

ABOUT ME

Hello, I'm Lu, an Assistant Professor at the **University of Surrey**, a long-term visitor and collaborator with the Visual Informatics Group (**VITA**) at **UT Austin**, and a visiting researcher at Eindhoven University of Technology (**TU/e**). My primary research focuses on understanding and building AI models with **Efficiency and Scalability**. I believe that passion and persistence are the cornerstones of transformative research, and I am committed to producing work of the highest caliber.

RESEARCH INTERESTS

AI Efficiency # LLM # Computer Vision # ML/DL # AI Interdisciplinary Applications

PROFESSIONAL EXPERIENCE

- University of Surrey
06/2024 – Present

Assistant Professor
 - Nature Inspired Computing and Engineering Group
- Eindhoven University of Technology
07/2023 – 12/2023

Postdoctoral Researcher
 - Department of Mathematics and Computer Science
- 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

Promoters: 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: Computer Vision, Robotics

Promoters: 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

GRANT

NeurIPS 2024 Challenge: Edge-Device Large Language Model Competition

- Funding Body: Huawei
- Value of Award: 70,000 \$
- Duration: June 2024 - December 2025
- 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)

SUPERVISION ACTIVITIES

Ph.D Projects

- Model Compression.
Andi Li, *University of Aberdeen*, 2024
- Robustness of Large Foundation Models
Kappiyath, Adarsh, *University of Surrey*, 2024
- Resource Efficient 3D World Understanding
Thengane, Vishal, *University of Surrey*, 2024

BSc Projects

- Hyperbolic NN within Incremental Learning
Ben Laurie, *University of Aberdeen*, 2024

MSc Projects

- Automated Object Recognition in Aerial Photographs.
Judith te Selle, *Eindhoven University of Technology*, 2022
- Aspect-based Few-shot Learning.
Phuong Trinh, *Eindhoven University of Technology*, 2022
- Impact of Parameter Sharing in Sparse Neural Networks.
Pritham Raaj Kishore Anand, *University of Aberdeen*, 2024
- Adaptive Augmentation in Latent Space using Autoencoders.
Nikhila Ramiset, *University of Aberdeen*, 2024

TEACHINGS

- | | | |
|--|-------|------|
| • Deep Learning (2AMM10), Eindhoven University of Technology | ----- | 2020 |
| • Deep Learning (2AMM10), Eindhoven University of Technology | ----- | 2021 |
| • Deep Learning (2AMM10), Eindhoven University of Technology | ----- | 2023 |
| • Applied Artificial Intelligence (CS5079), University of Aberdeen | ----- | 2024 |
| • Data Mining and Deep Learning (CS552J), University of Aberdeen | ----- | 2024 |
| • Practical Business Analytics (Com3018), University of Surrey | ----- | 2024 |

RESEARCH ACTIVITIES

Talks:

- Going beyond training ML models with labels at EDGE AI, Eindhoven University of Technology, 2020
- Model/supervision Efficiency at Xu Lab, Carnegie Mellon University, 2022
- LLM pruning, Visual Informatics Group @ University of Texas at Austin, 2023
- The power of model sparsity, Multimedia Analytics (MA) Laboratory at City University of Hong Kong, 2024

Conference Program Committee Member/Reviewer:

- NeurIPS, ICML, CVPR, UAI, DAC, SNN workshop. Reviewer.
- The European Conference on Machine Learning (ECML) [2020]. Session chair.

Organizational Contribution

- Co-organize NeurIPS 2024 Challenge: Edge-Device Large Language Model Competition

RESEARCH & SELECTED PUBLICATION

Overall: (as of September 2024)

- **over 40** papers (12 **A*** and 5 **A** top AI conference papers, CORE Conference Ranking), 1 Journal Paper

Highlights:

- 1 **Best Paper Award**, 1 **Best Paper Nomination Award**.
- 5 **ICML**, 3 **Neurips**, 2 **EMNLP**, 1 **BMVC**, 1 **ICASSP**, 1 **ICLR**, 1 **AAAI**, 1 **UAI**.

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
- **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
- Jie Ji, Gen Li, **Lu Yin**, .etc. *BiDST: Dynamic Sparse Training is a Bi-Level Optimization Problem*. The Forty-first International Conference on Machine Learning (**ICML**), 2024
- **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
- **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.
- **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.
- 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.
- 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.

- 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
- 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
- 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
- AJAY KUMAR 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
- Abhinav Bandari, **Lu Yin**. etc, *FFN-SkipLLM: Is C4 Dataset Enough for Pruning? An Investigation of Calibration Data for LLM Pruning*, Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2024
- 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
- 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
- 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**).
- 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**)
- **Lu Yin**, Vlado Menkovski, Mykola Pechenizkiy. *Knowledge Elicitation using Deep Metric Learning and Psychometric Testing*. The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**), Ghent, Belgium, 2020.
- Jiaxu Zhao*, **Lu Yin***, Shiwei Liu, Fang Meng. Mykola Pechenizkiy. *REST: Debiasing Deep Neural Networks through Reweighted Sparse Training*. The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**). Turin, Italy, 2023. *equal contribution
- Tianjin Huang, Shiwei Liu, Tianlong Chen, Meng Fang, Li Shen, Vlado Menkovski, **Lu Yin**, Yulong Pei, Mykola Pechenizkiy. *Enhancing Adversarial Training via Reweighting Optimization Trajectory*. The European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML-PKDD**). Turin, Italy, 2023.
- **Lu Yin**. *Beyond Labels: Knowledge Elicitation using Deep Metric Learning and Psychometric Testing*. 29th International Joint Conference on Artificial Intelligence-17th Pacific Rim International Conference on Artificial Intelligence (**IJCAI DC**), 2020. Doctoral Consortium.
- **Lu Yin**, Vlado Menkovski, Shiwei Liu, and Mykola Pechenizkiy. *Hierarchical Semantic Segmentation using Psychometric Learning*. The Thirteenth Asian Conference on Machine Learning (**ACML**), 2021. (**LONG ORAL**)
- **Lu Yin**, Vlado Menkovski, Yulong Pei, and Mykola Pechenizkiy. *Semantic-Based Few-Shot Learning by Interactive Psychometric Testing*. The Workshop on Interactive Machine Learning. The Thirty-Sixth AAAI Conference on Artificial Intelligence (**AAAI Workshop**), 2022
- **Lu Yin**, Vlado Menkovski, Yulong Pei, and Mykola Pechenizkiy. *Semantic-Based Few-Shot Learning by Psychometric Testing*. International Symposium on Intelligent Data Analysis (**IDA**). Springer, Cham, 2022.
- Fucheng Deng, Xiaorui Zhu, **Lu Yin**, Chao H, *Real-Time Detection of Polygons and Circles Based on Semantics*. 2018 IEEE International Conference on Information and Automation (**ICIA**). IEEE, 2018: 444-449.
- 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**)

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