Jin Hwa Lee

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jinhl9.github.io

Education

Technical University of Munich — Munich
M.Sc. in Neuroengineering, GPA: 1.2 — Oct.2019–Feb.2022

Korea Advanced Institute of Science and Technology (KAIST) — Daejeon
B.Sc. in Physics, GPA: 3.90 (Top 4.5%) — Mar.2015–Aug.2019

- Graduated with honors *magna cum laude*
- Thesis: Studies in spatial entropy of art paintings

Publications and preprints with links

[1] S. Schneider*, **J. H. Lee***, and M. W. Mathis, "Learnable latent embeddings for joint behavioral and neural analysis", *Under review.*

[2] L. Servadei*, **J. H. Lee**, J. Arjona-Medina, M. Werner, S. Hochreiter, W. Ecker, and R. Wille, "Deep Reinforcement Learning for Optimization at Early Stage", in *IEEE Design & Test of Computers*, 2022.

[3] K. S. Mann*, S. Schneider*, A. Chiappa, **J. H. Lee**, M. Bethge, A. Mathis, and M. W. Mathis, "Out-of-distribution generalization of internal models is correlated with reward", in *Self-Supervision for Reinforcement Learning Workshop-ICLR 2021*, 2021.

Research Experience

Mathis Lab, EPFL — Geneva
Master Thesis — Apr.2021-Feb.2022

- Supervised by *Prof. Mackenzie Mathis*
- **CEBRA**: **C**onsistent **E**mbeddings of **B**ehavior and neu**RA**l activity
- We developed CEBRA, a novel representation learning method leveraging contrastive learning to jointly model neural activity and behavioral recording

Mathis Lab, EPFL & Bethge Lab, Uni.Tübingen — Geneva, Tübingen
Research Internship — Sep.2020–Mar.2021

- Supervised by *Prof. Mackenzie Mathis, Prof. Matthias Bethge*
- Self-supervised learning on adaptive mechanism of reinforcement learning (RL) agent
- We applied self-supervised learning, specifically contrastive predictive coding, on RL agent state in adaptive learning task and found a correlation between out-of-distribution performance and reward drop

Macke Lab, TUM — Munich
Research Internship — Feb.2020-Apr.2020

- Supervised by *Prof. Jakob Macke*
- Domain invariant variational auto-encoder (VAE)
- We investigated different variants of VAE to study disentanglement between domain property and domain invariant property

Infineon — Munich
Applied Machine Learning Team, Working Student — Jul.2019-Feb.2020

- Combinatorial optimization of hardware/software with deep reinforcement learning
- We applied different reinforcement learning algorithms, including RUDDER with reward redistribution approach, to improve combinatorial optimization problem in designing chips

Scholarships and Awards

- 1st Prize, TUM Science Hackathon — Apr.2021
  TryCycle: App applying computer vision to assist recycling and upcycling
- 1st Prize, IEEE Brain BCI Designer Hackathon — Jul.2020
  VibeLight: Real time measurement, visualization and feedback of attention using BCI
- DAAD Scholarship for Master Study — Sep.2020–Oct.2021
  Awarded approx. 12,000 €
- National Science and Engineering Undergraduate Scholarship — Mar.2017–Feb.2019
  Awarded approx. 13M ₩ (10,200 €)

Educational Works

BonEcole. Inc — Seoul
Co-Founder — Sep.2021-Feb.2022

- I contributed in co-founding BonEcole, an online learning platform for African schoolers. We attempt to give more equal educational opportunity to everyone by building accessible online learning resource adapted to the user environment in Africa. We raised $70,000 seed funding and currently in rapid web development phase

Technical University of Munich — Munich
Teaching Assistant — May.2020-Jul.2020

- Machine Learning: Methods and Tools (EI 71040)
- Updating lecture materials and tutoring exercises

Connect Foundation — Seoul
Educational Volunteer — June.2016-Jan.2019

- I contributed as a translator and translation mentor in Connect Foundation to promote equal education opportunity to everyone in Korea. See my interview (Korean) as a honored volunteer

Skills

- **Programming languages** Python, MATLAB, bash
- **Frameworks and Tools** Pytorch, Keras, Git, Slurm