

Chathurangi Shyalika

AI Intern @IBM, Ph.D. Candidate, AI Inst., University of South Carolina
https://chathurangishyalika.github.io/chathurangishyalika_CV/



861 Bedford Rd, ELM Hall, 334
Pleasantville, NY, 10570, USA

✉ jayakodc@email.sc.edu [chathurangi-shyalika](https://www.linkedin.com/in/chathurangi-shyalika) [ChathurangiShyalika](https://github.com/ChathurangiShyalika) [Chathurangi Shyalika](https://plus.google.com/ChathurangiShyalika) [\(839\)-399-2285](tel:(839)399-2285)

EDUCATION

University of South Carolina (Expected Grad. Dec.2026) Columbia, South Carolina, USA
Ph.D. in Computer Science | GPA: 3.8/4.0 August 2022 – Present
Dissertation: *Neurosymbolic Multi-Agent AI for Robust, Intelligent, and Trustworthy Industrial Systems* ([link](#))

University of Moratuwa Sri Lanka
M.Sc. in Artificial Intelligence | GPA: 3.59/4.0 2018 – 2021
Dissertation: *An Integrated Approach for Uncertainty Scheduling in Adaptive Environments using MARL* ([link](#))

General Sir John Kotelawela Defence University Sri Lanka
B.Sc. in Information Technology | GPA: 3.96/4.2 | Batch Top 2014 – 2018
Dissertation: *ALLDS: An Image Processing Application for the Diagnosis of Acute Lymphoblastic Leukemia* ([link](#))

WORK EXPERIENCE

★ **AI Research Intern (Supervisor: [Dr. Dhaval Patel](#))** May 2026 – Aug 2026

IBM Research Yorktown Heights, NY
Design, develop, and deploy high-quality industrial AI agents, scenarios and custom evaluation protocols for the IBM agentic system (AssetOpsBench). Implemented embodied question answering platform and failure metadata knowledge graph. Built automated evaluation pipelines combining rule-based validation, LLM-based judgment and custom evaluation frameworks.

★ **Neuro-symbolic AI Research Intern (Supervisor: [Dr. Cory Henson](#))** May 2025 – Sept 2025

Robert Bosch LLC Pittsburgh, PA
Developed 'CausalPulse', an intelligent multi-agent-based solution for anomaly detection, root cause analysis, and causal reasoning in manufacturing as part of Bosch's next-generation AI solutions. ([Demo](#))

★ **Graduate Research Assistant (Research Advisor: [Dr. Amit Sheth](#))** August 2022 – Present

Artificial Intelligence Institute of South Carolina (AIISC) South Carolina, USA

Projects: 1. Neurosymbolic Multi-Agent AI for Robust, Intelligent, and Trustworthy Industrial Systems:

Leading the smart manufacturing project ([link](#)) at AIISC.

Designed and deployed 'SmartPilot', a multi-agent LLM system for industry 4.0 integrating retrieval (RAG), structured reasoning, and tool execution. Built end-to-end pipelines for anomaly detection and rare event prediction over large-scale time-series and multimodal industrial datasets. Developed evaluation frameworks with automated metrics (robustness, trustworthiness, intelligence), enabling reliable benchmarking of agentic systems. Implemented multimodal fusion models (vision + time-series + text) improving robustness and interpretability in industry 4.0. Designed data curation and enrichment pipelines, improving downstream model performance and generalization.

2. Enhancing the Security and Mitigating Bias in Vision Language Models (VLMs) to Combat Hateful Image Generation and Detoxify Hateful Images: Developing methods for preventing and mitigating toxic and biased content generation in VLMs through DE-HATE techniques ([link](#)).

★ **Senior Engineer-Big Data and Data Science** August 2019 – July 2022

Mobitel, Sri Lanka Colombo, Sri Lanka
Project: Big Data and Data Science Project: Developed AI-driven solutions for customer churn prediction, broadband tower optimization, customer segmentation, seasonal recommendations, fraud detection, conversational AI, mAdvertising, M2M classification, smartphone recommendation, and predictive analytics for international calling.

★ **Software Engineer-Artificial Intelligence** May 2018 – August 2019

SimCentric Technologies, Sri Lanka Colombo, Sri Lanka
Project: "SmartTrainer"—An Adaptive Framework to Prevent Real-Time Injuries: Smart wearable and Android-based application for human activity recognition and alerting to prevent real-time injuries ([link](#)).

★ **Software Engineer Intern** July 2017 – December 2017

WSO2 Colombo, Sri Lanka
Project: XACML Development Tool: Developed a tool compliant with XACML 3.0 specifications and platform for creating and evaluating fine-grained access control policies ([link](#)).

PUBLICATIONS [Complete List [Google Scholar](#)].

Selected Journal Publications

- A Comprehensive Survey on Rare Event Prediction. [*ACM Computing Surveys*] [[paper](#)]
- RI2AP: Robust and Interpretable 2D Anomaly Prediction in Assembly Pipelines [*Sensors*] [[paper](#)]
- Evaluating the Role of Data Enrichment Approaches Towards Rare Event Analysis in Manufacturing. [*Sensors*] [[paper](#)].

