

Michael Psenka

www.michaelpsenka.io | psenka@eecs.berkeley.edu | github.com/michael-psenka | [linkedin.com/in/michael-psenka](https://www.linkedin.com/in/michael-psenka) | [michael-psenka](https://www.instagram.com/michael-psenka)

About Me

I'm a 4th year PhD student in EECS (BAIR) at UC Berkeley, advised by Prof. Aditi Krishnapriyan, with a BA in pure mathematics from Princeton, where I focused on Riemannian geometry and optimization. My research specializes in leveraging mathematical insights to pioneer adaptive deep learning algorithms, particularly in **flow-based generative models** and **representation learning**, with applications in **reinforcement learning**, **computer vision**, and **molecular dynamics**. While my primary published work has focused on static systems, I am eager to expand these methods to video-based prediction and reasoning. I bring a solid foundation in mathematical modeling and am inspired by the rich challenges posed by dynamical systems. I believe developing adaptive, self-supervised systems demands a rigorous mathematical approach to achieve robust generalization across diverse environments.

Education

University of California, Berkeley

MS/PhD in Electrical Engineering and Computer Science

Berkeley, CA

Sept 2021 - Current

- *Coursework*: deep unsupervised learning, nonlinear systems and control, 3D vision, high-dimensional data analysis
- **GPA**: 4.0/4.0 major, 3.9 overall

Princeton University

BA in Mathematics, certificates in Applied Math and Computer Science

Princeton, NJ

Sept 2017 - June 2021

- *CS Coursework (grad)*: machine/deep learning, weakly supervised learning, reinforcement learning, information theory, complexity theory
- *Math Coursework (grad)*: stochastic calculus, geometric PDE, general relativity, quantum stat mech. (*undergrad*): probability theory, real/complex analysis, representation theory
- **GPA**: 3.6/4.0

Select Publications

S. Raja*, M. Šípka*, **M. Psenka***, T. Kreiman, M. Pavelka, and A. S. Krishnapriyan (2025). **Action-Minimization Meets Generative Modeling: Efficient Transition Path Sampling with the Onsager-Machlup Functional**. *ICML 2025*. [Link to paper](#).

M. Psenka*, A. Escontrela*, P. Abbeel, and Y. Ma (2024). **Learning a Diffusion Model Policy from Rewards via Q-Score Matching**. *ICML 2024*. [Link to paper](#).

M. Psenka, D. Pai, V. Raman, S. Sastry, and Y. Ma (2024). **Representation Learning through Manifold Flattening and Reconstruction**. *JMLR*. [Link to paper](#).

X. Dai, S. Tong, M. Li, Z. Wu, **M. Psenka**, K. H. R. Chan, P. Zhai, Y. Yu, X. Yuan, H.-Y. Shum, et al. (2022). **CTRL: Closed-Loop Transcription to an LDR via Minimizing Rate Reduction**. *Entropy Journal*. [Link to paper](#).

R. Arbon*, M. Mannan*, **M. Psenka***, and S. Ragavan* (2022). **A Proof of The Triangular Ashbaugh-Benguria-Payne-Pólya-Weinberger Inequality**. *Journal of Spectral Theory*. [Link to paper](#).

M. Psenka and N. Boumal (2020). **Second-order optimization for tensors with fixed tensor-train rank**. *NeurIPS OPT 2020 Workshop*. [Link to paper](#).

Awards

2020	Peter A. Greenberg '77 Memorial Prize , won for solving an open problem in spectral geometry. Awarded for outstanding accomplishments in Mathematics by juniors	Princeton
2018	HackPrinceton First Place , won first place at intercollegiate hackathon for developing A.I.D.A.N., a chatbot that lets users interact with their dataset with statistical and machine learning tools. Link to project .	Princeton
2018	Manfred Pyka Memorial Prize , awarded to outstanding Physics undergraduates who have shown excellence in course work and promise in independent research	Princeton
2021	Sigma Xi Honors Society , academic honors society for scientific research	Princeton

Work Experience

Research scientist intern (adv. Yann LeCun)

Meta, FAIR

New York, NY

May 2025 - Present

- Working with Yann LeCun on reasoning and planning capabilities for modern world models (real-world video models that interface with action/control)

Machine Learning & AI engineer

Moovila, Inc.

Charleston, SC

Jan 2025 - Present

- Helping develop a custom integrated LLM chatbot and modern machine learning tools for both increased functionality and ease of use

Co-head instructor, lecturer

University of California, Berkeley

Berkeley, CA

June 2022 - Aug 2022

- Organized and taught lectures for CS 70, an undergraduate class for discrete math and probability theory
- [Link to class page](#)

Undergraduate researcher

Stanford University

Palo Alto, CA

June 2020 - Aug 2020

- Worked with Dr. Tolga Birdal on a novel approach to multi-view reconstruction in computer vision that bypasses pairwise view registration

Undergraduate researcher

Princeton University

Princeton, NJ

June 2019 - Sept 2019

- Worked with Prof. Nicolas Boumal funded by the National Science Foundation through award DMS-1719558
- Successfully developed a state-of-the-art method for computing analytic Hessians and second order optimization over tensor train manifolds

Software engineer

Moovila, Inc.

Charleston, SC

June 2018 - Aug 2018, '17, '16

- Developed a machine learning algorithm for workplace analytics, and improved search engine for quicker and more robust search
- Worked through a patent application, co-inventor in patent for proprietary software
- Worked closely with dev team, participating in stand-up and sprints regularly

Skills

Programming Python (JAX, pytorch, numpy), C#, C, MATLAB, Java, HTML/CSS, JavaScript

Miscellaneous Linux, Shell, \LaTeX , Git, AWS

Interests

Piano Played since I was 3. Grew up mostly classical, got into jazz playing at restaurants in middle/high school

Princeton Pianist Ensemble All pieces arranged in-house, charity performances, virtual concerts during quarantine ([link](#))

Snowboarding The more trees, the better