# Reuben Feinman

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## EDUCATION

**New York University**, New York, NY — Sep 2017 – Present
Ph.D., Neural Science
- Advisor: Brenden M. Lake
- Focus: Computation, perception & learning

**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

## 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
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.

## PUBLICATIONS & PATENTS

### PUBLICATIONS & PREPRINTS

Zhou, Y., Feinman, R. and Lake, B.M. (2023). Compositional diversity in visual concept learning. *arXiv preprint arXiv:2305.19374*.

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*.

## WORK EXPERIENCE

**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.

**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

**PRESS COVERAGE**

**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, Jupyter, TensorFlow, PyTorch, Pyro, Docker, Git, MATLAB, LaTeX, Java, C

**INTERESTS**

Running, skiing, scuba diving, tennis, fishing, music production

**REFERENCES**

*Mentors and colleagues who have written recommendations for me:*

**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