Guy Davidson

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Aspiring machine learning researcher excited about drawing inspiration from human cognition and neural organization to inform the design of machine learning methods: marrying ideas and perspective from the cognitive sciences with rigorous computational theory to inspire the development of more efficient and robust artificial intelligence architectures. Excited to bring **eight years of software development experience** to ensure my work is robustly engineered and straightforward to reproduce.

EDUCATION

NYU CENTER FOR DATA SCIENCE   New York, NY
PhD student   2019–Present

MINERVA SCHOOLS   San Francisco, CA
BSc in Computational Sciences   2015–2019
- Graduated summa cum laude with a concentration in Machine Learning. **GPA: 3.98/4.0**
- Coursework including Bayesian Statistics, Machine Learning, Cognitive Neuroscience, Quantum Mechanics
- **Capstone project**: investigating the scaling behavior of different meta-learning algorithms: how quickly new tasks are learned as a function or previous training, using a novel benchmark paradigm inspired by visual question answering. Collaborating with **Prof. Mike Mozer** at CU Boulder.

PUBLICATIONS AND PRESENTATIONS

PREPRINTS
Davidson, G., Mozer, M. C. Sequential mastery of multiple tasks: Networks naturally learn to learn. `https://arxiv.org/abs/1905.10837`.

PEER REVIEWED CONFERENCE PROCEEDINGS
Davidson, G., Radulescu, A., & Niv, Y. Contrasting the effects of prospective attention and retrospective decay in representation learning. *The 4th Multidisciplinary Conference on Reinforcement Learning and Decision Making*, Montreal, Canada.

Bennett, D., **Davidson, G.**, & Niv, Y. Momentum and mood in policy-gradient reinforcement learning. *The 4th Multidisciplinary Conference on Reinforcement Learning and Decision Making*, Montreal, Canada.

UNREVIEWED CONFERENCE PRESENTATIONS
Davidson, G., Radulescu, A., & Niv, Y. (2018). Passive forgetting or selective attention? Comparing two models of learning in multidimensional environments. *Cognitive Computational Neuroscience Meeting* (Late-Breaking Research), Philadelphia, USA.

RESEARCH & PROFESSIONAL EXPERIENCE

PRINCETON NEUROSCIENCE INSTITUTE   Princeton, NJ
Research Intern   05/2018–08/2018
Joined the **Niv Lab**, headed by **Prof. Yael Niv**, to investigate human reinforcement learning (RL) in multidimensional environments:
- Modeled data from previous experiments, making discoveries regarding the dissociable roles of attention and decay in human RL, and the efficacy of eye-tracking and fMRI-based attention measures.
- Implemented a reinforcement learning experiment in a customizable web platform, enabling data collection using Amazon Mechanical Turk and building a framework used by several current lab members to develop new experiments.
- Developed a simulation environment for bandit problems to motivate work framing mood as a momentum variable.

AIDOC MEDICAL   Tel Aviv, Israel
Research Engineer   05/2017–11/2017
- Implemented research-supporting tools in Azure cloud environment to facilitate and expedite deep learning experimentation, reducing idea-to-experiment turnaround 10x from 1-2 hours to 5-10 minutes.
- Explored distributed model training frameworks, performed experiments and analyses leading to opt for tool development.

AMAZON PRIME AIR   Seattle, WA
Software Development Engineer Intern   05/2016–08/2016

- Implemented binary image loading solution for proprietary hardware and software platform using C and assembly.
- Contributed to serialization library used in multiple projects across the Prime Air development group.

MINERVA PROJECT   San Francisco, CA
Software Development Engineer Intern   01/2016–05/2016
- Designed and delivered overhaul of invoicing system, transitioning from a fixed to a line-itemized implementation, to allow for improved flexibility, history tracking, and increased robustness, in a Python/Django/MySQL web-stack.

SIMILARWEB   Tel Aviv, Israel
Software Engineer   06/2015–09/2015
- