Rain Hu

Senior Software & Optimization Engineer

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PROFESSIONAL SUMMARY

Senior software engineer with experience in scalable AIoT systems, semiconductor process optimization, and full-stack development. Proven ability to lead microservices and infrastructure projects using .NET, NATS, and Docker. Expert in Clean Architecture, DDD, and TDD practices in Agile/Scrum environments. Adept at translating domain knowledge into impactful software for both industrial computing and chip manufacturing.

CORE COMPETENCIES

Languages: C#, Python, TypeScript, C++
Architecture: Microservices, DDD, Clean Arch
DevOps: CI/CD, TDD, GitHub Actions
Databases: PostgreSQL, Oracle, SQL
Frameworks: .NET, React, ABP
Concurrency: NATS, Docker, RCP
AI Tools: TensorFlow, LangChain, RAG
Semiconductor: Yield, Layout, DRC, TCAD

PROFESSIONAL EXPERIENCE

Assistant Manager / Senior Software Engineer *02/2025 - Present*
Advantech *Taoyuan, Taiwan*

- Led development of EdgeSync and Device Shadow for real-time AIoT synchronization at scale using .NET, NATS, and Docker.
- Architected scalable, testable systems with Clean Architecture and DDD; promoted TDD across Agile teams.
- Delivered SDKs and APIs supporting cross-device AI deployment; built CI/CD pipelines to streamline delivery.

Senior Software Engineer *08/2022 - 10/2024*
UMC *Tainan, Taiwan*

- Built UEDA 5.0 platform enabling cross-fab data analysis (Taiwan, Japan, Singapore, China); boosted query speed 40%.
- Developed DSM Bot with RAG and LangChain, accelerating knowledge retrieval in semiconductor manufacturing.
- Led system refactor to support cross-database logic via Clean Architecture.

Device R&D Engineer *08/2018 - 08/2022*
UMC *Hsinchu, Taiwan*

- Developed mask layout optimization algorithm improving yield by 5% in 22nm/28nm/40nm HKMG processes.
- Built internal EDA tools (e.g., layout translators, optimization pipelines), reducing engineering workload by 30–50%.
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- Created U2C, a tool for translating between different DRC languages, reducing CAD development time by 30%

SELECTED PROJECTS

- **EdgeSync (Advantech)** – Infrastructure for real-time edge-cloud sync using NATS JetStream; core to AIoT Digital Twin platform.
- **DSM Bot (UMC)** – RAG-based AI assistant for fab engineers; reduced information lookup time significantly.
- **NWR (UMC)** – Algorithm-driven layout transformation tool that improved yield by 5% without layout redesign.
- **UEDA 5.0 (UMC)** Led development of an enterprise-wide integrated analysis platform including data integration across multiple databases

EDUCATION

MS, Material Science & Engineering *2014 - 2018*
National Tsing Hua University *GPA: 3.97*
BS, Material Science & Engineering *2010 - 2014*
National Tsing Hua University *GPA: 3.61*