JIYEONG OH

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Full Publication List: https://scholar.google.com/citations?user=xh5UT88AAAAJ

EDUCATION

Indiana University, Bloomington | M.S. Data Science, Applied Data Science Track — 08/2024 - Present
- GPA: 4.0/4.0 | Fulbright Scholar (U.S. government-funded, internationally selective) | Anticipated Graduation: 05/26

Hanyang University, Seoul | B.S. Data Science — 03/2020 - 02/2024
- GPA: 4.22/4.5 | Summa Cum Laude

WORK EXPERIENCE

AI Researcher | Roper Lab, Indiana University, Bloomington, IN — 12/2025 - Present
- Automated phenotyping by architecting a markerless pose-estimation and landmark-driven gait pipeline for Down syndrome models.
- Driving quantitative motor behavior analysis toward conference submission by deriving step timing and foot-strike events from pose trajectories.

Healthcare Robotics Researcher | R-House Lab, Indiana University, Bloomington, IN — 09/2024 - Present
- Advanced Toyota Research Institute-funded healthcare robotics by developing a vision-based emotion recognition system for dementia evaluation.
- Architected and deployed a biomarker-driven companion robot with low-latency (<120 ms) adaptive behavior on physical robotic pet hardware.
- Developed a stress prediction model from cognitive game interactions and wearable-derived heart rate variability, enabling biomarker-based affect inference for Alzheimer's monitoring.

AI Vision Engineer Intern @ Dental CAD/CAM Company | DOF Inc., Seoul — 06/2023 - 06/2024
- Accelerated the product launch by 6 months by developing a ResNet-based dental cavity classifier, optimizing real-time inference latency.
- Achieved a 14.1% MIoU improvement and enhanced model robustness by introducing a novel consistency loss term for oral video segmentation.
- Secured investor backing by spearheading diffusion- and Vision Transformer-based 3D dental crown generation pipelines on point clouds.

Machine Learning Researcher | DSIL Lab, Hanyang University, Seoul — 01/2021 - 02/2024
- Rescued a high-risk project by leading few-shot learning-based adaptation of companion robot behaviors, restoring reliable autism interaction.
- Overcame data scarcity by leading the integration of contrastive VAE and GAN architectures, improving model stability and generalization.
- First-authored and presented peer-reviewed research at a top-tier HRI conference, grounded in robotic perception-to-action (XGBoost, LSTM, GRU).

Software Developer | Zwon Institute, Seoul — 09/2021 - 12/2022
- Drove 2× customer growth by leading development of an anxiety alert platform integrating behavioral and emotional pattern analysis.
- Qualified the company for government funding by building cloud-native REST APIs for real-time data ingestion, processing, and scalable analytics.
- Designated as a critical contributor after championing NoSQL adoption and streamlining the end-to-end data collection pipeline across services.

PROJECT HIGHLIGHT

OSCAR: Overtaking Strategy in Competitive Autonomous Racing | Link — 09/2025 - 12/2025
- Achieved collision-free multi-agent overtaking in autonomous racing by architecting an MPCC-based controller with bounded-rational decision making under strict latency constraints, validated via sim-to-real deployment on a physical F1TENTH vehicle.

3D Brain Tumor Inpainting Model | MICCAI BraTS Challenge 2025 Link — 06/2025 - 10/2025
- Ranked 2nd globally in a top-tier medical imaging challenge by designing a GAN-based volumetric inpainting model with structural priors for tumor-to-healthy tissue reconstruction in 3D MRI, resulting in a workshop paper submission.

Active Learning: Powered Burn Scar Segmentation for Satellite Imagery | Link — 01/2025 - 05/2025
- Reduced annotation effort by 53.8% by integrating an active learning framework into a U-Net segmentation pipeline for satellite imagery, recognized as an outstanding paper and featured in the university press.

Metaverse For All: Locomotion AI for Mobility Impaired | mySUNI Creative Challenge (SK) Link — 09/2022 - 02/2023
- Won Best ESG Award and achieved 0.95+ accuracy with a LSTM/GRU-based VR locomotion system for mobility-impaired users, resulting in a first-author peer-reviewed publication.

TECHNICAL SKILLS

Languages | Python · C++ · C · SQL · R · JavaScript · MATLAB · Java

ML & DL | PyTorch · TensorFlow · Hugging Face · scikit-learn · Transformers · CNNs · Vision Transformers · Diffusion Models · GANs · VAEs · Computer Vision · Object Detection · Image Segmentation · Tracking · Pose Estimation · Video Understanding · Representation Learning · Self-Supervised Learning · Transfer Learning · Domain Adaptation · Fine-tuning · Multimodal Models · OpenCV · 3D Vision · Point Clouds · Real-time Perception · LLMs

Robotics & Autonomy | ROS2 · MPC / MPCC · Motion Planning · Path Planning · State Estimation · Sensor Fusion · Calibration · Localization · SLAM · Multi-agent Planning · Collision Avoidance · Closed-loop Control · Real-time Systems · Embedded AI · Sim-to-Real

Systems & Infrastructure | CUDA · TensorRT · GPU Acceleration · Model Optimization · Quantization · Edge Deployment · ONNX · Distributed Training · MLOps · Docker · CI/CD · Linux · Git · AWS · GCP · Hadoop · Spark

Data | NumPy · Pandas · SciPy · Data Pipelines · Dataset Curation · Annotation · Experiment Tracking · Weights & Biases · TensorBoard · Benchmarking · Evaluation · Time-series Modeling · Wearables · Biomarkers (HRV)

SELECTED PUBLICATIONS

- First-author peer-reviewed publications in Human-Robot Interaction (HRI) and digital health; full list on Google Scholar.
- IEEE BSN 2024: Few-shot learning for digital health sensor data in autism (Bennett, Stanojevic, Oh, et al.).
- IEEE RO-MAN 2023: Data-driven autonomous adaptation for therapeutic robotic pets (Bennett, Sabanovic, Stanojevic, Oh, et al.).
- ACM/IEEE HRI 2023 Companion: First-author qualitative comparison of robotic pet interactions (US vs. South Korea).
- Ongoing first-author submissions to top-tier venues including MICCAI and leading AI/robotics conferences.