Sathish Kumaran

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WORK EXPERIENCE

Data Science Intern   Jul. 2023 – Present

MiiCare   London, UK · Remote

- Designed and deployed a real-time cough detection pipeline on resource-constrained hardware, achieving 97% accuracy and 96% F1-score using classical ML models; led end-to-end audio data collection, preprocessing, feature engineering, and iterative model refinement.
- Contributed to the development of voice-based health assessments, including GRBAS voice quality rating, delirium detection, and Type 2 Diabetes Detection models.
- Implemented a highly customizable dashboard framework with a custom data caching system, data processing pipelines, and interactive visualizations to support diverse client requirements, enabling analysis from individual user health data to cohort-level trends and summaries.
- Conducted exploratory analysis on large IoT datasets from individual users to cohorts and developed activity detection algorithms.

PROJECTS

MazeHarvest   Jan. 2025

- Developed a stochastic, partially observable toroidal maze-like grid world simulating toxic plant spread and hostile mole interactions; integrated A* search with probabilistic logic to model non-deterministic mole behavior.
- Implemented reinforcement learning agents in PyTorch (PPO, Rainbow DQN, LSTM-PPO), achieving solution in easy mode with RDQN and mastering medium and hard modes with LSTM-PPO.

Rentit   Nov. 2024

- Built a MERN-stack house rental platform featuring real-time chat and booking updates via Socket.io, geocoded property search, and deployed on Render.

NN & DQN from Scratch   Apr. 2023

- Implemented a feedforward neural network and SGD optimizer from scratch using NumPy; trained a 43-parameter Deep Q-Network to solve the CartPole reinforcement learning environment.

ML from Scratch   Mar. 2023

- Built core machine learning algorithms (e.g., linear/logistic regression, decision trees, k-means) from scratch using numpy; created visualizations comparing convergence and performance across methods.

TicTacToe AI   Dec. 2022

- Created a flexible Tic-Tac-Toe AI using Minimax with alpha-beta pruning; supported variable board sizes, adjustable search depth, and interactive state editing.

EDUCATION

B.Tech in Artificial Intelligence & Data Science   2021 – 2025

Sri Muthukumaran Institute of Technology (SMIT)   *CGPA: 7.8/10*

TECHNICAL PROFICIENCIES AND TOOLS

Programming Languages:	Python, C, C++, R, JavaScript, TypeScript, Go, SQL, Rust
Technologies & Tools:	Linux, PyTorch, Git, React, Next.js, Docker, MongoDB
Skills:	Machine Learning, Software Development, Data Analysis

LANGUAGES

Tamil:	Native
English:	Professional Working Proficiency