

Felicia Sharon

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EDUCATION

Columbia University

MS in Computer Science, Machine Learning Track

New York, NY

2024 - 2025

Vellore Institute of Technology

B.Tech in Computer Science and Engineering

Chennai, TN

2019 - 2023

SKILLS

Languages: Python, C/C++, Java, JavaScript, React, HTML/CSS, PHP, MySQL, Hadoop, R, Node.js, TypeScript, PostgreSQL, MATLAB.

Frameworks: Keras, TensorFlow, OpenCV, Scikit-learn, PyTorch, Hadoop, React, Flask, Angular.

Technical: Data Structures and Algorithms, Object oriented design, Relational Database, Statistics, Calculus, Artificial Intelligence, Machine Learning, Data Science, Data Analytics, Model Building, Transfer Learning, ETL, Ajax, jQuery, JSON, Natural Language Processing, Large Language Models, BERT, Generative AI, Cloud Computing, Amazon Web Services (AWS), Software Development, Software Development Life Cycle (SDLC), Terraform, Code Review, Linux, UI/UX Design, Web Development, Spring, CI/CD pipeline, Block Chain, Computer Vision, Selenium, Deep Learning, Generative Adversarial Networks (GAN), Agile Methodologies, Adversarial Learning, Microservices, Kubernetes, Docker, Git, Test Automation, DevOps, REST API, Distributed data storage, Distributed Computing, Data Visualization, Big Data Analysis, Neuroscience, Frontend, Backend and Full Stack Development, Internet of Things (IOT), Google Cloud Platform (GCP), Virtual Machines (VM), FastAPI, Kanban.

Tools: Tableau, Power BI, PyCharm, Visual Studio.

PROFESSIONAL EXPERIENCE

Amazon

Chennai, TN

Software Development Engineer

Mar 2024 - Aug 2024

- Collaborated with 'Digital Payments' team in Amman, Jordan on extending online payment features to various countries - UAE, Egypt, Saudi Arabia and South Africa.
- Resolved 60% of team's internal Software Assurance risks, Shepherd risks and Policy Engine risks.
- Adopted various automation tools - SASHelper, OPEX Healer and Ginger to automate issue mitigation and email notification to team.
- Deployed AWS CloudFormation stacks and verified its creation in AWS Lambda and AWS DynamoDB to fix issues in production. Monitored usage IAM Access keys in AWS CloudTrail to safely enable automatic credential rotation.
- Reduced the Policy Engine risks by 40% upon feature modifications and leveraged internal services - Swagger and Jarvis for validation.
- Tech Stack** - Java, JavaScript, Node.js, TypeScript, Amazon Web Services (AWS IAM, S3, DynamoDB, CloudTrail, CloudWatch, Cloudformation, Lambda), Git, CI/CD pipeline, Linux.

Amazon

Bangalore, KA

Software Development Engineer Intern

Jan 2023 - Jun 2023

- Collaborated with 'Artificial Intelligence - Rekognition' team, developing an API service called 'AWS-Texttract' service to extract text, handwriting, and data from scanned documents automatically.
- Developed Test Automation - Canary, Unit Testing, Integration testing and Load testing for the 'Bulk Document Uploader' API and deployed it in pipelines and evaluated output and metrics using AWS CloudWatch.
- Validated availability of usage of Texttract API and resource accessibility for various users using AWS S3 and IAM Roles. Raised and reviewed several Code Reviews.
- Enhanced existing pipeline to raise alarms and cut tickets to respective teams automatically in case of any issues.
- Presented a live demo of Test automation to team and panel upon completion.
- Tech Stack** - Java, JavaScript, Node.js, TypeScript, Amazon Web Services (AWS Texttract, IAM, S3, DynamoDB, CloudTrail, CloudWatch, Cloudformation, Lambda), Git, CI/CD pipeline, Linux.

RESEARCH EXPERIENCE

Columbia University

New York, NY

Research Assistant at GILM Laboratory

Jan 2025 – Dec 2025

- Developed deep learning models for animal behavior phenotyping for preclinical research associated with neurological disorders (Alzheimer's, autism, depression).
- Extended human pose estimation methods found in action detection systems are being utilized for animal behavior studies.
- Evaluated Adversarial Learning approaches for phenotyping animal behavior from videos.

- **Tech Stack** - Python, PyTorch, TensorFlow, OpenCV, CUDA, Machine Learning, Linux.

