Seong Hyeon Park

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Education

- **Hanyang University** — Seoul, Korea
  M.S. in Electrical Engineering; GPA: 3.83/4.00 *(Major:* 4.00/4.00*).* *Feb. 2018 – Aug. 2020*
  - ***Thesis**: Deep Learning-based Prediction of Vehicle Trajectory using Multimodal Contexts.*
    Advisor: Prof. Jun-Won Choi
- **Carnegie Mellon University** — Pittsburgh, PA, USA
  Intensive Program in Artificial Intelligence; GPA 4.00/4.00. *Aug. 2019 – Feb. 2020*
  - ***Projects**: Trajectory Forecasting and IoT Robot Development.*
- **Hanyang University** — Seoul, Korea
  B.S. in Electrical Engineering; summa cum laude; GPA 3.82/4.00 *(Major:* 3.88/4.00*).* *Mar. 2012 – Feb. 2018*

Research Experiences

- **Diverse Trajectory Forecasting using Multimodal Context** — Carnegie Mellon University
  Researcher *Aug. 2019 – Feb. 2020*
  - **Contributions**: The first author. Mainly designed flow-based trajectory generator for motion forecasting modules, distribution approximating schemes and dataset pre-processing (Kalman smoothing). Participated in designing attention modules and diversity metrics.
  - **Publication**: [C1] in ECCV 2020.
  - **Award**: Honorable Mention [A1] at CVPR 2020 Argoverse motion forecasting competition.
- **Technology Innovation Program (Industrial Project)** — Hanyang University
  Researcher *Mar. 2018 – Jul. 2019*
  - **Project**: Development of deep learning-based future prediction and risk assessment technology considering inter-vehicular interaction in cut-in Scenario, funded by Ministry of Trade, Industry and Energy, Korea.
  - **Contributions**: Developed bounding box association, trajectory filtering and imputation software for autonomous driving data. Designed neural network models for vehicle trajectory prediction.
  - **Patent**: [P1] registered Korean patent.
- **Seq2Seq Trajectory Prediction via Occupancy Grid Map** — Hanyang University
  Intern Researcher (Undergraduate) *Aug. 2017 – Feb. 2018*
  - **Contributions**: The first author. Designed network architectures, trajectory embedding on occupancy grid map, and beam-search decoding for multiple trajectories prediction. Participated in data processing for radar signal.
  - **Publication**: [C2] in IEEE IV 2018 Oral Session (120+ citations).

Publications

[C1] Seong Hyeon Park, Gyubok Lee, Minseok Kang, Jimin Seo, Manoj Bhat, Ashwin Jadhav, Jonathan Francis, Paul Liang and Louis-Philippe Morency. "Diverse and Admissible Trajectory Forecasting through Multimodal Context Understanding". European Conference on Computer Vision (ECCV), 2020. [arXiv]

[C2] Seong Hyeon Park, Byeongdo Kim, Chang Mook Kang, Chung Choo Chung and Jun-Won Choi. "Sequence-to-Sequence Prediction of Vehicle Trajectory via LSTM Encoder-Decoder Architecture". IEEE Intelligent Vehicles Symposium (IV), 2018. (*Oral Session, 120+ citations*) [arXiv]

[PP1] ByeongDo Kim, Seong Hyeon Park, Seokhwan Lee, Elbek Khoshimjonov, Dongsuk Kum, Junsoo Kim, Jeong Soo Kim, Jun-Won Choi. "Lane-Aware Prediction of Future Trajectories" (*in Review*), 2020.

[PP2] Jin Hyeok Yoo, Seong Hyeon Park, Jun-Won Choi. "ScarfNet: Multi-scale Features with Deeply Fused and Redistributed Semantics for Enhanced Object Detection", 2019. [arXiv]

Patent

[P1] Seong Hyeon Park, ByeongDo Kim and Jun-Won Choi. "Vehicle Trajectory Prediction Technique via Modularized Recurrent Neural Network Architecture.", Korea patent 1019515950000, 2019. [Details]

Professional Activities

- **Journals Reviewing [Publons]**: IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Big Data, Elsevier Neurocomputing

Miscellaneous Experiences

- **IoT and Machine Learning: Delivery Robot Competition** — Carnegie Mellon University
  Participant — *Dec. 2019 – Feb. 2020*
  - **Project**: A course project to develop control system and delivery management software for IoT robots.
  - **Contributions**: Developed perception, PID control and route tracking codes.
  - **Achievement**: 2nd place at the final competition.
- **Enhanced Object Detection** — Hanyang University
  Researcher — *Nov. 2018 – Dec. 2018*
  - **Contributions**: Participated in designing architecture for feature processing network [PP2].
- **Undergraduate Research Opportunity** — Hanyang University
  Intern Researcher — *Jan. 2017 - Feb. 2018*
  - **Trajectory Prediction**: Developed a trajectory prediction model (Described in *Research Experiences*).
  - **SW Development**: Developed a visualization software for the occupancy grid map-based vehicle motion representation.
  - **Voice Enhancement**: Voice enhancement using statistical filtering algorithms.

Work Experiences

- **Motion Forecasting for Autonomous Vehicles** — Hanyang University Research Institute
  Research Scientist — *Oct. 2020 – Current*
  - **Research**: Developing multi-lane context processing algorithms for efficient motion forecasting. [PP1] under review.
- **Military Service** — US Army
  Sergeant (KATUSA program) — *Jul. 2013 – Apr. 2015*
  - **Specialty**: Served Military Police in the 188th MP CO, 94th MP BN, US Army.
  - **Career**: Graduated Warrior Leader Course at the Eighth Army Wightman Noncommissioned Officer Academy.

Awards and Scholarships

[A1] Honorable Mention (Argoverse Motion Forecasting Challenge), 2020. [Video]
[A2] Academic Excellence Award (Hanyang University), 2018.

[S1] $20,000, Kwanjeong Educational Foundation, 2018 – 2020.
[S2] 70% tuition waiver, Hanyang Graduate School, 2018 – 2020.
[S3] $6,545, BK21 (Korean Government), 2018.
[S4] $9,091, Korea Semiconductor Industry Association, 2017.
[S5] $1,818, Hanyang Alumni Association (Department of Electrical Engineering), 2017.