A Combinatorial Approach to Testing Deep Neural Network-based Autonomous Driving Systems. In 2021 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 57-66, IEEE.

C.5   **Jaganmohan Chandrasekaran**, Huadong Feng, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. Effectiveness of volumetric dataset reduction in testing machine learning algorithms. In 2020 IEEE International Conference On Artificial Intelligence Testing (AITest), pp. 133-140, IEEE.

C.4   Huadong Feng, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu N.Kacker and D. Richard Kuhn. A Method-Level Test Generation Framework for Debugging Big Data Applications. In 2018 IEEE International Conference on Big Data (Big Data), pp. 221-230, IEEE.

C.3   **Jaganmohan Chandrasekaran**, Huadong Feng, Yu Lei, D. Richard Kuhn and Raghu N.Kacker. Applying Combinatorial Testing to Data Mining Algorithms. In 2017 IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 253-261, IEEE.

C.2   **Jaganmohan Chandrasekaran**, Laleh Sh Ghandehari, Yu Lei, D. Richard Kuhn and Raghu N.Kacker. Evaluating the effectiveness of BEN in localizing different types of software fault. In 2016 IEEE Ninth International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 26-34, IEEE.

C.1   Laleh Sh Ghandehari, **Jaganmohan Chandrasekaran**, Yu Lei, D. Richard Kuhn and Raghu N.Kacker. BEN: A combinatorial testing-based fault localization tool. In 2015 IEEE Ninth International Conference on Software Testing, Verification and Validation Workshops (ICSTW), pp. 1-4, IEEE.

Manuscripts Under Preparation/Review

M.2   Krishna Khadka*, **Jaganmohan Chandrasekaran**, Yu Lei, Raghu Kacker, and D.Richard Kuhn. A Combinatorial Approach to Synthetic Data Generation. (Under Review - Submitted to Springer Journal)

M.1   Padmaksha Roy, **Jaganmohan Chandrasekaran**, Erin Lanus, Laura Freeman, and Jeremy Werner. A Survey of Data Security: Practices from Cybersecurity and Challenges of Machine Learning. (Under Review - Submitted to ACM Journal)

Other Publications

O.2   **Jaganmohan Chandrasekaran.** Testing Artificial Intelligence-based software systems. Dissertation & Theses University of Texas - Arlington; ProQuest Dissertation & Theses Global. (Dissertation)

O.1   **Jaganmohan Chandrasekaran.** Evaluating The Effectiveness Of BEN In Localizing Different Types Of Software Fault. Dissertation & Theses University of Texas - Arlington; ProQuest Dissertation & Theses Global. (Thesis)

Book Chapters

B.1   Chapter 1 - An Introduction to AI Assurance by Feras Batarseh, **Jaganmohan Chandrasekaran,** Laura Freeman AI Assurance: Towards Trustworthy, Explainable, Safe and Ethical AI, Academic Press, 2022.

Posters

PST.4   Rick Kuhn, M S Raunak, Raghu Kacker, **Jaganmohan Chandrasekaran**, Erin Lanus, Tyler Cody, and Laura Freeman Measurements to Improve AI/ML Training Data Sets , The Twenty-Fourth Annual High Confidence Software And Systems Conference (HCSS), May 2024.

PST.3   Luis Pol*, Brian Lee*, Anika Thatavarthy*, Erin Lanus, Justin Kauffman, and **Jaganmohan Chandrasekaran.** Combinatorial Testing to Measure Machine Learning Dataset Differences, Virginia Tech National Security Institute Colloquium, April 2023.

PST.2   Feras Batarseh, **Jaganmohan Chandrasekaran,** Yan Dong*, Gopinath Munisamy, and Susan E. Duncan. Measuring the Causal Effects of Outliers in Agricultural Supply Chains Using AI, Envisioning 2050 in the Southeast: AI-Driven Innovations in Agriculture, Auburn University, 2022.

PST.1   Edrik Aguilera*, Sunny Shree*, **Jaganmohan Chandrasekaran,** and Yu Lei A Software Fault Localization approach to Explainable Artificial Intelligence, UTA Innovation Day, April 2021.

RESEARCH TALKS

2025	Test and Evaluation of Large Language Models - Deep Dive with Research Sponsor, DoD/DoTE
	Test and Evaluation of Large Language Models to Support Informed Government Acquisition, 22nd Annual Acquisition Research Symposium & Innovation Summit, (Co-presenter)
	Evaluating Large Language Model Robustness using Combinatorial Testing - Deep Dive with Research Sponsor, DoD/DoTE
2024	Application of Combinatorial Testing in Testing Machine Learning Systems, A workshop on Combinatorial Testing for AI-Enabled Systems, Arlington , Virginia
	Large Language Models - Test & Evaluation Considerations, Director Operational Test and Evaluation (DOT&E) - AI working group
2023	**Invited Panelist** - Designing Autonomous/AI/ML Systems for Assurance, Second IEEE International Workshop on Workshop on Assured Autonomy, AI and Machine Learning (WAAM)
2022	**Tutorial -** Enabling AI adoption through Assurance, 35th FLAIRS Conference, USA
	Speed Briefing on AI Assurance , Inaugural CCI Symposium,USA
2021	Towards Building High Quality AI-Based Systems: An exploration between Software Engineering and AI, Virginia Tech, USA
	Evaluation of T-Way Testing of DNNs in Autonomous Driving Systems, 3rd IEEE International Conference on Artificial Intelligence Testing - Virtual
	A Combinatorial Approach to Explaining Image Classifiers, IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW) - Virtual
	A Combinatorial Approach to Testing Deep Neural Network-based Autonomous Driving Systems, IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW)- Virtual
2020	Effectiveness of dataset reduction in testing machine learning algorithms, 2nd IEEE International Conference on Artificial Intelligence Testing - Virtual
2016	Evaluating the Effectiveness of BEN in Localizing Different Types of Software Fault, IEEE International Conference on Software Testing, Verification and Validation Workshops (ICSTW), Chicago, USA

TEACHING

Experience: 5+ years, 15+ semesters as Graduate Teaching Assistant worked with 600+ students across undergraduate & graduate levels

Specializations: Software Testing, Software Engineering, AI Assurance, Test and Evaluation of AI systems.

Teaching Philosophy: My role as educator is successful when I empower students to become independent, critical thinkers through inclusive, research-informed teaching. I believe teaching and research are complementary—insights from my research enable me to present concepts from multiple perspectives, while student interactions deepen my understanding of fundamental principles. I am committed to creating supportive learning environments where collaboration, respect, and open communication thrive, ensuring every student has the opportunity to succeed through personalized support in collaborative learning environments.

Teaching Contributions:

- **Responsive Teaching:** Integrated student feedback to continuously refine instructional approaches and classroom practices

- **Inclusive environment:** Provided individualized accommodations including alternative testing environments and flexible office hours for students with diverse needs

- **Research Integration:** Applied insights from software engineering research to enhance curriculum relevance and student understanding

Instructor

Spring 2025	**Co-Instructor - DATAWorks 2025,** *Workshop on Combinatorial Testing for AI-Enabled Systems*
Spring 2024	**[CMDA 4984] Data Security - Guest Lecturer,** *Undergraduate Course*
Summer 2022	**CCI Cybercamp - Instructor ,** Introduction to AI Assurance, *One day workshop*
Summer 2018	**[CSE 4321] Software Testing - Guest Lecturer,** *Undergraduate course*
Summer 2017	**[CSE 5321] Software Testing - Guest Lecturer,** *Graduate course*

Graduate Teaching Assistant

Summer 2020	**[CSE 5321] Software Testing,** *Graduate course*
Spring 2020	**[CSE 6321] Advanced Automation Testing,** *Graduate course*
Fall 2019	**[CSE 6321] Advanced Automation Testing,** *Graduate course*
Summer 2019	**[CSE 5321] Software Testing,** *Graduate course*
Spring 2019	**[CSE 6321] Advanced Automation Testing,** *Graduate course*
Fall 2018	**[CSE 6321] Advanced Automation Testing,** *Graduate course*
Summer 2018	**[CSE 5321] Software Testing,** *Graduate course*
Spring 2018	**[CSE 5321] Software Testing,** *Graduate course*
Fall 2017	**[CSE 4321] Software Testing,** *Undergraduate course*
Summer 2017	**[CSE 5321] Software Testing,** *Graduate course*
Spring 2017	**[CSE 5321] Software Testing,** *Graduate course*
Fall 2016	**[CSE 4321] Software Testing,** *Undergraduate course*
Summer 2016	**[CSE 4321] Software Testing,** *Undergraduate Course*
Spring 2016	**[CSE 3311] Object-Oriented Software Engineering,** *Undergraduate course*
Fall 2015	**[CSE 4361] Software Design Patterns,** *Undergraduate course*
Spring 2015	**[CSE 5328] Software Team Project II,** *Graduate course*
Fall 2014	**[CSE 5325] Software Engineering II,** *Graduate course*

MENTORING EXPERIENCE

Ph.D.	
	Nazmul Kabir Sikder, Virginia Tech, *2022*
	Yingjie (Chelsea) Wang, Virginia Tech, *2022*
	Krishna Khadka, UT Arlington, *2022 - 2023*

Masters	Muhammad Shehryar Khan, Virginia Tech, *2025*
	Divakara Rao Annepu, Virginia Tech, *2024*
	Luis Pol, Virginia Tech, *2023*
	Flora Haberkorn, Virginia Tech, *2022*
	Yan Dong, Virginia Tech, *2022*
	Weiting Li, Virginia Tech, *2022*

Bachelors	Patrick Cross, Virginia Tech, *2024*
	Aarush Patil, Virginia Tech, *2024*
	Anika Thatavarthy, Virginia Tech, *2023*
	Edrik Aguirela, UT Arlington, *2020 - 2021*
	Christian Teeples, UT Arlington, *2020*
	Tiffany Isabel Frias, UT Arlington, *2020*

SERVICE

Policy Engagement

2024 - Current — **Contributor, Working Group # 3 - Capability Evaluations**
The Center for AI Standards and Innovation, NIST

2023 — **Invited Panelist - Designing Autonomous/AI/ML Systems for Assurance**
Second IEEE International Workshop on Workshop on Assured Autonomy, AI and Machine Learning (WAAM)

Technical Program Committee

Serving both as a Program Committee Member and as a Reviewer unless otherwise specified

2025 — **1st Workshop on Quality Evaluation of ML-based Software Systems**
The Seventeenth International Conference on Advances in System Testing and Validation Lifecycle (VALID)
7th IEEE International Conference on Artificial Intelligence Testing *(AI Test)*
18th IEEE International Conference on Software Testing, Verification and Validation *(ICST) - Poster track*

2024 — **1st International Workshop on Testing and Evaluation of Large Language Models**
The Sixteenth International Conference on Advances in System Testing and Validation Lifecycle (VALID)
3rd International Conference on AI Engineering *(CAIN)*
16th International Conference on Advances in System Testing and Validation Lifecycle
17th IEEE International Conference on Software Testing, Verification and Validation *(ICST) - Poster track*
6th IEEE International Conference on Artificial Intelligence Testing *(AI Test)*
24th IEEE International Conference on Software Quality, Reliability, and Security - Special Track on Artificial Intelligence Testing *(QRS)*

2023 — **30th Annual IEEE Software Technology Conference** *(STC)*
5th IEEE International Conference on Artificial Intelligence Testing *(AI Test)*
16th IEEE International Conference on Software Testing, Verification and Validation *(ICST) - Poster track*

2022	**1st IEEE International Workshop on Assured Autonomy, Artificial Intelligence and Machine Learning** (WAAM) - *Served on the Program Committee* **29th Annual IEEE Software Technology Conference** (STC) **4th IEEE International Conference on Artificial Intelligence Testing** (AI Test)
2021	**16th International Conference on Software Technologies** - *Auxillary Reviewer*
2020	**15th International Conference on Software Technologies** - *Auxillary Reviewer* **35th International Conference on Automated Software Engineering (ASE)** - *Sub Reviewer*

Journal Reviewer

2025	**IEEE Reliability** **IEEE Computer** **IEEE Transactions on Software Engineering**
2024	**IEEE Reliability** **IEEE Computer Special Issue - AI Failures: Causes, Implications, and Prevention**
2023	**Software Quality Journal**

Organizing Committee

2025	**Co-organizer,** *Combinatorial Testing for AI-Enabled Systems - DATAWorks 2025 .*
2024	**Co-organizer,** *Workshop on Combinatorial Testing for AI-enabled software systems (CT4AIES).*
2023	**Publicity Chair,** *ICST 2023*

Proposal Reviewer

2025	**Grant Proposal Reviewer,** *Commonwealth Cyber Initiative (CCI) - Central Virginia Node (CVN)*
2022	**Grant Proposal Reviewer,** *Commonwealth Cyber Initiative (CCI)*

REFERENCES

Dr. **Jeff Lei**	Professor, Computer Science and Engineering The University of Texas at Arlington E-mail: ylei@cse.uta.edu
Dr. **Erin Lanus**	Research Associate Professor, Intelligent Systems Division Virginia Tech National Security Institute E-mail: lanus@vt.edu
Richard Kuhn	Guest Researcher, Information Technology Lab National Institute of Standards and Technology E-mail: d.kuhn@nist.gov
Dr. **John Robb**	Former Associate Professor of Practice, Computer Science and Engineering, UT Arlington. Email: john_h_robb2003@yahoo.com

Jaganmohan Chandrasekaran
Research Assistant Professor
Sanghani Center for AI & Data
Analytics
Alexandria, Virginia 22305
jagan@vt.edu

Date: October 5, 2025

Dear Members of the Faculty Search Committee,

I am writing to apply for the position of Tenure-Track Assistant Professor (Position ID: R-086278) in the Department of Computer Science at Texas A&M University-Corpus Christi (TAMU-CC). My research lies at the intersection of software engineering and artificial intelligence (AI), focusing on the test and evaluation (T&E) challenges in AI-enabled software systems across their lifecycle. Currently, as a Research Assistant Professor at Virginia Tech's Sanghani Center for AI and Data Analytics, my work explores the bidirectional relationship between software engineering and AI. This includes developing testing methods and frameworks to address the evaluation challenges in large language models (LLMs) while also investigating how LLMs can augment traditional software testing activities. My research vision at the intersection of software engineering and AI, combined with my five years of experience as a Graduate Teaching Assistant for diverse software engineering courses at both undergraduate and graduate levels, positions me well to contribute meaningfully to the department's vision and the program's pedagogical goals.

