# Jeongjae Lee

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## RESEARCH INTERESTS

(1) Diffusion & flow-based models; (2) Reward alignment of generative models; (3) AI for Science and Health.

## EDUCATION

**Korea Advanced Institute of Science and Technology (KAIST)** Sep 2025 – Present
M.S., Graduate School of AI Seoul, Republic of Korea
GPA: 4.3/4.3, Advisor: Jong Chul Ye

**Seoul National University** Mar 2019 – Aug 2024
B.S., Electrical and Computer Engineering Seoul, Republic of Korea
GPA: 4.20/4.3, Rank: 7/158, Summa Cum Laude
On leave for 3 semesters due to military service (Feb 2021 - Aug 2022)

**Gyeonggi Science High School for the Gifted** Mar 2016 – Feb 2019
High School Diploma Suwon, Republic of Korea

## PUBLICATIONS & PREPRINTS

*First authors, †Corresponding authors. If absent, first/last authors are first/corresponding.

**[P2] Distribution-Based Regularization for reward fine-tuning diffusion and flow models**
Romeo Passaro*, **Jeongjae Lee***, Jong Chul Ye, Michael Bronstein, Yoshua Bengio, Alexander Tong†, Danyal Rehman†
*arXiv, 2026 (under review)* [paper] [code]

**[P1] GeoFix: Geometry Fixing for 4D Consistent Generation**
Yeobin Hong, Hyojun Go, Dohun Lee, **Jeongjae Lee**, Sunghwan Hong, Federico Tombari, Zhaochong An, Jong Chul Ye†, Konrad Schindler†, Dominik Narnhofer†
*arXiv, 2026 (under review)* [paper]

**[J2] Development and validation of VentPilot: an AI-based recommendation system for mechanical ventilation**
Hong Yeul Lee*, Gaon An*, Yeonwoo Jeong, Edward J. Schenck, Ho Geol Ryu, Brian W. Pickering, Vitaly Herasevich, Daniel A. Diedrich, Seungyong Moon, Hyun-Lim Yang, Hyung-Chul Lee, Wun Hur, Jaewon Choi, Seokjun Lee, **Jeongjae Lee**, Won-Seok Hur, Sebin Kim, Yoonshik Kim, Rajesh Ranganath, Kyunghyun Cho, Sang-Min Lee†, Hyun Oh Song†
*Journal of Intensive Care, 2026.* [paper]

**[C3] Aligning Few-Step Generative Models by Amortizing Sample-based Variational Inference**
Jaewoo Lee*, Hyeongyu Kang*, Dohyun Kim, Kyuil Sim, Woocheol Shin, Minsu Kim, Taeyoung Yun, **Jeongjae Lee**, Sanghyeok Choi, Tabitha Edith Lee, Jong Chul Ye†, Jinkyoo Park†
*NeurIPS 2026.*
*ICML 2026 Workshop* on Structured Probabilistic Inference & Generative Modeling. [paper] [code]

**[C2] Reward Score Matching: Unifying Reward-based Fine-tuning for Flow and Diffusion Models**
**Jeongjae Lee***, Jinho Chang*, Jeongsol Kim†, Jong Chul Ye†
*NeurIPS 2026.*
*ICML 2026 Workshop* on Structured Probabilistic Inference & Generative Modeling. (Best Paper; 2/270 = 0.74%) [paper] [code]

**[C1] PCPO: Proportionate Credit Policy Optimization for Aligning Image Generation Models**
**Jeongjae Lee**, Jong Chul Ye
*ICLR 2026.* [paper] [code]

**[J1] Fast and Accurate Protein Structure Search with Foldseek**
Michel van Kempen*, Stephanie S. Kim*, Charlotte Tumescheit, Milot Mirdita, **Jeongjae Lee**, Cameron L. M. Gilchrist, Johannes Söding†, Martin Steinegger†
*Nature Biotechnology, 2023.* [paper] [code]

## EXPERIENCE

**Aureka Biotechnologies** Oct 2026 – Present
*Consultant; Research Intern*
Advisor: Danyal Rehman
Development of autoregressive protein folding model.

**Yoshua Bengio Lab, Mila – Québec AI Institute** Jun 2026 – Sep 2026
*Research Intern*
Advisor: Danyal Rehman
[P2] DFR: Developed better regularization for RL post-training of diffusion & flow-matching models.

**BISPL Lab, KAIST** Sep 2025 – Present
*Graduate Research Assistant*
Advisor: Jong Chul Ye
[C1] PCPO: Developed a stable log-hinge based policy-gradient objective for diffusion & flow-matching models.
[C2] RSM: Developed a unifying framework for reward fine-tuning methods for diffusion & flow-matching models.

**BISPL Lab, KAIST** Sep 2024 – Aug 2025
*Postbaccalaureate Researcher*
Advisor: Jong Chul Ye
Conducted medical AI industrial research in collaboration with DRTech and Skylabs.
DRTech: Improved CycleGAN-based scatter correction by mitigating blob artifacts.
Skylabs: Developed a TimeVQVAE model for respiratory-rate prediction from PPG data.

**DeepMetrics** Jan 2023 – Dec 2023
*Research Intern*
Advisor: Hyun Oh Song
[J2] VentPilot: Developed data-processing, visualization, and model-selection pipelines for automated ventilator control in ICUs. Designed an auto-screening procedure to exclude physician actions during drug interventions. Designed clinically informed features for decision-tree models through iterative data analysis and consultation with clinicians.

**Steinegger Lab, Seoul National University** Jun 2022 – Dec 2022
*Research Intern*
Advisor: Martin Steinegger
[J1] Foldseek: Optimized LDDT-alignment score computation using spatial hashing and SIMD instructions, achieving a 13× single-core speedup over Pymican. Built and maintained the automated protein database update pipeline for the Foldseek web server.

## HONORS & AWARDS

**Top Reviewer, NeurIPS 2026** Oct 2026
Acknowledgement of high-quality reviewing; complimentary registration

**SPIGM Workshop Best Paper, ICML 2026** Jul 2026
[C2] Reward Score Matching; one of 2 Best Paper Award recipients and 6 oral presentations among 270 submissions.

**Medical AI Scholarship** Sep 2022 – Feb 2024
Merit-based scholarship from the Korea Health Industry Development Institute; KRW 3M per semester.

**Presidential Science Scholarship** Mar 2019 – Aug 2024
National scholarship for talented students in science and engineering from the Korea Scholarship Foundation; full tuition + KRW 2.5M per semester.

**Bronze Prize, Samsung Humantech Paper Award** Feb 2017
Biology, High School Sector; KRW 3M

## SERVICE

**Conference Reviewer:** NeurIPS (2026), ICLR (2027)

## REFERENCES

| | |
|---|---|
| **Danyal Rehman** | Postdoctoral Researcher, Mila – Québec AI Institute |
| **Jong Chul Ye** | Professor, KAIST |
| **Hyun Oh Song** | CEO, DeepMetrics |
| | Professor, Seoul National University |
| **Martin Steinegger** | Associate Professor, Seoul National University |