

Assel Kembay

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EDUCATION

University of California, Santa Cruz

Ph.D. in Electrical and Computer Engineering | GPA: 3.95/4.00 | Advisor: *Prof. Jason Eshraghian*
Area of Study: energy-efficient AI systems, Brain-inspired AI/ML

Santa Cruz, CA, USA

Jun. 2028 (expected)

University of Science and Technology

M.S. in AI - Robotics | GPA: 4.43/4.50

Thesis: "Inversion of Spiking Neural Networks & its application to Knowledge Distillation"

Seoul, South Korea

C-DAC's Advanced Computing Training School

Exchange student, postgraduate diploma in Advanced Computing

Pune, India

L.N. Gumilyov Eurasian National University

B.S. in Mathematical and Comp. Modeling (summa cum laude equivalent) | GPA: 3.86/4.00

Astana, Kazakhstan

AWARDS & HONORS

- Graduate Dean's Research Travel Grant, UC Santa Cruz, USA 2026
- DAC 2025 Young Fellow, Design Automation Conference, San Francisco, USA 2025
- IEEE WIE Student Scholarship, International Leadership Conference, San Jose, USA 2025
- Graduate Studies DEI Research & Travel Award, UC Santa Cruz, USA 2025
- Divisional MIP Fellowship, UC Santa Cruz, USA (\$20K) 2023
- POSCO Asia Fellowship, South Korea 2023
- KIST-KT&G Global Scholarship Foundation, South Korea 2021
- Sur-Place Konrad Adenauer Foundation Scholarship, Germany 2019
- ITEC Programme Scholarship, Government of India 2018
- Academic Achievement Award, ENU, Kazakhstan 2018
- Foundation of the First President of Kazakhstan Scholarship 2018

PUBLICATIONS

(* indicates equal contribution)

1. [APL Machine Learning 2026] **A. Kembay**, S. Gunasekaran, R.-J. Zhu, Y. Zhang, J. K. Eshraghian. (2026). *Efficient Knowledge Distillation via Salient Feature Masking*, APL Machine Learning 4, 016104 (2026) [paper] [code]
2. [Nature Communications 2025] S. Gunasekaran, **A. Kembay**, et al. *A Predictive Approach to Enhance Time-Series Forecasting*, Nature Communications, 16(1), 8645. [paper] [code]
3. [Under Review] Zhu R.-J.*, ..., **Kembay A.**, ..., Eshraghian J. (2025). *A Survey on Latent Reasoning*. [paper] [code]
4. [Under Review] Y. Tian, **A. Kembay**, N. D. Truong, J. K. Eshraghian, O. Kavehei. (2025). *Learning with Spike Synchrony in Spiking Neural Networks* [paper] [code]
5. [ISCAS 2025, DAC 2025] **A. Kembay***, K. Aguilar*, J. Eshraghian. *A Quantitative Analysis of Catastrophic Forgetting in Quantized Spiking Neural Networks*, 2025 IEEE International Symposium on Circuits and Systems (ISCAS). [paper] [poster] (also presented at DAC Young Fellows Poster Session)
6. [BayLearn 2024] **A. Kembay**, R.-J. Zhu, N. Kuipers, J. Eshraghian, C. Josephson. *Leveraging Spiking Neural Networks for Solar Energy Prediction in Agriculture*, Bay Area Machine Learning Symposium (BayLearn 2024). [paper] [code]
7. [IWCN 2021] Sch. Kim, Ch. Lee, B. Lee, D. Seol, D. Kim, **A. Kembay**, K. Yun, S. Jang, J. Lee. *Simulation Web Platform for the Electro-Chemical Oxygen Reduction Reaction*, 2021 International Workshop on Computational Nanotechnology (IWCN), **Oral**. (Associated patent, 20% share). [paper] [Project Page] [Platform Showcase]

PATENTS

Electronic Structure Calculation Web-Program, Korea Institute of Science and Technology.

Inventors: Kim Sch., **Kembay A.**, Kim S. (20% share each) [Project Page] [Platform Showcase]

RESEARCH EXPERIENCE

• Research Scientist Intern, AI Fund, Mountain View, CA, USA

Project: AI Systems for Vision-Based Reinforcement Learning in Interactive Environments

Mentor: **Dr. Andrew Ng**

Jan. 2026 – Present

• Graduate Student Researcher, University of California, Santa Cruz

Project: Knowledge Distillation (KD), Quantized Spiking NNs and Efficient Language Models

Mentor: **Prof. Jason Eshraghian**

Oct. 2023 – Present

– Implementing efficient LLMs for resource-constrained deployments;

– Developed new KD technique with top-K guided transfer, surpassing state-of-the-art KD methods by +1.47%;

– Analyzed Quantized Spiking Neural Networks' role in mitigating catastrophic forgetting through sparse activations;

• Research Scientist Intern, Korea University Medicine, Seoul, South Korea

Project: Wireless Brain Chip Optimization and Data Transfer Algorithms

Mentor: **Dr. Il-Joo Cho**

Apr. 2023 – Sep. 2023

- **Research Assistant, AI Research Group, Korea Institute of Science and Technology (KIST)** Mentor: [Dr. Suhyun Kim](#)
Project: Data-Free Knowledge Transfer for Neuromorphic Systems *Sep. 2020 – Mar. 2023*
- **Research Intern, Computational Science Research Center, KIST, Seoul, Korea** Mentor: [Dr. Seungchul Kim](#)
Project: Quantum Dot Simulation Platform Development *Mar. 2020 – Aug. 2020*

TEACHING EXPERIENCE

Teaching Assistant, ECE 173: High-Speed Digital Design **UC Santa Cruz**
Spring 2025 *Class size: 47*

MENTORSHIP

Mentored 4 undergraduates at UCSC; 2 co-authored publications ([Nature Communications](#), [ISCAS](#)). Mentored 15+ Central Asian students toward funded PhD programs (Columbia University, etc.) and prestigious awards (Graduate Presidential Fellowship, DAAD Scholarship).

PROFESSIONAL SERVICE

Reviewer: NeurIPS NeuroAI '24, APL Machine Learning '24–25, IEEE ISCAS '24–26, IEEE TCDS '25, ACM TOMM '25