Magzhan Gabidolla

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EDUCATION

University of California, Merced — **Jan 2020 – May 2025**
PhD, Machine Learning and Optimization — Merced, CA, USA

Nazarbayev University — **Aug 2015 – May 2019**
Bachelor of Science in Computer Science — Astana, Kazakhstan
- Summa Cum Laude, GPA 3.90/4.00

University College London — **Sep 2014 – June 2015**
University Preparatory Certificate — Astana, Kazakhstan

PUBLICATIONS

1. M. Gabidolla, A. Zharmagambetov and M. Á. Carreira-Perpiñán: "Beyond the ROC Curve: Classification Trees Using Cost-Optimal Curves, with Application to Imbalanced Datasets." *International Conference on Machine Learning (**ICML 2024**)*
2. M. Gabidolla and M. Á. Carreira-Perpiñán: "Generalized additive models via direct optimization of regularized decision stump forests." *in submission (2024)*
3. R. Kairgeldin, M. Gabidolla and M. Á. Carreira-Perpiñán: "Adaptive Softmax Trees for Large Multiclass Tasks." *Conference on Uncertainty in Artificial Intelligence (**UAI 2024**)*
4. M. Á. Carreira-Perpiñán, and M. Gabidolla, A. Zharmagambetov: "Towards Better Decision Forests: Forest Alternating Optimization." *Conference on Computer Vision and Pattern Recognition (**CVPR 2023**)*
5. M. Gabidolla, and A. Zharmagambetov, and M. Á. Carreira-Perpiñán: "Cost-sensitive learning of classification trees, with application to imbalanced datasets." *Bay Area Machine Learning Symposium (**BayLearn 2023**)*
6. M. Gabidolla, and M. Á. Carreira-Perpiñán: "Optimal Interpretable Clustering Using Oblique Decision Trees." *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2022**)*
7. M. Gabidolla, and M. Á. Carreira-Perpiñán: "Pushing the Envelope of Gradient Boosting Forests via Globally-Optimized Oblique Trees." *Conference on Computer Vision and Pattern Recognition (**CVPR 2022**)*
8. A. Zharmagambetov, M. Gabidolla and M. Á. Carreira-Perpiñán: "Softmax Tree: An Accurate, Fast Classifier When the Number of Classes Is Large." *Conference on Empirical Methods in Natural Language Processing (**EMNLP 2021**)*
9. M. Gabidolla, A. Zharmagambetov and M. Á. Carreira-Perpiñán: "Improved Multiclass AdaBoost Using Sparse Oblique Decision Trees." *International Joint Conference on Neural Networks (**IJCNN 2022**)*
10. M. Gabidolla, A. Zharmagambetov and M. Á. Carreira-Perpiñán: "Boosted Sparse Oblique Decision Trees." *Bay Area Machine Learning Symposium (**BayLearn 2020**)*
11. Y. Idelbayev, A. Zharmagambetov, M. Gabidolla and M. Á. Carreira-Perpiñán: "Faster Neural Net Inference via Forests of Sparse Oblique Decision Trees." *in submission (2021)*
12. A. Zharmagambetov, M. Gabidolla and M. Á. Carreira-Perpiñán: "Improved Multiclass AdaBoost for Image Classification: the Role of Tree Optimization." *IEEE International Conference on Image Processing (**ICIP 2021**)*
13. A. Zharmagambetov, M. Gabidolla and M. Á. Carreira-Perpiñán: "Improved Boosted Regression Forests Through Non-Greedy Tree Optimization." *International Joint Conference on Neural Networks (**IJCNN 2021**)*
14. A. Zharmagambetov, S. S. Hada, M. Gabidolla and M. Á. Carreira-Perpiñán: "Non-Greedy Algorithms for Decision Tree Optimization: An Experimental Comparison." *International Joint Conference on Neural Networks (**IJCNN 2021**)*

RESEARCH/INDUSTRY EXPERIENCE

Dept. of Computer Science and Engineering, UC Merced **Jan 2020 – Present**
Research/Teaching Assistant Merced, CA, USA

- Research area: machine learning and optimization, specifically, learning decision trees/forests and other tree-based methods, and their application in various domains: supervised learning, clustering, neural network compression, and model interpretability. Advisor: Miguel Á. Carreira-Perpiñán
- Teaching Assistant for the following courses: Intro to AI (Fall 2024), Software Engineering (Spring 2024), Intro to Machine Learning (Spring 2023, Fall 2023), Algorithm Design and Analysis (Fall 2023), Computer Organization (Fall 2022), Intro to Object Oriented Programming (Spring 2021), Discrete Math (Spring 2020)

Snap Inc. **Summer 2024**
Machine Learning Engineer Intern Santa Monica, CA, USA

- Successfully compressed and accelerated the inference of diffusion models. Mentor: Yerlan Idelbayev, manager: Dhritiman Sagar.

NSF I-CORPS™ **Summer 2022**
Co-Entrepreneurial Lead Bay Area, CA, USA

Translational Neuroimaging Group, Charité – Universitätsmedizin Berlin **Jul 2019 – Aug 2019**
Research Intern Berlin, Germany

- Developed deep learning models for automatic segmentation of optical coherence tomography (OCT) images of retina. Hosts: Seyedamirhosein Motamedi and Alexander Brandt

Institute of Smart Systems and Artificial Intelligence, Nazarbayev University **Jun 2019 – Dec 2019**
Research Assistant Astana, Kazakhstan

- Successfully trained deep neural networks for brain tumor segmentation of MRI scans obtained from local clinics. Advisors: M. Fatih Demirci and H. Atakan Varol

SKILLS

Programming languages: C, C++, Python, Java
Frameworks: PyTorch, TensorFlow, scikit-learn, LIBLINEAR/LIBSVM, XGBoost