Nikhil Daehee Agarwal

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EDUCATION

Rutgers University-New Brunswick   New Brunswick, NJ
M.S. in Computer Engineering, spec. Machine Learning   Expected May 2025
B.S. in Computer Engineering, GPA: 3.7/4.0   Expected May 2024
Secondary Academic Discipline - Computer Science
Rutgers HKN ECE Honor Society, IEEE

RELATED COURSEWORK

Intro to Artificial Intelligence	Intro to Machine Learning	Deep Learning
Data Structures	Software Methodology	Computer Architecture
Discrete Structures I & II	Design/Analysis of Algorithms	Linear Algebra
Sociology of Medicine & Healthcare	Ethics & Professionalism	Sociology of the Family

WORK EXPERIENCE

Barclays   Whippany, NJ
Software Engineer Intern   June 2023 - August 2023
- Part of team Group Financial Crime Operations, Wholesale KYC and Client Onboarding
- Developed in Java, Spring Framework, Microsoft SQL Server (SSMS), PEGA, with Agile deployment & Jira.
- Created technology to assist in ensuring regulatory compliance and safeguard against fraudulent activity

Makonis   Morris Plains, NJ
Software Engineer Intern   December 2021 - January 2022
- Developed an interactive Java backend that verifies, consolidates, and error handles merging Profit and Loss (P&L) statements for multiple group companies into a single financial report
- Exported P&L statements from *Intuit Quickbooks* as .csv files, and generated a detailed report of a group's Total Income, Cost of Goods Sold (COGS), Expenses, Net Other Income/ Net Ordinary Income, etc.

Wyzant   Bridgewater, NJ
College/AP Level Math, and Physics Tutor   September 2020 - May 2023
- Provided 1:1 academic support to students in Algebra, Geometry, Pre-calculus, AP Calculus, Multivariable Calculus, SAT math, ACT math, and Physics 1 by planning lessons and reviewing study techniques

Uncle Julios   Bridgewater, NJ
Server   June 2022 - August 2022
- Collaborated with a team of restaurant staff to assist guests, offer recommendations, and efficiently resolve issues in a fast-paced customer service environment

PROJECTS

Handwritten Number ML Classifier | *Python, Numpy*   repository: Number_Classifier_ML
- Built a Neural Network in Python to correctly classify handwritten numbers.
- Utilizes machine learning algorithms and **OOP** concepts to implement forward/backpropagation, activation functions, and loss calculation for intelligent learning.
- Trained the network on 60,000 images, which allowed the network to **correctly classify 97.64% of 10,000** new images

AiBot Ship Handyman | *Python, Numpy*   repository: CS440_AI_Bot_Project
- Built search algorithms, **Bayesian Networks**, and **Markov Chains**.
- Implemented **A* algorithm** for path finding and optimized test environment generation from quadratic to linear time.
- Built two neural networks to classify images (binary and M-ary classification) with **99.04% accuracy** on an unseen test dataset.

ECE443 ML Term Project | *Python, Scikit-learn, JupyterNotebook, Numpy, Pandas*   repository: CE443_Machine_Learning
- Implemented **QuadraticDiscriminantAnalysis** and **K-Nearest Neighbor** Classifiers on soundclip and imaging datasets from Kaggle.
- Achieved **91% accuracy with the K-NN classifier** on the sound-clip dataset (10 class classification tasks).
- Explored classifier performance with confusion matrices, performance metrics (accuracy, precision, f1-score, etc.), and ROC curves.
- Conducted preprocessing of the datasets and explored the **ethics of ML** concerning each dataset.

Notepad App "Infinote" | *Python, SQL, Flask*   repository: Infinote_app
- Implemented a notepad/calendar/password storage app using the Flask framework.
- Features RESTful API, OOP, robust login/authentication methods via *Flask Session*, and SMTP email notification capabilities.
- Utilizes SQLite3 database with data normalization for efficiency.

Pharmacy SWE 2023 | *Javascript, HTML/CSS, firebase DB*   repository: SWE-Online-Pharmacy-Project
- Developed a medication service website with order, pay, and delivery functionality as part of a 10-member team
- Implemented RESTful API architecture, in conjunction with Javascript async and await properties
- Personally developed the backend for our prescription validation & maintenance system

Brew & Bites | *Java, XML, Android SDK*   repository: cafe_android_application   Google Play: Brew & Bites
- Implemented OOP and Event-driven methodologies to create a cafe application where users can add items to a cart, view prices and totals, and view active orders.
- Utilizes Android's shared preferences for storage on local devices and communication between Android views.
- Implements Inheritance and Polymorphism for all Java menu item classes (donut, coffee, etc.)

VOLUNTEER WORK

Urban League of Morris County   Morristown, NJ
Mentor / Volunteer Math Teacher   May 2018 - August 2020
- Actively supported field electrician candidates through the Urban League Power Systems Institute Program for First Energy.

First Energy is a utility company that hires field electricians through this program. The candidates go through various tests: physical strength, endurance, ability to climb, knowledge of tools, and an interview. Shortlisted candidates must be able to clear entry-level English and Math requirements at the *Raritan Valley Community College* in NJ.

SKILLS

Programming: Python, Java, C/C++, Javascript, Matlab, RISC-V, SQL, NumPy, Pandas, React, Sci-kit learn
Technologies: Jupyter Notebook, Linux, Git/Github, Firebase, PEGA, AWS, Jira, Bitbucket
Frameworks: PyTorch, Flask, Spring, Express
General: Teamwork, Communication, Public speaking, Organization, Problem-solving, Time management, Agile