

Yunfei Luo

Master's Student (CS/ML/AI) @ UMass Amherst

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My primary research interest is in Machine Learning, specifically in modeling of Multimodal data and Multitask Learning, and the applicability in various fields like Signal Processing, Healthcare, Computer Vision, and Natural Language Processing. My goal is to enable lightweight and robust solutions to target real-world requirements using machine learning techniques.

🎓 Education

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| 09.2021 - 05.2023 | Master of Science in Computer Science |
| GPA : 3.92/4.0 | University of Massachusetts Amherst, Amherst, MA <ul style="list-style-type: none">➤ Advisor : Ina Fiterau Brostean Information Fusion Lab➤ Courses Taken : Advanced Machine Learning, Neural Networks, Probabilistic Graphical Models, Reinforcement Learning, Advanced Natural Language Processing, Advanced IoT |
| 09.2017 - 05.2021 | Bachelor of Science in Computer Science Bachelor of Science in Mathematics |
| GPA : 3.84/4.0 | University of Massachusetts Amherst, Amherst, MA <ul style="list-style-type: none">➤ Machine Learning and Computing Specializations |

🌟 Fellowships, Scholarships, Awards, and Honors

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| 2021 - 2023 | Bay State Fellowship Full Tuition Scholarship |
| 2017 - 2021 | Outstanding Undergraduate Course Assistant Award
Chancellor's Award, UMass Amherst |

📖 Publications

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| 2023 | Personalized Student Stress Prediction with Hierarchical Multitask Learning , Nature Communications (Nat. Commun), Journal |
| Under Review | Yunfei Luo, Iman Deznabi, Abhinav Shaw, Tauhidur Rahman, and Madalina Fiterau Brostean <ul style="list-style-type: none">➤ Proposed a novel approach to modeling the Multimodal data, got results that outperform SOTA➤ Modeled personalized and populational characteristics with Multitask Learning and Dynamic Clustering Method respectively➤ Evaluated the performance under cold-start setting, to support the robustness of our method <div>Multi-modal Fusion Methods Mental Health Machine Learning Neural Networks Time Series</div> |
| 2023 | Multi-task Learning on Tasks with Progressive Difficulties for Natural Language Processing, Association for Computational Linguistics (ACL) / Empirical Methods in Natural Language Processing (EMNLP-Findings), Conference |
| Under Review | Yunfei Luo, Yuyang Liu, Rukai Cai <ul style="list-style-type: none">➤ Introducing sub-tasks with progressive difficulties to improve the performance on main task. Inspired by how people learn. Experimented on text classification, sentiment analysis, and argument mining <div>Natural Language Processing Multi-task Learning Machine Learning Neural Networks</div> |
| 2023 | Agent Performing Autonomous Stock Trading under Good and Bad Situations, AI for Agent-Based Modelling (AI4ABM) in International Conference on Learning Representations (ICLR), Workshop |
| Under Review | Yunfei Luo, Zhangqi Duan <ul style="list-style-type: none">➤ Researched and experimented with different reinforcement learning algorithms to train agents to perform stock trading. The methods are evaluated under scenarios with stable and non-stable market <div>Natural Language Processing Multi-task Learning Machine Learning Neural Networks</div> |

Professional Experience

Summer 2022 to now	Machine Learning Engineering Intern , Center for Data Science, UMass Amherst <ul style="list-style-type: none">> Developed platform for Building Segmentation and Damage Assessment based on Satellite Imagery> Integrated the Machine Learning pipeline along with User Interface for Imagery Fetching and Labelling> Worked as Research Assistant after internship <div>Computer VisionMachine LearningDisaster ResponseSoftware DevelopmentFull-Stack Development</div>
Summer 2020 to 06.2021	Data Engineering Intern , Institute for Applied Life Sciences, UMass Amherst <ul style="list-style-type: none">> Built pipelines for fMRI data preprocessing and statistical analysis> Conducted Research and Experiments with Machine Learning models for Stroke Detection : Autoencoders, CNNs, and GANs> Worked as Undergraduate Research Assistant after internship <div>Machine LearningfMRIData Preparation</div>

Ongoing Research Projects

Satellite Imagery Based Building Segmentation and Damage Estimation. Machine Learning Research Project	06.2020 - now
<ul style="list-style-type: none">> Conducted Research and Experiments with various Finetuning setting and Machine Learning techniques to support selections of final-deployed hyper-parameters and models <div>Multimodal DataSignal ProcessingMental HealthMachine LearningMultitask LearningTime Series</div>	
Student Stress Prediction. Machine Learning Research Project	01.2020 - now
<ul style="list-style-type: none">> Wrap up the manuscript, and work on applying the method to other datasets. <div>Multimodal DataSignal ProcessingMental HealthMachine LearningMultitask LearningTime Series</div>	
Learning to Drop : Regularization, Hyperparameter Tuning, and Feature Selection, All-in-One	09.2020 - 12.2022
<ul style="list-style-type: none">> Proposed a novel parametric Dropout based on Probabilistic Sampling. Searching for Conference/Workshop to submit.> Evaluate the method in various tasks : Image Classification, Matrix Missing Value Imputation of Psychological Survey Scores, Musical Genre Classification, and Wearable Sensor based Human Activity Recognition. <div>Machine LearningNeural NetworksGitHub Link of Imputation of Psychological Survey ScoresGitHub Link of Musical Genre Classification</div>	

Teaching Experience

Fall 2021 to Spring 2023	Graduate Teaching Assistant, CICS, UMass Amherst <ul style="list-style-type: none">> CS 311 Introduction to Algorithm in Fall 2021 and Spring 2023> CS 590OP Applied Numerical Optimization, and CS 108 Foundation of Data Science in Fall 2022> CS 220 Programming Methodology in Spring 2022> Held office hours, led weekly discussion sessions, graded course works, answered questions on course forum, attended weekly TA meeting for discussing the progress/improvements of the course <div>JavascriptAlgorithmsNumerical OptimizationData ScienceTeaching</div>
Spring 2020 to Spring 2021	Undergraduate Course Assistant, CICS, UMass Amherst <ul style="list-style-type: none">> CS 240 Reasoning under Uncertainty in Spring 2021, CS 311 Introduction to Algorithms in Fall 2020, CS 220 Programming Methodology in Spring 2020> Helped with weekly discussion session, graded course works, and answered questions on Piazza <div>JavascriptAlgorithmsProbabilityTeaching</div>

Professional Certifications

2022	IBM Artificial Intelligence Engineering Professional Certificate
2022	Neuroscience and Neuroimaging Specialization Certificate
2020	TensorFlow Developer Professional Certificate

“ References

Madalina Fiterau Brostean

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University of Massachusetts Amherst
Lead of the Information Fusion Lab
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Tauhidur Rahman

Assistant Professor of Computer Science
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