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Seungho Jang

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Work Experience

Platform (Unreal) Engineer — **Hyundai Autoever** — **Aug. 2025- Current**
Robotic & Simulation — Seoul, Rep. Korea

- Developed a real-time factory line monitoring system using NVIDIA Isaac Sim; implemented TCP-based robotic arm control leveraging the Lula extension for inverse kinematics.

Sensor Software Engineer — **MORAI** — **Oct. 2021- Dec. 2024**
Virtual Sensor / Map & Test Automation — Seoul, Rep. Korea

- Developed **a shader-based radar simulation** using shader programming (.usf) in Unreal Engine
  - utilized low-level radar parameters; the number of chirps, samples, receive antenna, and antenna pattern to simulate radar returns based on those parameters; created Python script to process radar data, received low-level output data from ROS, and generated range-doppler maps.
- Created the **Bounding Box Labeler** with the following features:
  - implemented JSON file output for all object types: vehicle, vehicle parts, pedestrians with animation, and obstacles.
  - supported multiple coordinate systems for use cases (Camera, LiDAR, vehicle, and ENU), and developed 8-corner and center point-based representations.
- **Developed Coordinate Converter Plugin for Unreal Engine 5**:
  - implemented bidirectional transformation between Unreal Engine's left-handed and right-handed systems (NED, ENU, AER) with unit tests, enabling cross-team compatibility and project integration.
- **Developed a Comprehensive Scenario Runner** Application from scratch, implementing the ASAM OpenSCENARIO Standards:
  - created functionality to load, edit, and save OpenSCNEARIO files, adhering to the standard's defined elements and attributes, and implemented a user interface for scenario editing and batch simulation management.
  - implemented various OpenSCENARIO actions, including TrafficSpawnAction and custom PedestrianSpawnAction.
  - integrated gRPC protocol for communication with the simulator; developed an adaptor class to handle responses/requests, with the runner client performing all conditions and action evaluations for improved maintainability.
  - optimize collision detection using an Oriented Bounding Box (OBB) and Separating Axis Theorem.
  - architected scalable batch simulation functionality with Python APIs for simulation controls

Graduate Teaching Assistant — **University of Missouri St. Louis** — **2019-2021**
St. Louis, USA

- Developed and delivered hands-on C++ programming labs covering OOP, memory management, STL, and graph algorithms.

Teaching Assistant — **Washington University in St. Louis** — **2017-2019**
St. Louis, USA

- Provided supplemental educational services for undergraduate students studying Signal & System / Engineering Mathematics Course.

Education

- **M.Sc. Computer Science** — **2019–2021**
  University of Missouri - St. Louis. GPA: 4.0
- **B.Sc. Electrical & Electronic Engineering** — **2017–2019**
  University of Missouri / Washington University in St. Louis. GPA: 3.8

Technologies and Languages

- Languages: C, C++, C#, Java, Python, JavaScript
- Technologies: Git, OpenCV, Open3D, CUDA, DirectX11, DirectX12, Vulkan, HLSL, Unreal Engine, Unity, PyTorch, TensorFlow, PyQt, PyTest, Jenkins, GitLab CI/CD
- Other: Data structures and algorithms, Computer Vision, Deep Learning, Computer Graphics, ROS

Projects

- **Projects**

  Hyundai UAM: **Radar Point Cloud Visualization in Unreal Engine 5.**
  - applied Gaussian Random Distribution to generate realistic radar returns and utilized the raycasting method to capture aerial objects exclusively, improving point cloud fidelity and target isolation.

  Samsung Data Generation:
  Scenario Data Acquisition
  - utilized **DataGen** to build complex scenario datasets, ensuring 15+ objects per batch and detailed descriptions of dynamic situations. Managed video acquisition and detail modifications to enhance data quality and alignment with project requirements.

  Enhanced LiDAR Simulation with Motion Distortion
  - developed a post-processing technique to apply motion distortion to MORAI Simulator's LiDAR output, implementing coordinate transformation and spherical linear interpolation(SLERP) for rotation modeling, and integrated distortion effects into the pipeline.

  Project ROKA:
  - implemented a flexible architecture for Scenario Runner, incorporating a default mapping system for offline loading vehicles, pedestrians, and miscellaneous objects, while maintaining compatibility with existing RestAPI-based retrieval, ensuring operation across security environments.

  Project NIA:
  - developed, modified, and tested 1200 Edge Case Scenarios across 6 Korean maps in .xosc format, ensuring dataset accuracy and alignment with project requirements.
  - conducted simulations, identified necessary modifications, and updated to improve scenario quality and reliability

Others

- **Volunteer work**

  Brain Dynamics and Control Research Group, Electrical Engineering Department, Washington University in St. Louis.
  - Developed a portable Brain-Computer Interface (BCI) system using Raspberry PI3; built a portable device for anesthesia monitoring, storing real-time EEG data, participated in Conic Method research; implemented data preprocessing pipeline for noise reduction and artifact removal.

  Computing Club, University of Missouri St. Louis
  - Constructing a Remote Camera Control System by using Raspberry Pi3.

- **Patents**

  - Eungback Kim, Seungho Jang, Seongyeon Park, Hoseup Lee, Hein Jo, 2024. SCENARIO-BASED AUTONOMOUS DRIVING VEHICLE SIMULATION METHOD AND SYSTEM. WIPO Patent WO2024/117564, filed November 1, 2023, and published June, 6, 2024 Patent Approved & Registered.

  - Heecheol Yoo, Seungho Jang, Hojun Lim, 2024. ELECTRONIC DEVICE AND METHOD FOR PROCESSING POINT CLOUD DATA, KR 10-2024-0076717, filed June 24, 2024. Patent Approved.

- **Awards**

  - Sweeney Memorial Scholarship, Issued by Washington University in St. Louis, Engineering Department.
  - Robert Heider Engineering Scholarship, Issued by Washington University in St. Louis, Engineering Department.

- **Certifications and Courses**

  - Graduate Certificate in Artificial Intelligence - University of Missouri in Saint Louis / NSA / DHS National Center
  - Robotic Software Engineering – Udacity
  - Computer Vision – Udacity
  - Introduction to Computer Graphics with DirectX 11 – Part 2. Realtime Pipeline