Riyasat **Ohib**

Ph.D. Candidate | Georgia Tech

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Education

Georgia Institute of Technology — Dec 2025
Dissertation : Principled Sparsity for Efficient Deep Learning Across Computational Paradigms
Ph.D. in ECE, Concentration in AI, Atlanta, GA — Aug 2025
- Research in efficient AI, sparsity in LLMs, federated, multitask, and multimodal learning.
- Supervised by Dr. Vince Calhoun and Dr. Sergey Plis.
- CGPA : 4.0/4.0
- Expected Graduation : April 2026.

Georgia Institute of Technology — Dec 2025
Thesis : Explicit Group Sparse Projection for Machine Learning
Master's in ECE, Concentration in AI, Atlanta, GA — Aug 2025
- Research in Sparse Neural Networks and Neural Network Pruning.
- CGPA : 4.0/4.0

Work Experience

Google DeepMind — Dec 2025
Mechanistic Interpretability and Model Alignment Team
Research Intern, Kirkland, WA — Sep 2025
- Mechanistic Interpretability and Model Alignment Research

Cohere — Dec 2024
LLM Efficiency Research
Intern of the Technical Staff, Atlanta, GA — Sep 2024
- Worked on leveraging activation sparsity for inference efficiency in LLMs.
- Work ongoing as part of my PhD program now.
- Explored inference/test time compute.

Dolby Laboratories — Aug 2024
Experience Delivery Lab, Advanced Technologies Group (ATG)
Ph.D. Research Intern, Atlanta, GA — May 2024
- Project on efficient fine-tuning of LLMs through probabilistic layer selection.

Meta FAIR — Aug 2022
Sparsity and Efficiency
Research Scientist Intern, Menlo Park, CA — May 2022
- Designed & implemented a git-like library for version control & model compression called weigit.
- Weigit was integrated as part of the open-source facebookresearch/fairscale library.
- Research on extreme sparsity in deep learning models using signal processing based techniques (e.g. FFT and DCT) during training.

TReNDS Center at Georgia Tech — Present
Ph.D. Research in Sparsity in Deep Learning
Graduate Research Assistant, Atlanta, GA — Aug 2019
- Working on sparse deep learning, efficient AI and its applications in federated, reinforcement, multi-task and multimodal learning.
- Designed a new sparse projection algorithm :TMLR, ICLR-HAET.
- Developed a novel sparse offline-RL method : NeurIPS 2024 (main-track), NeurIPS-offlineRL.
- Designed a novel communication efficient federated learning method : arXiv.

Selected Research Projects

Efficient AI, Sparsity and Compression — May 2023 – Aug 2020

TReNDS Center, Atlanta, GA

- Developed a novel Group Sparse Projection algorithm for training sparse deep models. published in TMLR, initial work at ICLR HAET workshop.
- Developed a communication efficient method for Federated learning (FL) in the non-IID data regime.
  - Preliminary work published at ICLR Sparse Neural Network Workshop and full work on arXiv.
  - Applications to Neuroimaging published in Frontiers for Neuroinformatics.

Sparsity in Reinforcement Learning and efficient multi-task Learning in RL — Present – May 2021

TReNDS Center, collaboration with MILA, Montreal, CA, Atlanta, GA

- Neural network pruning for offline and online Reinforcement Learning tasks before training. Preliminary work accepted at NeurIPS workshop
- Full work accepted at NeurIPS, 2024.

Predicting Location of Audio Recordings — Mar 2016 – Sep 2015

IEEE Signal Processing Cup : Team and Programming Lead,

- Predicted the location of recording of audio files, exploiting embedded background power signatures from nearby electrical power lines via machine learning techniques.
- Led the undergrad Signal Processing Cup team to 11th rank worldwide and an Honorable Mention in IEEE Signal Processing Cup, 2016.

Selected Publications

2025 Samin Yeasar Arnob, Zhan Su, Minseon Kim, Oleksiy Ostapenko, **Riyasat Ohib**, Esra'a Saleh, Doina Precup, Lucas Caccia, Alessandro Sordoni. *Exploring Sparse Adapters for Scalable Merging of Parameter Efficient Experts.* **COLM 2025**.

2024 Samin Yeasar, **Riyasat Ohib**, Sergey Plis, Amy Zhang, Alessandro Sordoni, and Doina Precup. *Efficient Reinforcement Learning by Discovering Neural Pathways.* **NeurIPS, 2024**. *webpage*.

