LU YIN

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ABOUT ME

Hello, I'm Lu, currently an Assistant Professor at the University of Surrey, and a visiting scholar at Eindhoven University of Technology and the ELLIS - Max-Planck-Campus Tübingen. My general research interests focus on understanding and leveraging low-dimensionality in machine learning, impacting areas such as **efficient training and inference of large foundation models, understanding and enhancing reasoning in LLMs, and developing hardware-friendly machine learning algorithms.** I also pursue interdisciplinary applications in geospatial analytics, medical imaging, and healthcare. I am committed to producing transformative research of the highest caliber.

RESEARCH INTERESTS

Efficient and Scalable Foundation Models
(Computational efficiency and inference optimization)

Understanding and Enhancing NNs
(performance, robustness, and reasoning capabilities)

Interdisciplinary AI Applications
(Integration with Geospatial Analytics, Medical Imaging, and others)

PROFESSIONAL EXPERIENCE

University of Surrey
06/2024 – Present

Assistant Professor

- School of Computer Science and Electronic Engineering
  Nature Inspired Computing and Engineering Group

Eindhoven University of Technology
07/2023 – 12/2024

Postdoctoral Researcher

- Department of Mathematics and Computer Science
  Data and AI cluster

Google, New York Office
07/2023 – 09/2023

AI Researcher (Intern)

- Build Efficient Large Language Models (LLM)

EDUCATION

Eindhoven University of Technology
10/2018 - 2/2023

Ph.D in Computer Science

Department: Mathematics and Computer Science
Specialization: Knowledge Elicitation, Data Efficiency, Model Efficiency
Promotors: Prof. Dr. Mykola Pechenizkiy; Dr. Vlado Menkovski

Harbin Institute of Technology
(Shenzhen)
09/2015 - 07/2018

Master in Control Engineering

Department: Mechanical Engineering and Automation
Specialization: Machine Learning, Robotics
Promotors: Prof. Dr.Xiaorui Zhu

Harbin Institute of Technology
09/2009 - 07/2013

Bachelor in Electrical Engineering and Automation

Department: Information and Electrical Engineering

AWARDS AND HONOURS

- 12/2022 Best Paper Award at Learning on Graphs Conference (LoG). 2022.
- 06/2017 Best Paper Nomination Award at International Conference on Computer Vision Systems (ICVS), 2017

GRANTS

EuroHPC Grants for Computing Time

- Funding Body: European High-Performance Computing Joint Undertaking
- 144000 local core hours on Leonardo BOOSTER (CINECA, Italy).
- Duration: Sep 2025 - Feb 2026
- Role on the Grant: Pi

NWO Grants for Computing Time

- Funding Body: The Dutch Research Council (NWO)
- Value of Award: 90,431.5 $
- Duration: April 2023 - April 2025
- Role on the Grant: Co-pi (with Mykola Pechenizkiy and Shiwei Liu)

NWO Grants for Computing Time

- 2022 EINF-2694： HPC Cloud (CPU): 50.000 hr，HPC Cloud (GPU： NVIDIA GeForce RTX 2080 Ti): 10,000 hr
- 2022 EINF-2943： NVIDIA A100，1,000,000 Credits (7,812 hr)
- 2023 EINF-5205： HPC Cloud (GPU： NVIDIA GeForce RTX 2080 Ti): 10,000 hr
- 2023 EINF-5206： NVIDIA A100，1,000,000 Credits (7,812 hr)

SUPERVISION ACTIVITIES

Ph.D Projects

- 2024, Robustness of Large Foundation Models at Scale - Kappiyath Adarsh
- 2024, Efficient 3D Scene Understanding - Vishal Thengane (With Dr. Xiatian Zhu)
- 2025, Efficient Language Diffusion Models - Mingyu Cao,
- 2025, Test Time Adaptation for Mix of Expert - Handa Li
- 2025, Weight Space Learning with symmetry - Xiaolong Han (With Prof.Ferrante Neri)

