Noah **Gardner**

SOFTWARE ENGINEER · RESEARCH SCIENTIST

✉ ngngardner@gmail.com   ⌗ ngngardner   in Noah Gardner

Education

Kennesaw State University	Kennesaw, GA
MASTER OF SCIENCE IN COMPUTER SCIENCE	May 2022
Kennesaw State University	Kennesaw, GA
BACHELOR OF SCIENCE IN COMPUTER ENGINEERING	May 2020

Skills

- **Languages:** Python, Go, Julia, Nix
- **Technologies:** Git, Linux, Docker, PyTorch, OpenCV, SQL, GCP

Experience

Software Engineer   Atlanta, GA

NCR VOYIX   June 2022 - Present

- Architected and maintained a cloud-based computer vision service to classify produce at self-checkout kiosks, scaling the system to support over 1,000 stores, 10,000 SCOs, and 1 million daily requests.
- Developed the core service using Python and FastAPI and engineered the data pipeline with GCP Dataflow to process and save image data.
- Trained and deployed computer vision models on GPU-accelerated platforms to deliver real-time predictions.
- Established key performance indicators (KPIs) to evaluate model relevance and performance, creating a live dashboard in GCP Monitoring to track production model accuracy and operational health.
- Mentored and onboarded new software engineer interns, guiding their project contributions and fostering their technical development through code reviews and regular feedback.

Graduate Research Assistant   Kennesaw, GA

KENNESAW STATE UNIVERSITY   May 2020 - September 2022

- Engineered a reinforcement learning model to predict wrist motion direction from 2-channel sEMG data, achieving 92% accuracy by combining a Convolutional Neural Network (CNN) for deep feature extraction with an A2C actor-critic agent.
- Architected and trained a Deep Q-Network (DQN) for robotic path planning, pioneering the use of Dijkstra's algorithm to generate expert demonstrations which significantly accelerated model convergence.
- Developed the novel Iterative Self-Organizing Data Split (ISODS) algorithm to initialize cluster centroids, improving clustering performance for ISODATA and K-Means on benchmark UCI and hyperspectral imaging datasets.
- Conducted a comparative study classifying ant species by cuticle texture, demonstrating that deep learning methods achieved higher accuracy than statistical methods. The top model, a Deep Residual Pooling (DRP) network, achieved a 0.92 F1-score.

Software Engineer Intern   Atlanta, GA

NCR   May 2021 - August 2021

- Co-developed a production-bound retail microservice in Go to enable lottery ticket sales at self-checkout (SCO) kiosks, integrating with lottery provider APIs and physical receipt printers.
- Improved developer productivity by creating a template-based tool to auto-generate Go decorators for tracing and logging, substantially reducing boilerplate code.
- Contributed to a patent-pending system for a Paperless Lottery service, allowing users to digitize and track physical tickets via a mobile application.

Software Engineer Intern   Atlanta, GA

NCR   May 2020 - August 2020

- Developed the complete backend service for a mobile self-checkout solution using Go, the Echo web framework, and PostgreSQL; the application was successfully deployed in NCR's live test store.
- Secured 3rd place in a global NCR hackathon (2,400+ participants) for contributions to the patented NutriVerify application, including co-designing the core system diagram.

Research Assistant

Kennesaw, GA

Kᴇɴɴᴇsᴀᴡ Sᴛᴀᴛᴇ Uɴɪᴠᴇʀsɪᴛʏ

Jan 2019 - May 2020

- Improved a robot's wandering algorithm efficiency by 70% by developing an optimized, vision-based obstacle avoidance system using edge detection.
- Engineered the robotic platform by integrating a Raspberry Pi camera with a microcontroller and developing the serial interface to the motor controller.

Innovation Technologist Intern

Atlanta, GA

Eᴍᴇʀsᴏɴ Cᴏᴍᴍᴇʀᴄɪᴀʟ & Rᴇsɪᴅᴇɴᴛɪᴀʟ Sᴏʟᴜᴛɪᴏɴs

May 2019 - August 2019

- Engineered a Python scheduling service that monitored an Azure PostgreSQL database for tasks, launching background threads to run analytics on refrigeration time series data (temperature, power, etc.).
- Designed and developed a web dashboard to present analytics results, enabling technicians to visualize key performance metrics from refrigeration systems.
- Implemented a Redis caching layer for frequently requested data to improve dashboard performance and reduce database load.

Patent Applications

METHODS AND A SYSTEM OF ITEM NUTRITION INFORMATION PROCESSING	NCR, Atlanta, GA
	September 2020
PAPERLESS TICKET MANAGEMENT SERVICE	NCR, Atlanta, GA
	September 2021
TARGETED GAMIFIED ECOMMERCE SERVICE	NCR, Atlanta, GA
	November 2021
DELAYED ITEM TRANSACTION PROCESSING	NCR, Atlanta, GA
	December 2022
ITEM SIMILARITY ANALYSIS FOR THEFT DETECTION	NCR, Atlanta, GA
	June 2023
IMAGE PROCESSING FOR DISTINGUISHING PRODUCE-RELATED CHARACTER...	NCR, Atlanta, GA
	June 2023

Publications

EMG Based Simultaneous Wrist Motion Prediction Using Reinforcement Learning	KSU, Marietta, GA
	October 2020
ISODS: An ISODATA-Based Initial Centroid Algorithm	KSU, Marietta, GA
	March 2021
Definition modeling: literature review and dataset analysis	KSU, Marietta, GA
	March 2022
Reinforcement Learning Agent for Path Planning with Expert Demonstration	KSU, Marietta, GA
	June 2022
Investigation of ant cuticle dataset using image texture analysis	KSU, Marietta, GA
	September 2022

Honors and Awards

Eagle Scout	Boy Scouts of America, Lawrenceville, GA
	August 2014