2024 **Riyasat Ohib**, Bishal Thapaliya, Gintare Karolina Dziugaite, Jingyu Liu, Vince Calhoun and Sergey Plis. *Unmasking Efficiency : Learning Salient Sparse Models in Non-IID Federated Learning*. [arXiv]

2024 **Riyasat Ohib**, Bishal Thapaliya, Jingyu Liu, Vince Calhoun and Sergey Plis. *Efficient Federated Learning on distributed NeuroImaging Data.* **Frontiers in Neuroinformatics**. webpage

2023 **Riyasat Ohib**, Bishal Thapaliya, Jingyu Liu, Vince Calhoun and Sergey Plis. *Decentralized Sparse Federated Learning for Efficient Training on Distributed NeuroImaging Data*. **Neurips** Medical Imaging Workshop, 2023

2023 **Riyasat Ohib**, Bishal Thapaliya, Pratyush Reddy, Jingyu Liu, Vince Calhoun and Sergey Plis. *SalientGrads : Sparse Models for Communication Efficient and data aware Distributed Federated Training.* **ICLR** *Sparsity in Neural Networks workshop (SNN), 2023.* *webpage* .

2022 **Riyasat Ohib**, Nicolas Gillis, Niccolo Dalmasso, Vamsi Potluru and Sergey Plis. *Explicit Group Sparse Projection with applications to Deep Learning and NMF*. Transactions on Machine Learning Research **(TMLR)**, 2022. webpage

2021 Samin Yeasar, **Riyasat Ohib**, Sergey Plis and Doina Precup. *Single-Shot Pruning for Offline Reinforcement Learning*. **NeurIPS** Offline Reinforcement Learning workshop, 2021. paper webpage

2021 **Riyasat Ohib**, Nicolas Gillis, Sameena Shah, Vamsi Potluru, Sergey Plis. *Grouped Sparse Projection for Deep Learning.* **ICLR** Hardware Aware Efficient Training workshop, 2021. paper webpage

2018 **Riyasat Ohib**, Samin Arnob, Muhtady Muhaisin, Riazul Arefin, Taslim Reza and MR. Amin. *ENF Based Machine Learning Classification for origin of Media Signals : Novel Features from Fourier Transform Profile.* **Accepted at ICEECS 2018** presented on Nov 13-14, 2018.

2017 Samin Yeasar, **Riyasat Ohib**, and Muhtady Muhaisin. *Power file extraction process from Bangladesh grid and exploring ENF based classification accuracy using machine learning.* **IEEE R10HTC Conference, 2017**. paper

2016 **Riyasat Ohib**, Samin Yeasar Arnob, Md Sayem Ali, Rakibul Hasan Sagor, and Md Ruhul Amin. *Metal nanoparticle enhanced light absorption in Ga-As thin-film solar cell.* **IEEE Asia-Pacific Conference on Applied Electromagnetics**, pages 89–93, 2016. paper

Technical Strengths

- Deep Learning, Machine Learning, Computer Vision, Efficient AI.
- Python, C++, Matlab.
- PyTorch, JAX, NumPy, Pandas.
- Linux, slurm, cluster computing, bash scripting.

Relevant Coursework

- Statistical Machine Learning
- Linear Algebra
- Advanced Programming Techniques
- Information processing in Neural Systems
- Convex Optimization
- Advanced DSP
- Fourier Analysis
- Real Analysis

Projects and Open Source Contributions

WeiGit : A git-like neural network model-weight tracking library 2022

github.com/facebookresearch/fairscale

- Open source contribution, project was added as part of the open source fairscale library maintained by Meta AI FAIR.
- Designed & implemented a git-like model weight tracking library for tracking the changes of model weights during training.

Drone Simulation using OpenGL and OpenMPI 2019

github.com/riohib/UAV-Simulation-OpenGL-OpenMPI

- A C++ implementation of flight simulation for a pack of drones following physics mechanics equations.
- Graphics was rendered using OpenGL on C++.
- Each drone physics was handled by a separate compute node and all drones were coordinated among nodes using OpenMPI.

ENF Data Acquisition and Analysis : 2016

github.com/riohib/IEEE-SP-Cup-2016

- Collected 10 hours of Electric Network Frequency (ENF) data from the national Power Grid.
- Analyzed data using Fourier Analysis and classified with Support Vector Machines.

Professional Activities

2023-Present **Conference and Journal Reviewer** : TMLR, TNNLS, NeurIPS