

KIRAN K KETHINENI

AI & Automation Engineer

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Professional Summary

Machine Learning Engineer and Automation-focused AI developer specializing in real-time perception and resource-efficient computer vision systems. Experienced in designing and deploying lightweight ML pipelines for edge and mobile platforms, optimizing models for memory, latency, and reliability in field conditions. Strong software engineering foundation with experience building production APIs, automation workflows, and cloud infrastructure (Azure, Terraform). Passionate about translating applied ML into robust automation solutions that scale.

Machine Learning Engineering Experience

Doctoral Research

University of North Texas, Denton – TX | Jan 2022 to Present

Selected Technical Projects:

- **OmniSciNet** | *TensorFlow, CNN, Image Segmentation* — Architected a lightweight segmentation CNN replacing transformer-heavy baselines; achieved comparable accuracy with 3× fewer parameters (66% reduction) and lower inference latency.
- **SOIL Framework** | *TensorFlow.js, Web Inference, Privacy* — Engineered a serverless, browser-based on-device inference pipeline enabling zero-install deployment, privacy-preserving inference, and eliminating cloud inference dependency.
- **ChromaSense** | *Edge AI, TensorRT, IoT* — Designed a channel-sequential CNN processing RGB streams with shared weights, reducing RAM usage by 25% and flash footprint by 60% for edge deployment.
- **Semantic-Search** | *CNN, Semantic Attributes, Retrieval* — Built an attribute-aware disease retrieval system using descriptor matching, reducing retraining effort for incremental class expansion.
- **XpressWeed** | *TensorFlow, MAML, Few-Shot Segmentation* — Implemented a few-shot weed segmentation pipeline using meta-learning and prior texture knowledge to adapt to unseen species with 12 labeled examples, achieving 85% segmentation accuracy.
- **SprayCraft** | *Graph Modeling, Optimization, TSP Routing* — Developed a hotspot-driven variable rate drone spraying planner using graph-based intensity computation and TSP route optimization, improving coverage efficiency and chemical utilization.
- **Weed-Out** | *Semi-Supervised Learning, Clustering, Active Learning* — Created a human-in-the-loop clustering workflow for rapid labeling and annotation reuse, improving adoption to unseen classes with minimal manual effort.

Professional Experience

Teaching Assistant & Research Mentor

University of North Texas, Denton – TX | Jan 2022 to Present

- Conducted supplementary C++ lab sessions, improving student readiness through structured walkthroughs, live coding, and troubleshooting support.
- Supervised undergraduate project teams, providing mentorship in problem framing, implementation planning, and experimental validation, integrated high-quality outcomes into lab research efforts.
- Supported course delivery by creating learning materials (assignments, handouts, practice sets) and coordinating review sessions.

Software Developer

Harvard Pilgrim Health Care, Boston – MA | Mar 2019 to Dec 2021

- Developed and maintained responsive web applications using Angular, Ext JS, JavaScript/TypeScript, HTML, and CSS, improving usability and cross-browser compatibility.
- Built and enhanced backend services and REST APIs (Spring Boot/Java) to support business workflows, validations, and secure data processing.
- Integrated applications with database systems using optimized queries and persistence layers to ensure reliability, data integrity, and performance.
- Automated CI/CD pipelines and build workflows using Jenkins and Maven, supporting repeatable builds, testing, and deployments.
- Provisioned and managed cloud infrastructure on Microsoft Azure using Terraform, enabling scalable and consistent environment deployment across development and release stages.
- Used Git/GitHub for version control, branching strategies, and collaborative development across teams.
- Partnered with business stakeholders and analysts to understand requirements, recommend technical solutions, and translate workflows into implementable epics, user stories, and release plans.

Education

Doctor of Philosophy

University of North Texas, Denton – TX | Jan 2022 to Present

- Major: Computer Science and Engineering.
- Related coursework: Computer Algorithms, Graph Theory, Machine Learning, Electronic System Design, Graph Neural Networks, Fundamentals of AI, VLSI Design.

Master of Science

University of North Texas, Denton – TX | Jan 2017 to Dec 2018

- Major: Computer Science and Engineering.
- Related coursework: Computer Architecture, Computer Networks, Real-time Operating Systems, Computer Vision, VLSI Design.

Bachelor of Technology

Vignan's University, Guntur – India | July 2012 to May 2016

- Major: Electronics and Communication Engineering.
- Related coursework: Switching Theory, Logic Design, Signals and Systems, Network Theory, Electronic System Design, Analog and Digital Communication.

Skills

- Machine Learning & AI: CNNs, GNNs, RNNs, MAML, Meta-Learning, Few-Shot Learning, Transfer Learning, Computer Vision, Image Classification, Semantic Segmentation, Object Detection, Model Optimization, Feature Engineering, NLP, NER, LLM.
- Frameworks & Libraries: TensorFlow, TensorFlow.js, Keras, PyTorch, NumPy, Pandas, Matplotlib, Seaborn, scikit-learn, OpenCV, NetworkX.
- Programming & Scripting: Python, Java, C++, JavaScript, SQL, TypeScript, HTML, CSS.
- Software & Tools: Spring Boot, Angular, Ext JS, REST APIs, Git, Terraform, Postman.