LU YIN

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Google Scholar: https://scholar.google.com/citations?user=G4Xe1NkAAAAJ

ABOUT ME

Hi, I'm Lu, an Assistant Professor at the **University of Aberdeen** and a long-term Visiting Researcher at **Eindhoven University of Technology**. My primary research mainly focus is on **enhancing the Efficiency and Scalability of AI models.** I believe that passion and persistence are the keystones of groundbreaking research, and I am committed to delivering research of unparalleled quality.

RESEARCH INTERESTS

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

PROFESSIONAL EXPERIENCE

University of Aberdeen
11/2023 – Present

Assistant Professor

- Teach and Mentor Master/Ph.D. students.
- Secure grants.
- Research area: AI Efficiency, AI for Science, Large Language Models

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

AI Researcher (Intern)

- Build efficient large language models (LLM)

Eindhoven University of Technology
07/2023 – 11/2023

Postdoctoral Researcher

- Mentor Master/Ph.D. students.
- Publish research findings.

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: Computer Vision, 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

GRANT

high-performance computing grant

- 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)
- 2023 NWO-2023.027/L1： NVIDIA A100，10,000,000 Credits (78,120 hr)

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.

SUPERVISION ACTIVITIES

MSc Projects

- Automated Object Recognition of Solar Panels 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 Ramisett, University of Aberdeen, 2024

Ph.D Project

- Model Compression.
  Andi Li, *University of Aberdeen, 2024*

BSc Projects

- Exploring the Use of Hyperbolic Neural Networks within Class-Incremental Learning
  Ben Laurie, *University of Aberdeen, 2024*

Intern Projects

- Parameter-Efficient LLM Fine Tuning
  Jengxiang Li, Dalian Ligong University, 2024
- Urban Understanding using Deep Learning
  Zheyan Qu, Beijing University of Posts and Telecommunications *2022*
- LLM MoE Merging/Pruning
  Mingyu Cao, 2022

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

RESEARCH & SELECTED PUBLICATION

Overall: **21** papers (8 **A*** and 5 **A** conference paper, CORE Conference Ranking), 1 Jornal Paper
1 **Best Paper Award,** 1 **Best Paper Nomination Award.** (as of April 2024)

- **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**), PMLR, 2023.

- 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