Michael M. Meskhi

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Education

University of Houston — Houston, TX
Ph.D. in Computer Science — Expected Aug 2024
Thesis: *Learning to Learn via Meta-Dataset Distillation*

North American University — Houston, TX
B.S. Computer Science, *summa cum laude* — May 2019

Experience

Merck Research Labs — San Francisco, CA
Data Science Intern — May 2023 – Aug 2023

- Designed and implemented a meta-learning pipeline using JAX, significantly enhancing molecular property prediction in low-data scenarios; led to a 15% improvement in model accuracy over standard multi-task approaches.
- Developed a custom batching method based on JAX pytrees to batch molecular graphs enabling parallel computation of molecular graphs.
- Engineered the pipeline to be modular, allowing the flexibility to run diverse experiments and facilitating rapid prototyping and testing of new hypotheses for early drug discovery.
- Implemented state-of-the-art meta-learning algorithms such as MAML, iMAML, and ANIL for graph learning problems on graph objects extracted using RDKit.
- Managed a cross-disciplinary project between cheminformatics and data science, partnering with domain experts to advance computation and practical applications

National Research Group — Los Angeles, CA
Applied Scientist Intern — Jun 2022 – Aug 2022

- Performed advanced NLP analysis, focusing on topic modeling and sentiment analysis using BERT and zero-shot learning models, to effectively process and interpret complex user feedback data.
- Delivered a sentiment analysis web service and a podcast topic modeling pipeline, leveraging PyTorch, SQL, and DataRobot. Achieved an 80% improvement in insight delivery turnaround time.
- Applied c-TF IDF in conjunction with BERT models to deepen the analysis of customer feedback, enhancing the accuracy of sentiment extraction and topic identification, and contributing significantly to more refined data insights.

Publications

1. **Meskhi, M. M.**, Hoang, N., Vilalta, R., (2022). Learning to Learn via Meta-Dataset Distillation. Preparing submission to TMLR.
2. **Meskhi, M. M.**, Hoang, N., Vilalta, R., (2023). Meta-Data Selection Algorithm for Multi-Task Learning. Preparing submission to ICML.
3. **Meskhi, M. M.**, Rivolli, A., Mantovani, R. G., & Vilalta, R. (2021). Learning Abstract Task Representations. AAAI Workshop on Meta-Learning and MetaDL Challenge, 140, 127–137.
4. **Meskhi, M. M.**, Wolfe, N. E., Dai, Z., Fröhlich, C., Miller, J. M., Wong, R. K., & Vilalta, R. (2022). A New Constraint on the Nuclear Equation of State from Statistical Distributions of Compact Remnants of Supernovae. The Astrophysical Journal Letters.
5. Vilalta, R., & **Meskhi, M. M.** (2022). Transfer of Knowledge Across Tasks. In Metalearning. Springer.

Skills

- **Languages:** Python, C, R, MySQL
- **Frameworks:** JAX, PyTorch, Optax, NumPy, Pandas, Sklearn, Tensorflow, RDKit
- **Tools:** AWS (S3, Lambda, RedShift), DataRobot, AutoML, Airflow, Git, Docker, Linux
- **Methods:** Slurm HPC training (5x A6000), GPC TPU parallelization