TEACHINGS

- Deep Learning (2AMM10) as TA, Eindhoven University of Technology ---------- 2020
- Deep Learning (2AMM10) as TA, Eindhoven University of Technology ---------- 2021
- Deep Learning (2AMM10) as TA, Eindhoven University of Technology ---------- 2023
- Practical Business Analytics (Com3018), University of Surrey ---------- 2024
- Deep Learning and Advanced AI (COM3025), University of Surrey ---------- 2025

SERVICE

- 2025 : Conference Reviewer: CPAL, ICLR, CVPR, BMVC, NeurIPS, Journal Reviewer: TPAMI
  Area Chair, CPAL
- 2024: Conference Reviewer: NeurIPS, DAC, UAI, ICML, CPAL
  Journal Reviewer: ACM Computing Surveys
- 2023 : Conference Reviewer: NeurIPS, UAI, ICLR SNN(workshop)
  Journal Reviewer: Clinical Epidemiology
- 2022: Conference Reviewer: SNN
- 2020: Conference Reviewer: ECML-PKDD

INVITED TALKS

- 2025: Layerwise Insights: A Secret Sauce for LLM Efficiency, Tsinghua University
- 2024: The power of model sparsity, Multimedia Analytics (MA) Laboratory at City University of Hong Kong
- 2023: LLM pruning, Visual Informatics Group @ University of Texas at Austin,
  Meta universe and Digital Human @ AI time PhD Debate, Tsinghua
- 2022: Model/supervision Efficiency at Xu Lab, Carnegie Mellon University,
- 2020: Going beyond training ML models with labels at EDGE AI, Eindhoven University of Technology,

ORGANIZATIONAL CONTRIBUTIONS

- International Conference on Artificial Intelligence and Agents as Publicity Chair
- NeurIPS 2024 Challenge： Edge-Device Large Language Model Competition
- IEEE CAI 2025 Workshop：Stable Training Paradigms for LLMs: Reducing Instability, Increasing Capacity
- IEEE CAI 2025 Workshop：Secure, Private, and Fair Federated Optimization and Learning

RESEARCH & SELECTED PUBLICATIONS

Summary: (as of June 2025)

- **Over 50 papers (20A* and 5 A top AI conference papers, CORE Conference Ranking)**
- **1 Best Paper Award, 1 Best Paper Nomination Award.**
- **7 ICML, 4 ICLR, 6 NeurIPS, 2 EMNLP, 2 Interspeech, 1 BMVC, 1 ICASSP, 1 AAAI, 1 UAI. 1 ACL**

Selected Publications

- **Lu Yin**, You Wu, .etc. *Outlier Weighed Layerwise Sparsity (OWL): A Missing Secret Sauce for Pruning LLMs to High Sparsity*. The Forty-first International Conference on Machine Learning (**ICML**), 2024. Link (Click me)
- **Lu Yin**, Ajay Jaiswal, .etc. *Pruning Small Pre-Trained Weights Irreversibly and Monotonically Impairs "Difficult" Downstream Tasks in LLMs*. The Forty-first International Conference on Machine Learning (**ICML**), 2024. Link
- **Lu Yin,** Gen Li, Meng Fang, Li Shen, Tianjin Huang, Zhangyang Wang, Vlado Menkovski, Xiaolong Ma, Mykola Pechenizkiy, Shiwei Liu. *Dynamic Sparse Training Is also A Structure Sparsity Learner.* Conference on Neural Information Processing Systems (**NeurIPS**), 2023. Link
- **Lu Yin**, Shiwei Liu, Fang Meng, Tianjin Huang, Vlado Menkovski, Mykola Pechenizkiy. *Lottery Pools: Winning More by Interpolating Tickets without Increasing Training or Inference Cost*. Thirty-Seventh AAAI Conference on Artificial Intelligence (**AAAI**), 2023. Link
- **Lu Yin**, Vlado Menkovski,Meng Fang, Tianjin,Huang, Yulong Pei,Mykola Pechenizkiy, Decebal Constantin Mocanu, Shiwei Liu. *Superposing Many Tickets into One: A Performance Booster for Sparse Neural Network Training.* The 38th Conference on Uncertainty in Artificial Intelligence (**UAI**). 2022. Link
- Adarsh Kappiyath, Abhra Chaudhuri, AJAY KUMAR JAISWAL, Ziquan Liu, Yunpeng Li, Xiatian Zhu, **Lu Yin[+].** *SEBRA : Debiasing through Self-Guided Bias Ranking.* The Thirteenth International Conference on Learning Representations. (**ICLR**) 2025. [+]corresponding author. Link

