# Karthik P

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## Objective

- Aspiring Backend Developer skilled in building scalable and efficient server-side applications. Experienced in API development, database design, and optimizing backend systems for performance and reliability

## Education

**IIIT Kottayam** <div align="right">Kerala, India</div>

B-Tech in Artificial Intelligence and Data Science, CGPA: 8.76 (Expected Exit: 2027)

## Skills

- **Technical Skills:** React, Express, Nodejs, MongoDb, Python, C++, C, SQL, HTML, CSS, TailwindCSS
- **Machine Learning:** Feature Engineering, Data Preprocessing, Image Processing, Data Visualization, Natural Language Processing (NLP), Statistical Analysis, Dimensionality Reduction, Data Wrangling
- **Tools:** VS Code, Postman, Jupyter Notebook, TensorFlow, Scikit-Learn, Pandas, Numpy, Seaborn, Matplotlib, Pytorch

## Projects

**ProFileCraft – Resume Builder Platform** [GitHub](#) | [Live Demo](#)

- Built ProFileCraft, a resume-builder platform allowing users to select templates, customize accent colors, and generate professional resumes.
- Implemented secure user authentication, profile management, and resume storage using a scalable backend architecture.
- Integrated RESTful APIs for resume generation, sharing, and downloads, enabling a seamless and responsive user experience.

**Fine-Tuning scGPT for Melanoma Cancer Detection** [GitHub](#)

- Fine-tuned the scGPT transformer-based model on single-cell RNA sequencing data for melanoma cancer cell classification.
- Achieved 96% accuracy in identifying malignant cells, enabling effective disease-marker detection and cellular phenotype separation.
- Built preprocessing pipeline and visualized embeddings using dimensionality reduction techniques (t-SNE/UMAP).
- Used PyTorch, Scanpy, and scgpt to optimize training and interpret gene-expression patterns.

**Chat App** [GitHub](#) | [Live Demo](#)

- Developed a real-time chat application supporting instant messaging, leveraging modern web technologies for seamless user experience and multi-user communication.
- Implemented user authentication, robust message handling, and scalable backend architecture to ensure secure and efficient data management.

## Experience

**Research Intern, National Institute of Technology Calicut** <div align="right">May 2025 – July 2025</div>

- Conducting AI-in-healthcare research under NITC's Centre of Excellence in Artificial Intelligence, focusing on single-cell data analysis and model development.
- Fine-tuning scGPT—a foundation transformer model—for single-cell gene-expression profiling and developing a new scMistral for disease-marker detection and cellular phenotype classification.
- Building preprocessing pipelines, evaluation metrics, and visualization tools to support exploratory analysis and model interpretability in biomedical AI.

## Certificates

**Python for Data Science and Machine Learning Bootcamp**                               Certificate

- Completed a comprehensive Udemy course covering Python fundamentals, data visualization, and machine learning techniques.

## Extra-Curricular Activities

- Solved 700+ problems on LeetCode, enhancing problem-solving and algorithmic thinking.
- Solved 120+ problems on Coding Ninjas, strengthening data structures and algorithms skills.