# Sudharsan Senthil Kumar

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## EDUCATION

**University at Buffalo, SUNY** — **Buffalo, New York**
***M.S. Computer Science and Engineering (AI/ML Track) (CGPA: 3.1/4.0)*** — *June 2025*

**Chennai Institute of Technology** — **Chennai, India**
***B.E. Computer Science and Engineering (CGPA: 8.8/10.0)*** — *April 2023*

## PROJECTS

**PIVOT – Urge & Habit Tracking Platform | Live Demo**

- Constructed a full-stack habit and urge tracking platform focused on real-time behavioral intervention and long-term progress analytics, by translating abstract behavioral concepts (urge surfing, delayed response) into concrete, interactive system features.
- Developed a full-stack web application using React and TypeScript with scalable architecture, with a low-latency, one-tap logging system to reduce user friction during high-stress decision moments.
- Implemented a JWT-based authentication system with secure password hashing (bcrypt).
- Designed RESTful APIs in NestJS with DTO validation and layered service architecture, along with relational schemas using Drizzle ORM (PostgreSQL), enabling efficient querying for time-series and lifetime statistics.

**AI Interview Agent | Live Demo**

- Created a full-stack AI-driven interview simulation platform using Next.js + TypeScript, integrating multiple cloud APIs to deliver real-time, voice-interactive features and demonstrating strong end-to-end product engineering skills.
- Devised FAST API backend logic for dynamic question generation, voice processing, and session management, orchestrating services across Google AI Studio, AWS Polly, and Deepgram through well-structured REST APIs.
- Modelled a relational PostgreSQL schema on Xata using Drizzle ORM, enabling consistent storage of user profiles and interview sessions, while ensuring type-safe, maintainable backend data operations.

## EXPERIENCE

**Freelance Consultant (KERA C)** — **Chennai, India (Hybrid)**
***Full-stack Developer*** — *Oct 2025- Present*

- Architected a multi-tenant Lean Maturity Assessment platform using NestJS microservices with RabbitMQ event-driven architecture, manual ACK/NACK patterns, and centralized error handling.
- Administered production-grade REST APIs serving 25+ endpoints for assessment grids, scoring systems, and real-time analytics, with sub-100ms response times through database indexing and query optimization.
- Built containerized services using Docker Compose on AWS EC2, integrating AWS RDS Data API for serverless database access and implementing CORS-enabled API gateway with comprehensive request validation.

**Centre for Additive Manufacturing, Chennai Institute of Technology** — **Chennai, India**
***Research Assistant*** — *March 2022 – April 2023*

- Analyzed real-world sensor and process-parameter data from industrial FFF 3D printers and benchmarked multiple ML models—including Random Forest, XGBoost, AdaBoost, and Linear Regression—achieving $R^2$ up to 0.91 and identifying key process parameters influencing mechanical performance.

## PUBLICATIONS

- Dhinakaran Veeman, **S. Sudharsan**, et al. (2023). Machine learning model for predicting the hardness of additively manufactured acrylonitrile butadiene styrene. *Materials Today Communications,* Volume 35, 2023, 106147, ISSN 2352-4928. (https://doi.org/10.1016/j.mtcomm.2023.106147)

## SKILLS

**Languages and Tools:** Python, JavaScript, TypeScript, SQL, Git, GitHub, VS Code.
**Backend:** FastAPI, Nest.js, RESTful APIs, Microservices, Drizzle ORM. | **Frontend:** React.js, Next.js, Tailwind.
**Cloud and MLOPS:** AWS (EC2, S3, RDS, Aurora Serverless), Docker, CI/CD (GitHub Actions), Nginx.
**Databases:** PostgreSQL, MongoDB (Mongoose), Xata (PostgreSQL)