- Di He, Ajay Jaiswal, Songjun Tu, Li Shen, Ganzhao Yuan, Shiwei Liu, **Lu Yin**+. *AlphaDecay: Module-wise Weight Decay for Heavy-Tailed Balancing in LLMs.* Conference on Neural Information Processing Systems (**NeurIPS**), 2025. +corresponding author. Link

- Tianhao Chen, Xin Xu, Zijing Liu, Pengxiang Li, Xinyuan Song, Ajay Kumar Jaiswal, Fan Zhang, Jishan Hu, Yang Wang, Hao Chen, Shizhe Diao, Shiwei Liu, Yu Li, **Lu Yin**+, Can Yang. *GPAS: Accelerating Convergence of LLM Pretraining via Gradient-Preserving Activation Scaling.* Conference on Neural Information Processing Systems (**NeurIPS**), 2025. +corresponding author. Link

- Pengxiang Li*, **Lu Yin*,** Shiwei Liu**.** *Mix-LN: Unleashing the Power of Deeper Layers by Combining Pre-LN and Post-LN***.** The Thirteenth International Conference on Learning Representations. (**ICLR**) 2025 *equal contribution. Link.

- Pengxiang Li*, **Lu Yin***, Shiwei Liu. *Outlier-weighed Layerwise Sampling for LLM Fine-tuning.* The 63rd Annual Meeting of the Association for Computational Linguistics. (**ACL Findings**) 2025 *equal contribution. Link.

- Yuxiang Guo, **Lu Yin**, Bo Jiang, Jiaqi Zhang. *TODO: Enhancing LLM Alignment with Ternary Preferences.* The Thirteenth International Conference on Learning Representations. (**ICLR**) 2025. Link

- Tianjin Huang, **Lu Yin,** Zhenyu Zhang, Li Shen, Meng Fang, Mykola Pechenizkiy, Zhangyang Wang, Shiwei Liu. *Are Large Kernels Better Teachers than Transformers for ConvNets?* International Conference on Machine Learning (ICML), 2023.. Link

- Jie Ji, Gen Li, **Lu Yin**, .etc. *Advancing Dynamic Sparse Training by Exploring Optimization Opportunities.* The Forty-first International Conference on Machine Learning (**ICML**), 2024. Link

- Shiwei Liu, **Lu Yin**, Decebal Constantin Mocanu, and Mykola Pechenizkiy. *Do We Actually Need Dense Over-Parameterization? In-Time Over-Parameterization in Sparse Training*. The Thirty-eighth International Conference on Machine Learning (**ICML**), PMLR, 2021. Link

- Ajay Jaiswal, **Lu Yin.** etc, *FFN-SkipLLM: A Hidden Gem for Autoregressive Decoding with Adaptive Feed Forward Skipping,* Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2024. Link

- Abhinav Bandari, **Lu Yin.** etc, *Is C4 Dataset Enough for Pruning? An Investigation of Calibration Data for LLM Pruning,* Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2024. Link

- Gen Li, **Lu Yin**, Jie Ji, Wei Niu, Minghai Qin, Bin Ren, Linke Guo, Shiwei Liu, Xiaolong Ma *NeurRev: Train Better Sparse Neural Network Practically via Neuron Revitalization.* The Twelfth International Conference on Learning Representations. (**ICLR**) 2024. Link

