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. (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*.

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
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.

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, PyTorch, TensorFlow, SLURM, Jupyter, 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