RELEVANT EXPERIENCE

Amazon

Chennai, TN

Jul 2022

- Selected by Amazon for Amazon Machine Learning Summer School 2022 to undergo a month of training in Advanced Machine Learning.

NetApp

Chennai, TN

Feb 2022 - May 2022

- Completed a project 'Smart Eye' deemed as one of the 15 best projects, during a 4-month mentorship program as part of NetApp Women Hackathon 2022.

FarmWise-AI

Chennai, TN

Dec 2021 - Jan 2022

- Developed a new Multi-scale Polygon Matching system for geo-referencing agricultural lands.

PROJECTS

Smart Assistant for Visually Challenged people

- Designed a system to aid visually challenged people to perform day-to-day activities by combining Face recognition, Object detection, and Image Captioning models.
- Customized existing COCO dataset and Flickr 8k dataset accordingly by adding 20 data samples for each of 8 additional classes utilizing the VGG Image Annotator (VIA) tool.
- Leveraged CNN ResNet-50 for Face recognition, Deep Learning Faster R-CNN ResNet-50 FPN model for Object detection, and CNN ResNet-50 and LSTM for Image Captioning.
- Achieved an accuracy of 80.6% and 92.7% for Face detection and Object detection, respectively, and a blue score of 0.493(BLEU-1) for Image captioning.
- **Tech Stack** - Python, ResNet-50, Faster R-CNN ResNet-50 FPN, CNN-LSTM, COCO dataset, Flickr8k dataset, VIA annotation tool.

IoT Framework for Real-Time Weather Monitoring using ML

- Built a cost-effective prototype leveraging Arduino UNO and IOT sensors to read real-time temperature, pressure and humidity.
- Trained ML models - Decision tree and Random Forest on weather dataset to predict weather given real-time weather parameters gathered by prototype.
- Forecasted weather parameters for the next 24 hours, deploying Auto-ARIMA model and predicted weather using ML models.
- Evaluated Random Forest and Decision Tree models based on Accuracy, Precision, Recall, and F1-Score, and concluded that Random Forest, with an accuracy of 70.74% is better than Decision Tree with an accuracy of 59.9%.
- **Tech Stack** - Arduino UNO, IoT sensors, Python, Exploratory Data Analytics (EDA), ETL, Machine Learning Algorithms, Auto-ARIMA.

Online Shopping portal with AI Recommendation

- Built an online grocery shopping website leveraging HTML, CSS, JavaScript, PHP, and Ajax for user-interface and MySQL for storing user data and inventory in a database, and Python.
- Incorporated a Machine learning technique called Market Basket Analysis, where frequently occurring purchases are analyzed, thereby acquiring foreknowledge of customer behavior and recommending products most likely to be bought by customer.
- Formulated Association Rules using Apriori algorithm in Python and integrated it with user-interface.
- **Tech Stack** - HTML, CSS, JavaScript, PHP, Ajax, MySQL, Python, Apriori algorithm.

Exploring Generative Adversarial Networks

- Researched various applications of different types of Generative Adversarial Networks (GAN) - Stack-GAN and Semi-supervised GAN.
- Leveraged Stack-GAN to create 256×256 photorealistic images conditioned on text descriptions.
- Devised a Semi-supervised GAN model embedded with a k-Nearest Neighbor (kNN) algorithm to add most relevant samples of minority class to original imbalanced dataset to resolve Multi-class imbalance.
- Concluded that devised Semi-supervised GAN model was better than SMOTE based on accuracy of Decision Tree on dataset balanced by Semi-supervised GAN (93%) and SMOTE (90.3%).
- **Tech Stack** - Python, StackGAN, Semi-supervised GAN, SMOTE, Machine Learning (ML) Algorithms.

Vector Search Engine

- Engineered a custom vector database supporting cosine, dot-product, and Euclidean similarity, with disk-based persistence and dynamic indexing for blog retrieval.
- Developed a FastAPI backend exposing /search and /chat endpoints, embedding queries with BGE-micro, performing vector similarity search, and powering a complete RAG pipeline using Groq's llama-3.3-70B-versatile model. Implemented an integrated chat workflow that retrieves context, invokes the LLM, and returns grounded, transparent responses.
- Designed a clean, responsive UI using vanilla JavaScript and Fetch API, enabling seamless interaction with a FastAPI vector search backend running locally.
- **Tech Stack** - HTML, CSS, JavaScript, Fetch API, FastAPI backend, Groq LLaMA-3.3 RAG, HuggingFace BGE-micro, SentenceTransformers, NumPy, CORS.