- Vishal Thengane, Jean Lahoud, Hisham Cholakkal, Rao Muhammad Anwer, **Lu Yin,** Xiatian Zhu, Salman Khan. *CLIMB-3D: Continual Learning for Imbalanced 3D Instance Segmentation*. The British Machine Vision Conference (**BMVC**). 2025. Link

- Wenfang Sun, Xinyuan Song, Pengxiang Li, **Lu Yin,** Yefeng Zheng, Shiwei Liu. *The Curse of Depth in Large Language Models.* Conference on Neural Information Processing Systems (**NeurIPS**), 2025. Link

- Ajay Jaiswal, Yifan Wang, **Lu Yin**, Shiwei Liu, Runjin Chen, Jiawei Zhao, Ananth Grama, Yuandong Tian, Zhangyang Wang. *From Low Rank Gradient Subspace Stabilization to Low-Rank Weights: Observations, Theories, and Applications.* Forty-Second International Conference on Machine Learning. **ICML**, PMLR, 2025. Link

- Qiao Xiao, Boqian Wu, **Lu Yin,** Christopher Neil Gadzinski, Tianjin Huang, Mykola Pechenizkiy, Decebal Constantin Mocanu. *Are Sparse Neural Networks Better Hard Sample Learners?* Conference on British Machine Vision Conference. (**BMVC**), 2024. Link

- Adriana Fernandez-Lopez, Shiwei Liu, **Lu Yin**, Stavros Petridis, Maja Pantic, *Full-Rank No More: Low-Rank Weight Training for Modern Speech Recognition Models.* IEEE International Conference on Acoustics, Speech, and Signal Processing. (**ICASSP**), 2025. Link

- Boqian Wu, Qiao Xiao, Shiwei Liu, **Lu Yin,** etc. *E2ENet: Dynamic Sparse Feature Fusion for Accurate and Efficient 3D Medical Image Segmentation.* Conference on Neural Information Processing Systems (**NeurIPS**), 2024. Link

- Zihang Liu, Tianyu Pang, Oleg Balabanov, Chaoqun Yang, Tianjin Huang, **Lu Yin,** Yaoqing Yang, Shiwei Liu. *LIFT the Veil for the Truth: Principal Weights Emerge after Rank Reduction for Reasoning-Focused Supervised Fine-Tuning.* Forty-Second International Conference on Machine Learning. **ICML**, PMLR, 2025. Link

- Shiwei Liu, Tianlong Chen, Xiaohan Chen, Zahra Atashgahi, **Lu Yin**, Huanyu Kou, Li Shen, Mykola Pechenizkiy, Zhangyang Wang, and Decebal Constantin Mocanu. *Sparse Training via Boosting Pruning Plasticity with Neuroregeneration.* The Thirty-fifth Conference on Neural Information Processing Systems (**NeurIPS**), 2021. Link

- Zahra Atashgahi, Xuhao Zhang, Neil Kichler, Shiwei Liu, **Lu Yin**, Mykola Pechenizkiy, Raymond Veldhuis, Decebal Constantin Mocanu. *Supervised Feature Selection with Neuron Evolution in Sparse Neural Networks*. Transactions on Machine Learning Research (**TMLR**).. Link

- Tianjin Huang, Tianlong Chen, Meng Fang, Vlado Menkovski, Jiaxu Zhao, **Lu Yin**, Yulong Pei, Decebal Constantin Mocanu, Zhangyang Wang, Mykola Pechenizkiy, Shiwei Liu. *You Can Have Better Graph Neural Networks by Not Training Weights at All: Finding Untrained GNNs Tickets*. Learning on Graphs Conference (**LoG**). 2022. (**BEST PAPER AWARD**). Link

- Xiaorui Zhu, **Lu Yin,** Fucheng Deng. *Wind Disturbance Rejection in Position Control of Unmanned Helicopter by Nonlinear Damping.* International Conference on Computer Vision Systems (**ICVS**). Springer, Cham, 2017: 590-599. (**BEST PAPER NOMINEES AWARD**). Link

More in: https://scholar.google.com/citations?user=G4Xe1NkAAAAJ