My research over the past decade has centered on software engineering for AI, particularly on testing AI-enabled software systems. My Ph.D. work focused on addressing the unique testing challenges in the Machine Learning (ML) model development phase, developing frameworks for testing ML algorithms and pre-trained Deep Neural Network models used in autonomous driving systems, studying the impact of replacing large training datasets with sampled datasets in testing ML algorithms, and a software fault localization-based approach to produce counterfactual explanations for image classifiers. As a postdoctoral researcher, expanding my focus beyond correctness, I studied the broader AI assurance challenges, investigating Explainability, data security challenges across the ML lifecycle, and developing a fairness testing framework for detecting bias in pre-trained ML models. My work on test & evaluation (T&E) best practices for ML systems has been recognized with the International Test and Evaluation Association (ITEA) 2024 Best Publication Award and incorporated into the sponsor's policy and guidance manual. This research, along with my other contributions to testing AI systems, led to an invitation to serve as a panelist at the 2nd IEEE International Workshop on Assured Autonomy, AI and Machine Learning (WAAM).

My current work explores the bidirectional relationship between software engineering and AI. I am leading a research effort to address the T&E challenges in LLMs. This includes developing a comprehensive evaluation framework for testing LLM's capabilities and qualities, adapting traditional software testing approaches for LLM robustness evaluation. Concurrently, I am investigating the challenges in adapting off-the-shelf LLMs for test generation activities. My research addresses critical national priorities and has been supported by federal grants and contracts. I also have ongoing research collaborations with researchers from the National Institute of Standards and Technology (NIST) that have resulted in joint publications and co-organized workshops, with a proposal currently under development. My research accomplishments are supported by a strong publication record in top-tier venues such as ICST, ICSE-CAIN, AITest, ICSE, and Naval Engineers Journal. Additionally, I represent my institution in the NIST's U.S. AI Safety Institute Consortium, contributing to working group discussions on the TEVV (Test, Evaluation, Verification, and Validation) of LLMs and participating in pilot efforts like the Zero Drafts Project.

As a tenure-track faculty member at TAMU-CC, I will establish a lab dedicated to addressing the challenges at the intersection of software engineering and AI. My lab will develop methods, metrics, tools, and frameworks to address the evaluation challenges of AI, LLMs in particular, while also investigating how LLMs can augment traditional software testing activities. My research agenda is built upon three interconnected pillars: developing systematic testing methodologies for LLMs that move beyond static benchmarks toward adaptive evaluation techniques, investigating how LLMs can augment traditional software testing activities such as automated input model generation, and establishing model-agnostic approaches for providing performance guarantees in deployed AI/ML systems. This bidirectional research vision will both aim to advance the state of testing practices for AI/ML systems across their lifecycle and enhance our ability to successfully leverage AI to augment software engineering practices. My research

program's alignment with national priorities, as evidenced by the recent America's AI Action Plan 2025, supported by a strong publication record and active collaborations with researchers from federal agencies, positions me to compete effectively for sustained external support from agencies like NSF, DoD, and NIST.

My teaching philosophy is centered on empowering students to become independent and critical thinkers through an inclusive, research-informed approach. As a Graduate Teaching Assistant for 17 semesters, I guided over 600 students, including undergraduate and graduate courses in software testing, design patterns, object-oriented software engineering, and advanced topics in software testing. My responsibilities included designing course projects, developing grading rubrics, assisting with the ABET-certification process, closely supporting the implementation of a new graduate-level coursework, training junior teaching assistants, and occasionally delivering lectures. This hands-on experience, recognized with a nomination for the Outstanding GTA award, has enabled me to teach at both undergraduate and graduate level courses at TAMU-CC. My future curriculum goals include developing a graduate-level AI Testing and Evaluation course that provides hands-on experience in building and deploying reliable AI systems. Beyond the classroom, I have had the privilege of mentoring nine graduate students and six undergraduate students, including those from underrepresented groups.

I would welcome the opportunity to contribute to the Department of Computer Science at Texas A&M University-Corpus Christi and its mission as a Hispanic-Serving Institution. Thank you for considering my application.

Sincerely,

Jaganmohan Chandrasekaran, Ph.D.
Research Assistant Professor
Sanghani Centre for AI & Data Analytics
Virginia Tech