+1 858-333-0295
San Diego, CA
tarun.murugan24@gmail.com

# Tarun Murugan
Software Engineer

GitHub: tarunm20
LinkedIn: tarunmurugan
Portfolio

## EDUCATION

**Bachelor of Science in Computer Science**, *University of California, San Diego*          Sept, 2021 — Present

- Relevant Coursework: Computer Vision, Computer Graphics, 3D AR/VR, Machine Learning, and, Database Systems
- Honors: Provost Honors
- Research: Worked with Prof.Edwin Solares on implementing UNet and SegNet in PyTorch and Tensorflow for the AbeloneVision project.

## SKILLS

| | |
|---|---|
| **Languages** | Python, Java, JavaScript, TypeScript, HTML/CSS, C, C++, SQL (PostgreSQL), Markdown, OpenCL, CUDA |
| **Frameworks & APIs** | Spring Boot, ReactJS, Next.js, FastAPI, Django, Flask, TensorFlow, PyTorch, Airflow, Flutter |
| **Databases & Cloud** | PostgreSQL, MongoDB, AWS (Bedrock, EC2, S3), GCP, Azure, Redis |
| **Tools & Technologies** | Docker, Kubernetes, Git, Node.js, Pandas, scikit-learn, JWT, REST APIs, Microservices, CI/CD |
| **Other** | Jira, Confluence, AGILE Methodologies, Full-Stack Development, Machine Learning, AI Integration |

## WORK EXPERIENCE

**Student Engineer**                                                                      **Oct, 2022 — Present**
*Information Technology Services(ITS), UCSD*                                          *San Diego, California*

- Designed, tested, and bug-fixed a variety of **Airflow** architectures and workflows including DAGs, custom operators, and helper functions for ITS's private Airflow Provider Package. Used **Python**, Airflow, and **SQL**.
- Developed a script for automating UCSD's billing process. Increased productivity by **300%**. Iteratively collaborated with stakeholders to accurately implement requirements. Used **Python**.
- Prototyped different prompts for the initial version of UCSD's **TritonGPT** and generated a workflow to transcribe UCSD videos using the **WhisperX** model. Curated comprehensive testing benchmarks and scripts to holistically assess performance. Used **Python**, **Kubernetes**, and **OpenAI API**.
- Solved critical bugs with UCSD's mobile app and researched a lecture watching feature for the app. Used **Dart** and **Flutter**.

**Cyber Security Intern**                                                                **Oct, 2020 — Aug, 2021**
*CyberSecurityWorks*                                                                          *Chennai, India*

- Increased the content team's productivity by developing a library of web scrapers that helped increase efficiency by **336%**. The library was developed in **Python** using **Selenium** with a minimalistic UI for the content team.
- Developed a fully automated docker vulnerability report system that reduced document generation time by **50%**. Used **Python** to interact with docker containers being stored on **GCP**.

**Machine Learning Intern**                                                              **Sept, 2020 — Dec, 2020**
*nFactorial Analytical Sciences*                                                              *Chennai, India*

- Researched and implemented multiple ML models using **TensorFlow** for classifying audio samples by emotion, achieving **92%** accuracy. The research was deployed in an HR product to detect employee satisfaction.

**Software Engineering Intern**                                                          **Jun, 2019 — Aug, 2019**
*Ventuno Technologies*                                                                        *Chennai, India*

- Developed and tested several private **REST APIs** for their video platform after evaluating **Django** vs **Flask** to determine the optimal technology stack for the company's requirements.

## PROJECTS

### Blue Turtle

- Developed a full-stack natural language SQL interface using **FastAPI**, **React**, and **AWS Bedrock** that enables non-technical users to query databases with **LLMs**, reducing data access bottlenecks by **90%**.

### Synth

- Built a production-ready AI-powered flashcard application with **Spring Boot 3.2**, implementing secure JWT authentication, RESTful APIs, and **PostgreSQL** integration with JPA/Hibernate. Developed **Claude AI** integration for automated document processing and semantic answer grading, complemented by a **Next.js** frontend and Docker containerization for scalable deployment.