Jules Berman

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Summary

PhD researcher specializing in generative modeling (diffusion, state-space methods) with applications to video synthesis and physics-based simulations; experienced in scaling models efficiently for real-world data

Education

B.S. New York University. GPA: 3.8. **Graduation 2017**
Major: Computer Science | *Awards:* cum laude

Ph.D. Courant Institute of Mathematical Sciences, New York University. GPA: 3.9. **Expected 2026**
Major: Computer Science | *Awards:* Harold Grad Memorial Prize, Maccracken Fellowship
Advisor: Benjamin Peherstorfer | *Area*: Generative Modeling, Video Synthesis, PDE-based Simulation

Select Publications

Stochastic Lifting for One-Step Per-Frame Video Generation and Physics Simulation [***in review***] **NeurIPS 2025**
[arxiv] **J Berman**, T Blickhan, B Peherstorfer.

Parametric model reduction of [...] stochastic systems via higher-order action matching **NeurIPS 2024**
[arxiv] **J Berman**, T Blickhan, B Peherstorfer.

Randomized Sparse Neural Galerkin Schemes with Deep Networks [***spotlight***] **NeurIPS 2023**
[arxiv] **J Berman**, B Peherstorfer.

CoLoRA: Continuous low-rank adaptation for reduced neural modeling [...] **ICML 2024**
[arxiv] **J Berman**, B Peherstorfer.

Experience

Google **May 2025 - Aug 2025**
Research Engineer Intern
Developed deep state-space models (S5) with novel singular-value regularization achieving significant model compression (80%) without accuracy degradation.

Meta **May 2024 - Aug 2024**
Research Scientist Intern, CTRL-Labs
Designed and trained diffusion-based generative models of EMG data, improving downstream accuracy by 10% through synthetic data augmentation.

Flatiron Institute **May 2021 - Aug 2022**
Research Analyst, Center for Computational Neuroscience
Architected a distributed training platform for large-scale experiments (100k+ VAEs) and developed novel representational metrics enabling in-depth comparative analyses.

Bloomberg LP **April 2018 - April 2021**
Senior Software Engineer, Global Infrastructure Team
Developed internal full-stack web platforms for infrastructure management; deployed ML-based predictive systems to forecast future infrastructure demands from historical usage data.

Skills

Machine learning, generative modeling (diffusion, flow-based), state-space models, numerical analysis
Python, Jax, Pytorch, NumPy, SLURM

Publications

1. **J Berman**, T Blickhan, B Peherstorfer. (2025). Stochastic Lifting for One-Step Per-Frame Video Generation and Physics Simulation. *Advances in Neural Information Processing Systems (NeurIPS — In Review).*
2. **J Berman**, T Blickhan, B Peherstorfer. (2024). Parametric model reduction of mean-field and stochastic systems via higher-order action matching. *Advances in Neural Information Processing Systems (NeurIPS).*
3. **J Berman**, B Peherstorfer. (2024). CoLoRA: Continuous low-rank adaptation for reduced implicit neural modeling of parameterized partial differential equations. *International Conference on Machine Learning (ICML).*
4. **J Berman**, P Schwerdtner, B Peherstorfer. (2024). Neural Galerkin schemes for sequential-in-time solving of partial differential equations with deep networks. *Numerical Analysis Meets Machine Learning.*
5. **J Berman**, S Golkar, D Lipshutz, RM Haret, T Gollisch, DB Chklovskii. (2024). Neuronal temporal filters as normal mode extractors. *Physical Review Research.*
6. **J Berman**, P Schwerdtner, B Peherstorfer. (2024). P Schwerdtner, P Schulze, J Berman, B Peherstorfer. (2023). *SIAM Journal on Scientific Computing (SISC).*
7. **J Berman**, B Peherstorfer. (2023). Randomized sparse neural galerkin schemes for solving evolution equations with deep networks. *Advances in Neural Information Processing Systems (NeurIPS — Spotlight).*
8. LR Duong, J Zhou, J Nassar, **J Berman**, J Olieslagers, AH Williams. (2023). Representational dissimilarity metric spaces for stochastic neural networks. *International Conference on Learning Representations (ICLR).*
9. **J Berman**, DB Chklovskii, J Wu. (2023). Bridging the Gap: Point Clouds for Merging Neurons in Connectomics. *International Conference on Medical Imaging with Deep Learning (MIDL).*