Changyeon Lee

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Education

- **Yonsei University** Seoul, Republic of Korea
  Senior undergraduate student in Computer Science and Engineering *Feb 2018 - Feb 2025 (Expected)*
  - GPA: 4.1/4.3 (Cumulative and Major, both equal)
  - Absences
    - Spring 2020 (Data Scientist at HDC)
    - Fall 2020 - Spring 2022 (Military Service at Republic of Korea Air Force)
    - Spring 2024 (Visiting Research Intern at Purdue University)
- **Chungnam Science High School** Gongju-si, Chungcheongnam-do, Republic of Korea
  School for gifted student in natural science and engineering *Feb 2016 - Jan 2018*
  - Graduated one year early with honors.

Work Experiences

- **Miraflow AI** Kirkland, Washington, United States
  Founding Machine Learning Engineer (Working with Aerin Kim) *Mar 2024 - Present*
  - Developing solutions for lip-sync video generation.
  - Led research on efficient diffusion-generated deepfake image detection (DistilDIRE) as part of an initiative led by *TrueMedia.org* and contributed to a survey paper on deepfake video detection and generation.

- **IITP K-SW Square, Purdue University** West Lafayette, Indiana, United States
  Visiting Research Intern (Advisor: Eric T. Matson) *Mar 2024 - Jun 2024*
  - Led research on a 'Counter Unmanned Aerial System (CUAS)' by integrating multiple modalities.
  - Fully sponsored by the IITP, an organization under Ministry of Science and ICT of the Republic of Korea, in collaboration with Department of Computer and Information Technology of Purdue University.

- **Computational Intelligence & Photography Lab, Yonsei University** Seoul, Republic of Korea
  Research Intern (Advisor: Seon Joo Kim) *Jul 2022 - Jun 2024*
  - Participated in *Deep View* Project (led by Republic of Korea government agency (ETRI)).
    Task : Space-Time Video Super Resolution (STVSR)
    - Integrated a MeMViT-inspired approach to enhance the STVSR architecture, expanding its temporal axis view to improve video processing capabilities.
  - Participated in 'Controllable Object Centric Learning' and 'Online Temporal Action Localization (On-TAL)' research.
  - Controllable Object-Centric Representation Learning
    - Conducted a downstream task analysis to demonstrate the applicability of our research contributions while accomplishing a dataset generation task for evaluating the performance of our proposed method.
    - Tested different architectural components to validate the effectiveness of our proposed method.
  - Online Temporal Action Localization
    - Reproduced a benchmark model with datasets to establish the baseline performance for real-time action localization in videos, showing the efficacy of our research model.
    - Conducted a user study employing Amazon Mechanical Turk (AMT) to evaluate the effectiveness of our proposed model for online temporal action localization.

- **Hyundai Development Company (HDC)** Seoul, Republic of Korea
  Data Scientist *May 2020 - Aug 2020*
  - Played a critical role in developing a machine learning model for the estimation of an adequate apartment lotting-out price by analyzing the actual transaction price data of apartments.
  - Designed a feature engineering process using XGBoost feature importance (drop-out, pick-up) and correlation analysis.

- **Data Engineering Lab, Yonsei University** Seoul, Republic of Korea
  Research Intern *Jul 2019 - Feb 2020*
  - Conducted an image captioning project using Transformer.

Extracurricular Activities

- **Google Developer Student Club (GDSC Yonsei)** — Seoul, Republic of Korea
  AI/ML Member — *Sep 2024 - Jul 2025 (Expected)*

- **Yonsei Artificial Intelligence Academic Club (YAI)** — Seoul, Republic of Korea
  Executive Member (Advisor: Seon Joo Kim) — *Sep 2018 - Feb 2020* **&** *Jul 2022 - Aug 2022*
  - Proceeded a reinforcement learning project DQN and Soft Q-Learning algorithm through the development of personally devised game environment using Python (Deep RL)
  - Worked as a leader of Reinforcement Learning (RL) Team and conducted a study group on RL.
  - Hosted education sessions related to artificial intelligence.

Military Service

- **Republic of Korea Air Force (ROKAF)** — Republic of Korea
  Staff Sergeant — *Aug 2020 - May 2022*
  - Honorably discharged as Staff Sergeant from Republic of Korea Air Force (ROKAF).
  - Received Republic of Korea Air Force Achievement Award.

Publications

- **Deepfake-Eval-2024: A Multi-Modal In-the-Wild Benchmark of Deepfakes Circulated in 2024**
  Nuria Alina Chandra, Ryan Murtfeldt, Lin Qiu, Arnab Karmakar, Hannah Lee, Emmanuel Tanumihardja, Kevin Farhat, Sejin Paik, ***Changyeon Lee****, Jongwook Choi, Aerin Kim, Oren Etzioni*
  Ongoing Work (To Be Submitted)

- **Cost-Efficient and Effective Counter Unmanned Aerial System via Visual-Acoustic Sensing**
  Changyeon Lee*, Dongju Yu*, Soyeon Cho*, Dane W. Hindsley, Halaevalu F. Patterson, Megan A. Clecak, Eric T. Matson*
  IEEE International Conference on Robotic Computing (IRC) 2024

- **DistilDIRE: A Small, Fast, Cheap and Light Diffusion Synthesized Deepfake Detection**
  Yewon Lim, **Changyeon Lee***, Aerin Kim, Oren Etzioni*
  ICML 2024 Workshop on Foundation Models in the Wild

- **The Tug-Of-War Between Deepfake Generation and Detection**
  Hannah Lee, ***Changyeon Lee****, Kevin Farhat, Lin Qiu, Steve Geluso, Aerin Kim, Oren Etzioni*
  ICML 2024 Workshop on Data-centric Machine Learning Research

- **Towards Interpretable Controllability in Object-Centric Learning**
  Jinwoo Kim, Janghyuk Choi*, Jaehyun Kang,* **Changyeon Lee***, Ho-Jin Choi, Seon Joo Kim*
  CVPR 2024 Workshop on Causal and Object-Centric Representations for Robotics

(* denotes equal contribution)

Scholarships & Awards

- Highest Honors, Yonsei University (Fall 2023)
- Merit-Based Scholarship, Jung-Hun Foundation (Fall 2023, Fall 2024)
- Merit-Based Scholarship, Yonsei University (Spring 2019, Spring 2023, Fall 2023, Fall 2024)
- Honors, Yonsei University (Spring 2018, Fall 2018)

Skills Summary

- Languages: Korean (Native), English (Fluent)
- Programming Languages: Python, C++, Java, SQL
- Frameworks: PyTorch, Scikit-learn, SciPy, XGBoost, Pymoo
- Tools: Docker, Oracle, PostgreSQL, MySQL