# KARTHIK GANESAN

Motivated, cross-functional developer seeking full-time opportunity.
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## Education:

**Master of Science** — Aug' 18 – May' 20
Arizona State University, USA — GPA: 3.96 / 4
**Bachelor of Engineering** — Aug' 14 – May' 18
Anna University, India — GPA: 8.03 / 10

## Skills:

**Programming**: Python, Rust, C++, SQL, Terraform, HTML, CSS, React, Bash, Matlab.
**Framework and Tools**: Langchain, Streamlit, Docker, Git, ROS, Blender, OpenCV, Qt Designer, Selenium, Nvidia Omniverse
**Cloud Platforms**: GCP, AWS.

## Experience:

**Developer** | Tyson Foods, Springdale, AR | Nov '21 - Present

- Currently leading Tyson's LLM initiatives, successfully developing a Streamlit-based chat interface for processing Structured and Unstructured data through Natural Language queries. Deployed the chatbot securely on GCP using CloudRun, Load Balancer, and IAP for authentication.
- Developed an asynchronous Python library to facilitate the rapid prototyping of LLM applications across Tyson. This library efficiently reads and processes BigQuery data, enables the creation of embeddings, and stores them in ChromaDB/QdrantDB on GCP CloudRun. Additionally, leveraged mounted GCP Filestore for robustness and high-speed I/O.
- Established a simulation-based workflow at Tyson using Nvidia Omniverse, ROS2, MoveIt2, AWS, and Reinforcement Learning. Conducted feasibility testing of digital twin and implemented RL in simulation.
- Developed ML models with AWS Sagemaker evaluating synthetic image detection performance. Achieved a 50% reduction in training time through techniques like Transfer Learning Twice and Distributed Training, achieving an accuracy of approximately 70% across 5 classes, with a max class accuracy of 97%.
- Architected and developed a cloud-based pipeline for synthetic data generation. Leveraged AWS, Python, Blender, Docker, Terraform, and CI/CD for streamlined development.

**Software Application Engineer** | Duke University, Durham, NC | Jan' 21 – Oct' 21

- Led the development of a high-performance Optical Coherence Tomography (OCT) data-acquisition and processing software application using Python and Qt Designer.
- Established and maintained an efficient Project Management System leveraging Jira and Confluence, ensuring seamless documentation and user request management.
- Collaborated with stakeholders to define software requirements for OCT, assessing feasibility and aligning with project goals.
- Enhanced existing projects by resolving bugs, implementing requested features, and delivering comprehensive documentation using Qt Designer, C++, Jira, and Git.

**Robotics Research Assistant** | Arizona State University, Tempe, AZ | Jan'20 – Jan' 21

- Engineered an autonomous vehicular robot and its middleware using ROS and C++ for real-world operation.
- Integrated the robot into Gazebo simulation environment using URDF, concurrently developing a user-friendly GUI with Qt Designer and Python to access camera sensor data.
- Applied YOLOv3 model to create a highly accurate ML model, achieving a 90% detection accuracy for custom objects, enhancing the robot's navigation capabilities.

**Autonomous Surveillance Drone** | Arizona State University, Tempe, AZ | Jan'19 - May'19

- Developed and operationalized autonomous drone movement and landing using Aruco markers, ROS, OpenCV and Python.
- Leveraged Neural Networks and Deep Learning Models for object detection and sending only the required frames of interest to the master node.