

# Ashwin R

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## EDUCATION

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### SASTRA Deemed to be University

*B.Tech, Computer Science and Engineering (IoT & Automation) | CGPA: 7.80*

Thanjavur, Tamil Nadu

Aug 2023 – Jun 2027

## EXPERIENCE

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### Summer Fellow – Software Developer

*FOSSEE, IIT Bombay | eSim EDA Project*

May – Aug 2026

*Part-time*

- Nationally selected through a competitive task-based screening process to join a 12-week hybrid fellowship contributing to eSim, an open-source EDA tool under NMEICT, IIT Bombay

## RESEARCH

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### SR-MCU — Sensor Resilience on Microcontrollers | *Target: SAGE Intelligent Decision Technologies*

- Independently designed a lightweight AI system for detecting sensor degradation in embedded hardware a class of failures invisible to conventional signal-processing approaches
- Validated across multiple real-world and benchmark datasets and deployed on STM32 microcontroller hardware

### FedXMSPPRA-GA — Federated Healthcare Task Scheduler | *Collaborative Research*

- Co-developed a privacy-preserving scheduling system for hospital edge networks, prioritizing critical patient alerts while balancing energy and latency constraints
- Designed to remain robust under adversarial conditions and node failures; validated on MIMIC-IV and eICU clinical datasets

## PROJECTS

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### MSGAL | *Graph Neural Networks, PyTorch*

- Built a graph-based stock prediction system incorporating market correlation signals; backtested across 6 rolling windows on major indices
- Dual-branch GRU + GAT framework for stock return prediction on CSI 300/500

### Immi-Torch | *Python, NumPy*

- Rebuilt PyTorch from scratch across 20 modules autograd, optimizers, CNNs, self-attention, and a GPT-style transformer 20 modules with CI/CD via GitHub Actions to develop deep foundational understanding of ML systems

### DeepFocus | *Next.js, TypeScript, PostgreSQL*

- Designed and shipped a full-stack learning platform with Google OAuth, timestamp-linked notes, and Obsidian-compatible export

## TECHNICAL SKILLS

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**Languages:** Python, C/C++, TypeScript, SQL, Java

**AI/ML:** PyTorch, Graph Neural Networks, scikit-learn, XGBoost, LangChain, TinyML

**LLM & APIs:** OpenAI API, Gemini API, RAG pipelines, structured output parsing

**Web & Backend:** Next.js, FastAPI, PostgreSQL, Prisma, REST APIs

**Tools:** Git, GitHub Actions, Docker, Linux, Vercel

## INTERESTS

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**Reading:** Actively reads across AI safety, alignment, and the long-term societal implications of advanced AI systems

**Writing:** Publishes technical blogs on AI alignment, AI philosophy, and state-of-the-art research bridging cutting-edge ideas for a broader technical audience