

Reuben Feinman

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EDUCATION

New York University, New York, NY

Sep 2017 – Sep 2023

Ph.D., Neural Science

- Thesis: Generative neuro-symbolic models of concept learning
- Advisor: Brenden M. Lake

Brown University, Providence, RI

Sep 2011 – May 2015

Sc.B. with Honors, Applied Mathematics

- Honors thesis: A Deep Belief Network Approach to Learning Depth from Optical Flow
- Thesis advisors: Thomas Serre & Stuart Geman
- GPA: 3.9 / 4.0

WORK EXPERIENCE

Common Sense Machines, Cambridge, MA

Lead Deep Learning Scientist

Jun 2024 – Present

Research Scientist

Sep 2023 – Jun 2024

- Developing large-scale machine learning models for 3D content creation and interactive 3D design
- Leading ML infrastructure, pipelines and methodology across the company
- Experimenting with LLMs, transformers, diffusion models and deep RL to achieve state-of-the-art results in GenAI

Facebook, New York, NY

May 2020 – Sep 2020

Research Intern, Facebook AI Research (FAIR)

- Worked directly with chief AI scientist Yann LeCun
- Investigated self-supervised learning algorithms for computer vision applications including image compression and generation

Symantec Corporation, Mountain View, CA

Jul 2015 – Jun 2017

Machine Learning Engineer, Center for Advanced Machine Learning

- Worked in a team of 10 PhDs while consulting regularly with Ruslan Salakhutdinov.
- Led an R&D effort that improved the detection rates of both known and unknown malicious software on 100+ million endpoints worldwide.
- Developed a machine learning model that helped prevent 22 million attempts of the global and infamous “WannaCry” ransomware attack.

PUBLICATIONS & PATENTS

PUBLICATIONS

Zhou, Y., Feinman, R. and Lake, B.M. (2024). Compositional diversity in visual concept learning. *Cognition*, 244, 105711.

Feinman, R. and Lake, B.M. (2021). Learning task-general representations with generative neuro-symbolic modeling. *International Conference on Learning Representations (ICLR)*.

Feinman, R. and Lake, B.M. (2020). Generating new concepts with hybrid neuro-symbolic models. In *Proceedings of the 42nd Annual Conference of the Cognitive Science Society*.

Feinman, R. and Parthasarathy, N. (2020). A linear systems theory of normalizing flows. *arXiv preprint arXiv:1907.06496*.

Feinman, R. and Lake, B.M. (2019). Learning a smooth kernel regularizer for convolutional neural networks. In *Proceedings of the 41st Annual Conference of the Cognitive Science Society*.

Feinman, R. and Lake, B.M. (2018). Learning inductive biases with simple neural networks. In *Proceedings of the 40th Annual Conference of the Cognitive Science Society*.

Feinman, R., Curtin, R.R., Shintre, S., and Gardner, A.B. (2017). Detecting adversarial samples from artifacts. *arXiv preprint arXiv:1703.00410*.

Papernot, N., Goodfellow, I., Sheatsley, R., Feinman, R., and McDaniel, P. (2016). Cleverhans v1.0.0: an adversarial machine learning library. *arXiv preprint arXiv:1610.00768*.

PATENTS

Shintre, S. and Feinman, R. (2020). Providing Adversarial Perturbations to Media. *US Patent No. 10,542,034*.

Feinman, R., Echauz, J., and Gardner, A.B. (2019). Systems and methods for trichotomous malware classification. *US Patent No. 10,366,233*.

Feinman, R. and Parikh, J. (2018). Systems and methods for detecting malware. *US Patent No. 10,133,865*.

RESEARCH TALKS	Generative neuro-symbolic models of concept learning , MIT CoCoSci lab meeting	Mar 2023
	Structure and emergence in human concepts , NYU neuroscience department meeting	Oct 2020
	Learning a smooth kernel regularizer for CNNs , NYU CCS lab meeting	Feb 2019
	Learning inductive biases with neural networks , NYU CILVR lab meeting	Feb 2018
	Artifacts of adversarial examples , NYU LCV meeting	Nov 2017
HONORS & AWARDS	Google PhD Fellowship in Computational Neuroscience , Google	Sep 2018
	Fellowships awarded annually to ~30 PhD students studying CS and related disciplines.	
	Henry Mitchell McCracken Fellowship , NYU GSAS	Sep 2017
	Fellowships awarded annually to promising first-year PhD students in the GSAS.	
	CTO Recognition Award , Symantec Corporation	May 2016
PRESS COVERAGE	Awarded by CTO Steve Trilling for significant contributions to the company's technologies.	
	Sigma Xi Honor Society , Brown Chapter Sigma Xi	May 2015
	Awarded for strong academics and research achievement in applied science.	
	Security Week , Symantec Adds Machine Learning to Endpoint Security Lineup	Sep 2016
	eWeek , Symantec Adds Deep Learning to Anti-Malware Tools to Detect Zero-Days	Jan 2016
SKILLS	Python, PyTorch, TensorFlow, SLURM, Jupyter, Docker, Git, MATLAB, L ^A T _E X, Java, C	
INTERESTS	Running, skiing, scuba diving, tennis, fishing, music production	
REFERENCES	<i>Mentors and colleagues who have written recommendations for me:</i>	
	Dr. Brenden Lake , Assistant Professor of Psychology and Data Science, New York University	
	Dr. Thomas Serre , Associate Professor of Cognitive Linguistic & Psych. Sciences, Brown University	
	Dr. Stuart Geman , James Manning Professor of Applied Mathematics, Brown University	
	Dr. Andrew Gardner , Senior Technical Director of Machine Learning, Symantec Corporation	
	Dr. Nikolaos Vasiloglou , Technical Director of Machine Learning, Symantec Corporation	