Selected Conference Publications

- IndustryAssetEQA: A Neurosymbolic Operational Intelligence System for Embodied Question Answering in Industrial Asset Maintenance [*ACL 2026*] [[paper](#)]
- AssetOpsBench: A Real-World Evaluation Benchmark for AI-Driven Task Automation in Industrial Asset Management (*KDD 2026*) [[paper](#)]
- Where Should Knowledge Enter? A Layered Framework for Knowledge Infusion in Multimodal Iterative Generative Models [*CVPR 2026*]
- CausalPulse: An Industrial-Grade Neurosymbolic Multi-Agent Copilot for Causal Diagnostics in Smart Manufacturing [*AAAI-MAKE 2026*] [[paper](#)]
- CausalTrace: A Neurosymbolic Causal Analysis Agent for Smart Manufacturing [*AAAI-IAAI 2026*] [[paper](#)]
- DETONATE: A Benchmark for Text-to-Image Alignment and Kernelized Direct Preference Optimization [*AAAI 2026*] [[paper](#)]
- CausalPulse: Agentic Copilot for Root Cause Analysis in Smart Manufacturing [*AAAI-Demo 2026*] [[paper](#)]
- AssetOpsBench-Live: Privacy-Aware Online Evaluation of Multi-Agent Performance in Industrial Operations [*AAAI-Demo 2026*] [[paper](#)]
- In-Situ Eval: A Modular Framework for Custom and Real-Time RAG Benchmarking [*AAAI-Demo 2026*] [[paper](#)]
- NSF-MAP: Neurosymbolic Multimodal Hybrid Fusion for Robust and Interpretable Anomaly Prediction in Assembly Pipelines. [*IJCAI 2025*] [[paper](#)]
- SmartPilot: Agent-Based CoPilot for Intelligent Manufacturing. [*IEEE CAI 2025*] [[paper](#)]
- SmartPilot: Agent-Based CoPilot for Intelligent Manufacturing. [*AAMAS 2025*] [[paper](#)]
- Time Series Foundational Models: Their Role in Anomaly Detection and Prediction. [AAAI 2025] [[paper](#)]
- Towards Rare Event and Anomaly Prediction in Manufacturing: Bridging Methodological Gaps in Industrial Applications. [*NeurIPS 2024*] [[paper](#)]
- Pic2Prep: A Multimodal Conversational Agent for Cooking Assistance, [*AAAI Demo 2025*] [[paper](#)]
- AssemAI: Interpretable Image-Based Anomaly Detection for Manufacturing Pipelines. [*ICMLA 2024*] [[paper](#)]

TUTORIALS AND ENGAGEMENTS

- Led development of **AssetOpsBench**, a large-scale benchmark for evaluating agentic AI systems in industrial environments (collaboration with IBM). Coordinated cross-institution efforts across academia and industry
- **KDD 2026**: Building Reliable Industrial Agents with MCP: A Hands-on AssetOpsBench Tutorial for AI-Driven Operations
- **AAAI 2026**: **From Inception to Productization: Hands-on Lab for the Lifecycle of Multimodal Agentic AI in Industry 4.0**, https://ibm.github.io/AssetOpsBench/aaai_website/ [Collaboration with IBM]
- **AAAI 2025**: **Developing explainable multimodal AI models with hands-on lab on the life-cycle of rare event prediction in manufacturing**, <https://aiisc.ai/aaai25/AAAI-Lab-Rare-Event-Prediction/>
- **AAMAS 2025, US2TS 2025**: **Multiagent CoPilot in Industrial AI Applications**, https://aiisc.ai/tutorials/AAMAS_Tutorial_Multiagent_CoPilot_in_Industrial_AI_Applications/
- **CODS 2025 Agentic AI Challenge**, Co-organizer with IBM, <https://ikdd.acm.org/cods-2025/data-challenge.php>
- **AssetOpsBench-Live**: <https://www.codabench.org/competitions/10206/> [Collaboration with IBM]

TECHNICAL SKILLS

Languages -Python, Java SE, Java EE, React, C, C#, Node JS **Frameworks**- LLMs, LangChain, LangGraph, Transfer learning, Hadoop, Spark, Hive, MapReduce, **Database** - MySQL, MSSQL, **ML Frameworks** - Tensorflow, Keras, PyTorch, **ETL Tools**- Informatica, PowerCenter **Ontology Development Frameworks**- Protege, Neo4J

ACHIEVEMENTS AND AWARDS

- Best Paper Award at IEEE-CAI 2025: Paper: “SmartPilot: Agent-Based CoPilot for Intelligent Manufacturing” ([link](#))
- Best Poster Award at DiscoverUSC 2024 Conference: “RI2AP: Robust and Interpretable 2D Anomaly Prediction in Assembly Pipelines.” ([link](#))
- Gold Medal for the Best Overall Performance in B.Sc. (Hons) Information Technology, KDU, Sri Lanka [2018] and Vice Chancellor’s List - KDU, Sri Lanka [2014- 2017]
- Hackathons: KDU_FOC (2016) 2nd place, HackX (2016), BeThemChallenge (2017), SimCtHackNight (2019)