

# MANH DO

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## EMBEDDED SOFTWARE ENGINEER

Experienced Senior Software Engineer with over 15 years in Proton Therapy Systems (PTS), specializing in C/C++, Java, and Linux-based development for high-performance applications and system integration. Skilled in middleware technologies (RTWorks, SmartSockets, TIBCO EMS), Linux programming, and embedded control systems for medical devices, industrial automation, and IoT. Proficient in full SDLC, IoT solutions, backend development, and cloud integration using Raspberry Pi, Django, Python, and databases (Oracle, PostgreSQL, MySQL). Strong expertise in IoT data collection, edge computing, and enterprise applications.

- Lean Methodology • SOLID Principles • Separation of Concerns (SoC) • Test-Driven Development (TDD) • DevOps
- Multithreading • Software-Hardware Interface Programming • Medical Devices • IEC-62304 Compliance • CI/CD

**Languages:** C/C++, Java

**Web:** HTML, CSS, JavaScript

**Web/App Servers:** Apache, Tomcat, Nginx

**Frameworks:** Django, Boost, Poco, Jakarta EE JBoss, Hibernate

**Databases:** MySQL, PostgreSQL, Oracle

**SDLC:** Agile, Scrum, Waterfall, V Cycle

**Tools:** Maven, Ant, Eclipse, GNU Make, Jenkins, Git, GitHub, SVN, Mercurial, ClearCase, Google C++ Test, JUnit, Selenium, JMeter, Postman

**Platforms:** Windows, Linux, Unix

**Application/Software:** RTWorks, SmartSockets, TIBCO EMS

## PROFESSIONAL EXPERIENCE

**CAREER NOTE:** Completed on-campus studies and currently taking distance education courses to complete a **Master's Degree in Computer Science** (Available for full-time, W-2 employment).

### HITACHI DIGITAL SERVICES VIETNAM, Ho Chi Minh City, Vietnam • 04/2020 – 06/2024

A worldwide company specializing in data management, storage solutions, and professional and managed services.

#### Technical Leader - Embedded and IoT

- Enabled energy data acquisition in industrial environments by implementing an IoT edge gateway on Raspberry Pi, Beagle Board using Python, MQTT to communicate with sensors via wired and wireless protocols such as Zigbee and 6LoWPAN.
- Integrated IoT edge gateway with Lumada Core to publish bioelectricity data using Modbus protocol, Java, enabling seamless industrial IoT data flow.
- Enhanced Proton Therapy System safety by revising and updating irradiation dose calculations, allowing suspended treatments to resume without compromising precision by refactoring C/C++ code. The technology used is RPC-call to communicate with Scanning Controller device and scanning algorithm API on Linux platform.
- Improved treatment module stability, increasing system availability from 90% to 95%, and ensuring more reliable and uninterrupted therapy sessions by discussing with HW engineer and implement error recovery to continue workflow without safety compromise, update code C/C++ on Linux.

**Technologies Used:** Java, Spring, Hibernate, C/C++, Python, Linux, Perl, Shell Scripts.

### HITACHI VANTARA VIETNAM (HITACHI DIGITAL SERVICES VIETNAM), Ho Chi Minh City • 09/2016 – 04/2020

A subsidiary of Hitachi, Ltd. offers innovative solutions that leverage big data, analytics, and the Internet of Things (IoT).

#### Senior Engineer - Embedded Healthcare

Software Project Delivery

- Upgraded the GUI of the Scanning Controller Box from Qt5 to Qt6, improving performance and user experience.
- Simulated irradiation signals by C/C++ on Raspberry Pi, enabling enhanced testing and validation of the Scanning Controller.
- Developed a new module to integrate with Scanning Controller Hardware using C/C++, RPC, enabling the successful deployment of a new treatment mode for the customer.

- Migrated the database from Oracle 8.0.5 to Oracle 11.2, ensuring compatibility with modern database systems and enhancing data security.
- Replaced obsolete third-party libraries with SmartSockets, mitigating risks associated with unsupported dependencies and ensuring long-term software maintainability.
- Deployed a hybrid system with GNU Linux 64-bit running in parallel with HP-UX 32-bit, allowing the customer to perform system renovations without downtime.
- Ported control modules from C/C++ 32-bit to C/C++ 64-bit, eliminating dependency risks on HP-UX 32-bit, which was no longer supported.

**Technologies Used:** C/C++, Python, Java, RPC, HP-UX, Linux, Oracle, PostgreSQL.

## **HITACHI CONSULTING VIETNAM (HITACHI DIGITAL SERVICES VIETNAM), Ho Chi Minh City • 12/2010 – 08/2016**

A leading technology and outsourcing company that offers a diverse range of IT solutions and services.

### **Senior Engineer - Embedded Healthcare**

#### **Software Project Delivery**

- Developed communication modules for Siemens PLC S7-300 using C/C++ Fetch/Write, enabling integration with ACU (Accelerator Control System) and SCU (Safety Control System) for a successful upgrade from Siemens S5 to Siemens S7.
- Refactored the communication module for VxWorks-based control systems using C/C++, TCP/IP, and SmartSockets (publish-subscribe model), allowing the customer to replace obsolete RTWorks 5 with SmartSockets 11.
- Contributed to the release of new model of Ventilation Machine by refactored hardware interface modules for valves and sensors, providing a robust API for breath control in a ventilator system. Used C language with compiler Green Hills to build and deploy it in a non-OS environment.
- Enabled remote monitoring of ventilation machine by implementing a lightweight web server for the ventilator, enabling remote data retrieval and monitoring. Lightweight web server using C over TCP socket.

**Technologies Used:** C/C++, Java, Shell scripts, Linux, GreenHills cross compiler.

**Older professional experience (06/1999 – 12/2010) can be provided upon request.**

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## **ACADEMIC PROJECTS**

### **Maharishi International University (2025)**

- **Contact Management System:** CRUD application for managing contacts of name, phone and email. Demonstrate usage of Nodejs, Express, React. Utilized Nodejs, Express, React, MySQL.
- **Vehicle Rental System:** Backend web application for vehicle rental system. Demonstrate usage of Java, Spring Boot. Utilized Java, Spring Boot, MySQL.

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## **EDUCATION**

### **Master of Science in Computer Science**

*(In progress via distance education; expected completion 04/2027)*

Maharishi International University, Fairfield, Iowa

**Key Courses:** Algorithm, Enterprise Architecture, Web Application Programming, Software Engineering

### **Bachelor of Computer Engineering in Information Technology**

HCMC University of Technology, Ho Chi Minh City, Vietnam (08/1997)

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## **CERTIFICATIONS**

Certified Excellent Consultant – CEC – John & Partner (05/2024)

Lean Six Sigma Green Belt – John & Partners (05/2023)