Milena Rmus

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EDUCATION

University of California, Berkeley Aug. 2019 – May 2024
PhD, Cognitive Science Berkeley, CA

Brown University Aug. 2014 – May 2018
BS, Cognitive Neuroscience (Magna Cum Laude) Providence, RI

EXPERIENCE

Helmholtz Institute for Human-Centered AI May 2024 – present
Research Scientist Munich, Germany

- Led a research project on **reverse-engineering interpretable algorithms (in the format of Python functions) from behavioral datasets using Large Language Models (LLMs; Llama 3, Qwen 2.5, R1)**, with applications in human decision modeling and behavioral model discovery.
- Built model-fitting and evaluation tools and workflows using **Python, Hugging Face Transformers, PyTorch, and SciPy to support automated scientific discovery**.
- Developed benchmarking workflows with **Bayesian model selection, automated error checking, and iterative model revision via natural language feedback loops.**
- Supervised a cross-disciplinary team of junior researchers and collaborated with ML engineers to translate cognitive modeling insights into practical, scalable systems.

Lawrence Livermore National Laboratory May 2022 – Aug. 2022
Data Science Intern Livermore, CA

- Optimized amino acid sequences as mathematical expressions using Pareto optimization in Deep Symbolic Regression.
- **Achieved a 2+ term reduction in model complexity while preserving performance**.
- Built random forest classifiers (AUC = 0.88) to predict compound binding affinity from molecular descriptors.

Princeton University Jun. 2018 – Jun. 2019
Research Specialist Princeton, NJ

- Oversaw experiment rollout, cross-site data integrity, and ran fMRI scanning sessions.
- **Developed a web app hosted on Amazon Mechanical Turk in JavaScript** (jQuery, jsPsych) to run decision-making experiments, and stored data on Firebase.
- Analyzed behavioral data using machine learning tools (SVMs, PCA, and clustering) in Python.

SELECTED PUBLICATIONS

- Rmus, M., Jagadish, A. K., Mathony, M., Ludwig, T., & Schulz, E. (in press). Generating computational cognitive models using large language models. Advances in Neural Information Processing Systems (**NeurIPS**). [PDF link]
- Witte, K.*, Rmus, M. *, Akata, E., Schulz, E. (2025). Using Llama-3 to Refine Psychotherapy in Silico. The 8th annual conference on Cognitive Computational Neuroscience. [PDF link]
- Binz, M., Jagadish, A.K., Rmus, M., & Schulz, E. (2025). Automated scientific minimization of regret. (Under review). [PDF link]
- Rmus, M., Eckstein, M. K. & Collins, A. G. E. (2025). Subgoals in Hierarchical Reinforcement Learning. (Under review). [PDF link]
- Rmus, M., Pan, T., Xia, L. & Collins, A. G. E. (2024). Artificial neural networks for model identification and parameter estimation in computational cognitive models. **PLOS Comp Bio**. [PDF link]
- Rmus, M., He, M., Baribault, B., Walsh, E. G., Festa, E. K., Collins, A. G. E. & Nassar, M. R. (2023). Age-related differences in prefrontal glutamate are associated with increased working memory decay that gives the appearance of learning deficits. **eLife**. [PDF link]
- Rmus, M., Ritz, H., Hunter, L. E., Bornstein, A. M. & Shenhav, A. (2022). Humans can navigate complex graph structures acquired during latent learning. **Cognition**. [PDF link]

TECHNICAL SKILLS

- **Languages**: Python (expert), MATLAB (expert), JavaScript (fluent), R (fluent), LaTeX (fluent), SQL (prior experience)
- **Libraries & Tools**: vLLM, Huggingface, PyTorch, NumPy, Scikit-Learn, TensorFlow, Pandas, Matplotlib, Seaborn, ggplot2, Git, Adobe Illustrator, Procreate