Haesung Oh

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RESEARCH INTEREST

Autonomous Vehicles/Robots

– Decision making with AI-Based Approach using Deep Learning

– Autonomy optimization using Multi Agent Reinforcement Learning

EDUCATION

POSTECH, Convergence IT Engineering, Bachelor's Degree (GPA: 3.15/4.3)   Feb 2016 - Feb 2023
UC Berkeley, Exchange Student   Jun 2017 - Dec 2017
Seoul Science Highshcool   Feb 2013 - Feb 2016

RESEARCH EXPERIENCE

Metal-Organic Frameworks Property Regression   *Advisor: Seungchul Lee*   Sep 2022 - Dec 2022

– Regression model that predicts the properties of MOF in an inverse design manner

– Optimizes the regression model by tuning hyperparameters automatically

– *Keywords: Hyperparameter Tuning, Lazy Regression, Extra-tree Regression*

Autonomous Delivery Mobile Robot (SNU ARIL Internship) *Advisor: Sungwoo Kim* Dec 2021 - Feb 2022

– 6-wheel, skid steering autonomous delivery robot for SNU campus

– Contributed to autonomy simulation and robot mobility optimizing

– *Keywords: ROS, Unity simulation, Embedded system, 3D CAD, Hardware assembly*

Autonomous Parking Simulation   *Advisor: Suhee Han*   Sep 2021 - Dec 2021

– An autonomous parking simulator using Unity ML-Agent and reinforcement learning

– Trained an average of 8 million episodes for the front, parallel, and diagonal parking situations, respectively

– *Keywords: Reinforcement learning, AI-based autonomy, Autonomy simulation, Unity ML-Agent*

Autonomous Drone   *Advisor: Suhee Han*   Feb 2021 - Jun 2021

– An autonomous drone avoids obstacles and terrain and comes back safely using ultrasonic sensors

– Targets to explore an extreme environment based on a rule-based approach dependent on obstacle conditions

– *Keywords: Rule-based autonomy, Arduino, Obstacle detection, PID control, Drone system dynamics*

Auto Training Routine Recording System   *Advisor: Chulhong Kim*   Sep 2020 - Dec 2020

– Detects human pose to get exercise, repeats and sets automatically for weight training using computer vision

– *Keywords: OpenPose, Pose estimation, Vector similarity*

Auto Strike Zone Detection   *Advisor: Sungjun Jung*   Feb 2018 - Jun 2018

– Auto strike zone detection for baseball

– *Keywords: Computer vision, Real-time, Line detection, Object detection*

Working Experience

Autonomous Recycle Robot (Dudaji Start-up Company Internship)   Jul 2022 - Aug 2022

– 6-joints-robot that classifies and does pick-and-place trashes by using ROS, Deep Learning, and computer vision
– Contributed to robot detection via camera, robot movement optimization via ROS, pick-and-place logic development, converting algorithm from computer vision to robot coordinate, and collecting plastic waste image data for classification
– *Keywords: Robotics, ROS, Computer vision, Yolo v5, Deep learning, Pick-and-place*

Other Experience

Hyundai H-Mobility Class: Autonomous Car Class   Jul 2022 - Jan 2023

Keywords: Recognition, Decision making, Machine learning, Vehicle system control, Vehicle network

Honors and Awards

Creative ICT Scholarship   Feb 2016 - Dec 2021

MSIT(Ministry of Science and ICT), Korea, under the ICT Creative Consilience program

Korea Art Management Service: ART Hack-A-Thon   May 2018

Excellence Prize: *Art and coding education using drones for the next generation*

Skills

Programming Language   Python, ROS, C/C++, Git
2D/3D Graphic   Unity, Fusion 360, AutoCAD

Extra-Curricular Experiences

Military Service: Republic of Korea Airforce   Nov 2018 - Sep 2020

Military residence management airman, A representative of airmen

Berkeley Media Club: Berkast   Nov 2017 - Dec 2017

Actor, Cinemaphotographer, and Video editor

Creative IT Camp   Aug 2016, Aug 2018

Team leader, Instructor, and Photographer

POSTECH Photography Club: Bitt-Noeul   Feb 2018 - Jun 2018

Photographer, and Photography advisor

POSTECH Baseball Club: Tachyons   Feb 2016 - Dec 2022

Catcher, First-baseman, Cleanup hitter, and Team captain

POSTECH Musical Club: OPCA   Feb 2016 - Jun 2016

Actor, Played a musical named 'Laundry' as the main character