Seongho Son(London)

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RESEARCH INTERESTS

- Reinforcement Learning: RLHF, Robustness
- Generative models: LLMs, diffusion models, multimodal models
- Multi-agent systems: game theory, networked agents, emergent behaviour

EDUCATION

University College London   Oct 2022 – Present
Ph.D. in Computer Science
Advisor: Prof. Brooks Paige & Prof. Ilija Bogunovic | Topic: RLHF, Uncertainty Estimation

Seoul National University   Mar 2016 – Feb 2018
M.S. in Computer Engineering
Advisor: Prof. Byoung-Tak Zhang | Thesis: Deep Bayesian Neural Networks for Continual Learning

Seoul National University   Mar 2010 – Feb 2016
B.S. in Artificial Intelligence Engineering(self-designed major) & Linguistics

EXPERIENCES

Teaching Assistant @ **UCL ELEC0141 Deep Learning for Natural Language Processing** 23/24, 24/25
- Create lab session material about fine tuning Transformers
- Conduct lab sessions

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Teaching Assistant @ **UCL COMP0016 Systems Engineering**   Jan 2024 - Mar 2024
- Support students' software development projects through weekly meetings

Research Engineer @ **NCSOFT Game AI Lab**   Feb 2018 – Apr 2021
- Develop AI agents based on deep reinforcement learning for one-versus-one fighting environment of *Blade & Soul*
- Research on deep reinforcement learning for multi-agent battle environment

Course Assistant @ **Big Data Institute[1], Seoul National University**   Aug 2017 – Sep 2017
- Course: "Advanced Artificial Intelligence" by Professor Yungkyun Noh

Tutorial Instructor @ **Multicampus**   Dec 2016
- Title: "Deep Learning with Python and Open Source Libraries"

PUBLICATIONS

1. Seongho Son, William Bankes, Sangwoong Yoon, Shyam Sundhar Ramesh, Xiaohang Tang, Ilija Bogunovic. *Robust Multi-Objective Controlled Decoding of Large Language Models.* arXiv preprint, 2025. (Link)

2. Xiaohang Tang, Sangwoong Yoon, Seongho Son, Huizhuo Yuan, Quanquan Gu, Ilija Bogunovic. *Game-Theoretic Regularized Self-Play Alignment of Large Language Models.* arXiv preprint, 2025. (Link)

3. Seongho Son, William Bankes, Brooks Paige, Ilija Bogunovic. *Right Now, Wrong Then: Non-Stationary Direct Preference Optimization under Preference Drift.* **Accepted to ICML 2025.** (ArXiv Link)

4. Sangwoong Yoon, William Bankes, Seongho Son, Anja Petrovic, Shyam Sundhar Ramesh, Xiaohang Tang, Ilija Bogunovic. *Group Robust Best-of-K Decoding of Language Models for Pluralistic Alignment.* NeurIPS 2024 Pluralistic Alignment Workshop.

5. Inseok Oh, Seungeun Rho, Sangbin Moon, Seongho Son, Hyoil Lee, Jinyun Chung. *Creating Pro-Level AI for Real-Time Fighting Game with Deep Reinforcement Learning.* IEEE Transactions on Games, 2021. (Link)

6. Seongho Son, Jiseob Kim, Byoung-Tak Zhang. *Sequential Multitask Learning Optimization Using Bayesian Neural Network(Best Paper Presentation Award).* Korea Computer Congress 2017.

7. Seongho Son, Jiseob Kim, Byoung-Tak Zhang. *Active Image Learning of Household Robots Using Bayesian Neural Network.* Korea Software Congress 2016.

8. Seongho Son, Jiseob Kim, Byoung-Tak Zhang. *Online Image Recognition Using Bayesian Neural Network for Sequential Estimation.* Korea Computer Congress 2016.

PROJECTS

Research on multi-agent reinforcement learning @ NCSOFT Game AI Lab   Jun 2020 – Apr 2021
- Cooperate with team members to develop a learning pipeline based on StarCraft II(pysc2), including architecture design, opponent sampling and visualization for performance assessment
- Implement and experiment reinforcement learning algorithms including V-MPO and MO-V-MPO
- Experiment on multi-agent environments including SMAC and originally developed maps for team-versus-team battle

Developing AI agent for *Blade & Soul* @ NCSOFT Game AI Lab   Feb 2018 – Jun 2020
- Cooperate with AI System team to develop a learning pipeline based on *Blade & Soul* simulator, including opponent matching, performance evaluation and general optimization
- Develop code for game log analysis, visualizing stats and activated features of agents during each match
- Implement and experiment reinforcement learning algorithms, including ACER and IMPALA
- Experiment on additional elements for performance boosting, including opponent sampling and reward shaping

Developing makeup scoring AI @ NIA[2] | LG Household & Healthcare   Sep 2016 – Dec 2016
- Experiment on scoring makeup of facial photographs using convolutional neural networks
- Make learning data with scores given from experts, using facepp and numpy
- Setup and maintain Linux-based server for machine learning experiments

Deep learning-based pattern recognition @ Samsung Electronics   Feb 2016 – Oct 2016
- Develop tools for recognition perfomance assessment and visualization
- Experiment on sequential pattern data with deep neural networks and data augmentation
- Setup and maintain Linux-based server for machine learning experiments

AWARDS

- Dean's award, valedictorian speech (College of Liberal Studies, Seoul National University, 2016)
- Highlighted presentation award in Korea Computer Congress 2017
- Full tuition scholarship granted by Korea Student Aid Foundation (2010-2012)
- An Entrance Scholarship awarded by Seoul National University (2010)

SKILLS

- **Languages**: Korean(Native), English(TOEFL 112, GRE - V 164 / Q 170 / W 4.0)
- **Programming Languages**: Expert in Python, competent in C/C++, Java and knowledge of JavaScript, Ruby, HTML/CSS, MATLAB, R, OCaml, Racket
- **Tools**: Git, Tensorflow, Pytorch, Linux/Ubuntu, NumPy, Vim, VS Code, Bash, Tmux, Docker, Matplotlib

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[1]Current Artificial Intelligence Institute of Seoul National University(AIIS)

[2]National Information Society Agency of Korea