Kenji Tanaka

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Summary

Highly innovative and results-oriented Robotics Engineer with 8+ years of progressive experience in the design, development, and deployment of advanced embedded robotics software and field applications. Demonstrated expertise in leading technical engagements, integrating complex sensor fusion systems, and providing exceptional technical support to commercial and industrial clients. Proven ability to work across the full software and hardware stack, from RTOS and embedded systems to ROS/ROS2 middleware. Adept at problem-solving, optimizing system performance, and driving process improvements. Excellent communication skills, fluent in Japanese and English, with a proven track record of fostering collaboration within international teams.

Professional Experience

OrionArc, Tokyo, Japan
Senior Field Application Engineer – Robotics | April 2020 – Present
- Led technical engagements with enterprise clients in the Asia-Pacific region, managing the deployment and customization of robotic platforms to meet specific operational requirements. This involved understanding client workflows, configuring robotic systems, and providing ongoing support.
- Oversaw the integration of sensor fusion systems (LiDAR, IMUs, vision sensors) and robotics middleware (ROS/ROS2) into commercial applications. This included developing integration strategies, writing software interfaces, and troubleshooting integration issues.
- Provided expert-level debugging, performance tuning, and issue resolution for RTOS-based embedded systems on diverse hardware platforms, including RISC-V and ARM Cortex-M. This involved using debugging tools, analyzing system logs, and optimizing code for real-time performance.
- Collaborated with product development teams to translate customer feedback and market insights into actionable feature roadmaps and design improvements for next-generation robotic solutions. This included participating in design reviews, providing input on new features, and prioritizing development efforts.
- Developed and delivered technical training programs and documentation for clients and internal teams, ensuring effective adoption and utilization of robotic

technologies. This included creating training materials, conducting workshops, and providing ongoing support.

- Contributed to the development of standardized deployment methodologies and best practices, enhancing the efficiency and scalability of robotic system implementations. This involved identifying areas for improvement, developing new processes, and documenting best practices.
- Managed on-site system bring-up, testing, and acceptance for key client projects, ensuring successful implementation and handover of robotic solutions.

Key Achievements:

- Reduced customer integration time by 30% through the development and implementation of modular diagnostic tools and automated deployment scripts. This resulted in faster project completion and increased customer satisfaction.
- Successfully led the technical onboarding and provided ongoing support for three Fortune 500 clients in the Asia-Pacific region, resulting in high levels of customer satisfaction and the expansion of business opportunities.
- Identified and resolved critical performance bottlenecks in existing robotic deployments, leading to a 15% improvement in overall system efficiency and throughput. This optimization reduced downtime and increased productivity.
- Proactively contributed to the expansion of OrionArc's service offerings by identifying emerging customer needs and proposing new technical solutions, demonstrating a commitment to innovation and customer satisfaction.
- Developed a comprehensive knowledge base and troubleshooting guide, reducing average customer support resolution time by 25%.

Sony Corporation, Tokyo, Japan
Robotics Software Engineer | April 2016 – March 2020

- Designed, developed, and tested embedded software components for consumer and industrial robotics products, adhering to strict quality and performance standards. This included writing C/C++ code, developing unit tests, and participating in code reviews.
- Developed and maintained low-level control algorithms, sensor drivers, and middleware layers using Embedded C/C++ within various RTOS environments. This involved working with hardware interfaces, implementing control logic, and optimizing code for real-time constraints.
- Participated in agile cross-functional teams, collaborating with hardware engineers and researchers to prototype and validate innovative robotics platforms in the Research and Development (R&D) division. This included attending daily stand-ups, participating in sprint planning, and contributing to team goals.

- Contributed to the development of robust unit and integration tests to ensure the reliability and stability of embedded software modules. This involved writing test cases, executing tests, and reporting on test results.
- Investigated and resolved software defects and performance issues identified during testing and early product deployments, ensuring high-quality product releases.

Key Achievements:

- Optimized critical control loop performance for a flagship consumer robot, resulting in a 20% improvement in real-time responsiveness and enhanced user experience.
- Awarded internal recognition for significant contributions to a next-generation robotics R&D project focused on advanced autonomous navigation capabilities in 2019.
- Reduced memory footprint by 10% in a high-volume industrial robot controller through efficient code optimization techniques.
- Played a key role in the successful launch of a new consumer robotics product, contributing to the development of core software components.

Education
Tokyo Institute of Technology
Bachelor of Engineering in Robotics | Graduated: June 2016
- Relevant Coursework: Advanced Robotics, Embedded Systems Design, Artificial Intelligence, Control Theory, Computer Vision, Sensor Fusion, Real-Time Systems, Machine Learning for Robotics, Robot Dynamics and Control.
- Senior Thesis: [Optional: Briefly mention your thesis topic if relevant, e.g., "Development and Evaluation of a Novel SLAM Algorithm for Real-time Mapping and Localization of Mobile Robots in Dynamic Environments."]

Technical Skills

- **Robotics Middleware:** ROS (Robot Operating System), ROS2, DDS
- **Embedded Programming:** Proficient in Embedded C, C++ (including C++11/14/17 standards), Python
- **Real-Time Systems:** Expertise in RTOS (FreeRTOS, VxWorks, QNX), Real-time scheduling algorithms, Interrupt handling, Memory management
- **Microprocessor Architectures:** In-depth understanding of RISC-V Toolchains, ARM Cortex-M/A series microcontrollers, Microprocessor peripherals (Timers,

ADCs, DACs)
- **Sensor Technologies & Fusion:** Sensor Fusion algorithms (Kalman Filtering, EKF), Inertial Measurement Units (IMUs), LiDAR (Light Detection and Ranging), Computer Vision (OpenCV), 3D perception, Encoders, Force/Torque sensors
- **Communication Protocols:** Serial (UART, SPI, I2C), Ethernet, CAN bus, TCP/IP, UDP
- **Software Development Tools:** Git, CMake, Embedded Debuggers (GDB, JTAG), Static analysis tools, Unit testing frameworks
- **Operating Systems:** Linux (Ubuntu, embedded Linux distributions, Yocto Project), Windows
- **Simulation Tools:** Gazebo, MATLAB/Simulink
- **Support & Deployment:** Field Engineering, Customer Technical Support, Troubleshooting, Documentation, System Integration

Languages

- Japanese: Native Proficiency
- English: Business Professional Proficiency (TOEIC Score: [Optional: Include if high and relevant])

Projects

- **Autonomous Navigation System for a Mobile Robot:** Developed a ROS-based navigation system for a mobile robot, including SLAM (Simultaneous Localization and Mapping) and path planning algorithms. Technologies used: ROS, LiDAR, IMU, C++, Python.
- **Robot Arm Control with Computer Vision:** Designed and implemented a robot arm control system using computer vision for object recognition and manipulation. Technologies used: ROS, OpenCV, Python, C++.
- **Embedded System for a Drone:** Developed the embedded flight control system for a drone using FreeRTOS and an ARM Cortex-M microcontroller.