Hotsuyuki Kawanishi

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SUMMARY

Software Engineer with 4 years of experience in Autonomous Robot (Perception, Motion Planning) and ML (Computer Vision, LLM). Graduating with a Master's degree in Software Engineering in Dec 2025, and eligible for 3 years of US work through STEM OPT.

EXPERIENCE

Waymo, Mountain View, California **May 2025 – Aug 2025**
Software Engineer (intern), Self-Driving Car - Perception

- Improved the performance (PR curves and Mean IoUs) of the lidar semantic segmentation task, which is one of the main task of the perception model, by inputting noise point cloud in addition to non-noise point cloud to the model and co-training the model with a noise-aware auxiliary task alongside the main tasks. The ML frameworks used in this work were TensorFlow and JAX.

University of Tokyo AI Lab (Matsuo Lab), Tokyo, Japan **Jan 2024 – Aug 2024**
Machine Learning Engineer (part-time), LLM

- Rapidly acquired necessary expertise in LLM within 1 month despite working full-time in a different field (Self-Driving Car), and built an LLM distributed training pipeline with Microsoft Megatron-DeepSpeed and Hugging Face Transformers, achieving successful training of an OpenAI GPT-based 10B generative model on 160 Nvidia H100 GPUs via Google Cloud GPU cluster.
- Led a lecture on pre-training in an online LLM course with 4,000+ participants, accomplishing the highest Net Promoter Score.

Woven by Toyota, Tokyo, Japan **May 2021 – Aug 2024**
Software Engineer (full-time), Self-Driving Car - Motion Planning

- Decreased driver interventions in JP by 30% by debugging the optimization-based trajectory planning modules with teams in the US, e.g. triaging log data, identifying root causes on large codebases, articulating solutions, and managing car experiments.
- Streamlined and accelerated simulation scenario generation process for the motion planning team by 3x efficiency by creating automation scripts that leverage Applied Intuition API and by leading cross-functional collaboration with teams in the US.
- Enhanced safety validation for Level 4 driverless autonomous vehicles by designing and implementing a prediction evaluator with Agile methods and software development life cycle best practices, e.g. object-oriented design, code reviews, and testing.

Kanazawa University Advanced Mobility Research Institute, Kanazawa, Japan **Apr 2020 – Mar 2021**
Research Engineer (full-time), Self-Driving Car - Perception

- Developed perception features by applying research theories to practical applications in a fast-paced environment, including a speed bump detector using lidar point cloud and probabilistic approaches (successfully delivered to a customer company) and a lane line visibility checker using lidar-camera sensor fusion and linear algebra (published in an international journal paper).
- Improved map data collection process for autonomous vehicles by 2x efficiency by creating a real-time map generation tool.
- Mentored 4 lab students, resulting in 1 paper publication at IEEE IV and 1 patent filing, by providing hands-on guidance.

EDUCATION

University of Miami, Coral Gables, Florida | M.S. in **Software Engineering** (GPA: 4.00) **Dec 2025**
Relevant Courses: Machine Learning, Neural Networks, Algorithm Design and Analysis, Software Architecture, Software DevOps

Kanazawa University, Kanazawa, Japan | M.Eng. in **Robotics** (GPA: 3.93) **Mar 2020**
Relevant Courses: Intelligent Robotics, Dynamics and Control, Master's Thesis on Localization & Mapping for Self-Driving Car

Chiba University, Chiba, Japan | B.Eng. in **Mechanical Engineering** (GPA: 3.87) **Mar 2017**
Relevant Courses: Linear Algebra, Calculus, Numerical Computation, Analytical Mechanics, Control Theory, Mechatronics

National Institute of Technology Numazu College, Numazu, Japan | A.Eng. in **Computer Science** (GPA: 3.81) **Mar 2015**
Relevant Courses: Data Structures and Algorithms, Programming, Operating Systems, Computer Graphics, Computer Simulation

SKILLS

Languages / Technologies: C, C++, C#, Python, Shell Script, JavaScript, PHP, SQL, PyTorch, TensorFlow, JAX, W&B, DeepSpeed, Hugging Face Transformers, Jupyter Notebook, Unity, React, FastAPI, AWS, Azure, GCP, Docker, Jenkins CI, Bazel, Git, Linux, CLI

PROJECTS

LLM Distributed Training Pipeline | *Python, Shell Script, DeepSpeed, Transformers, Distributed Systems* **Apr 2024**

- Scalable distributed training pipeline for LLMs on GPU clusters using DeepSpeed ZeRO, 3D Parallelism, and Transformers.

C++ Deep Learning Framework from Scratch | *C++, Bazel, Object-Oriented Programming, Unit Testing* **Aug 2022**

- PyTorch-like deep learning framework architected and implemented from scratch in C++, e.g. layers, optimizers, and autograd.

Object Detection Model in PyTorch C++ with TensorRT | *C++, PyTorch, TensorRT, Conv Neural Net (CNN)* **Jan 2021**

- SSD300 in PyTorch C++ (instead of Python) with TensorRT for faster performance and lower inference latency in production.

Robotics Algorithms in Jupyter Notebook | *Python, Robotics, SLAM, Localization, Path Planning* **Sep 2020**

- Python codes for robotics algorithms, e.g. Simultaneous Localization & Mapping (SLAM), localization, and path planning.