Tata Group Data Analytics Job Simulation on Forage

- Completed a job simulation involving AI-powered data analytics and strategy development for the Financial Services team at Tata iQ.
- Conducted exploratory data analysis (EDA) using GenAI tools to assess data quality, identify risk indicators, and structure insights for predictive modeling.
- Proposed and justified an initial no-code predictive modeling framework to assess customer delinquency risk, leveraging GenAI for structured model logic and evaluation criteria.
- Designed an AI-driven collections strategy leveraging agentic AI and automation, incorporating ethical AI principles, regulatory compliance, and scalable implementation frameworks.
- **Tech Stack** - GenAI tools (EDA, no-code modeling support), Python (for data exploration), Pandas, NumPy, AI-assisted analytics platforms, predictive modeling frameworks, AI strategy & automation design principles.

Credit Score Analytics and Visualization System

- Performed end-to-end EDA on the Credit Score dataset, cleaning and preparing data, engineering risk-based features, and uncovering key drivers of creditworthiness such as utilization rate, delinquency patterns, and income-to-debt ratios.
- Built an interactive Power BI dashboard with custom DAX measures to visualize score distributions, customer risk segments, payment behaviors, and key financial KPIs, enabling streamlined credit risk assessment.
- Designed a narrative Tableau story dashboard that highlighted customer profiles, high-risk clusters, and behavioral trends through multi-page visualizations, providing clear, actionable insights for decision-making.
- **Tech Stack** - Power BI, Tableau, R, SQL, Excel, Data Cleaning, Data Visualization, Exploratory Data Analytics (EDA).

SkincareLab - Skincare Learning and Test Platform

- Built an interactive learning platform where users can learn about skincare types, routines, ingredients, and skin concerns through dynamic educational content.
- Developed Flask APIs and routing for quiz processing, rules-based evaluation, and dynamic result generation, with modular JSON-driven content for easy feature iteration.
- Designed a responsive, interactive UI supporting guided quizzes and personalized result views, improving usability and end-to-end application flow across the stack.
- **Tech Stack** - HTML, CSS, Bootstrap, jQuery, JavaScript, Python, Flask, AJAX, JSON.

TripSpark – Cloud-Native Travel Recommendation Platform

- Developed a multi-service travel recommendation system with Catalog, User, Recommendation, and Log microservices, plus a browser UI—each with dedicated GitHub repos, Kanban boards, REST endpoints (GET/POST/PUT/DELETE), and OpenAPI/Swagger specs.
- Implemented cloud-distributed architecture: Catalog on a VM with MySQL; User & Recommendation on Cloud Run with separate Cloud SQL databases; Log Service deployed independently for event-level tracking; all services integrated via a Composite microservice supporting parallel threaded calls and logical foreign key validation.
- Delivered core requirements including eTag processing, pagination, query parameters, linked resource paths, 201-Created responses, 202-Accepted async workflows with polling, OAuth2/OIDC login via Google, JWT-protected API routes, and a Pub/Sub-triggered Google Cloud Function.
- Built and deployed a lightweight browser UI using React.js via Cloud Storage, enabling interaction with all atomic and composite microservices and rendering personalized travel recommendations & itineraries.
- **Tech Stack** - Python, FastAPI, Swagger/OpenAPI, MySQL, Cloud SQL, Docker, Cloud Run, Compute Engine, Pub/Sub, Cloud Functions, OAuth2/OIDC, JWT, HTML/CSS/JavaScript, React, TypeScript, Git/GitHub.

PUBLICATIONS

F. Sharon, A. V. P. Y and Geetha. S, IoT Framework for Real Time Weather Monitoring using Machine Learning Techniques, IEEE Xplore 2023, doi: 10.1109/ICEEICT56924.2023.10156901. <https://ieeexplore.ieee.org/document/10156901>.

F. Sharon, S. Sellamuthu, N. S and A. V, Framework for Face recognition and Scene Description using Deep Learning for Visually Challenged people, IEEE Xplore 2024, doi: 10.1109/ICERCS57948.2023.10434146. <https://ieeexplore.ieee.org/document/10434146>.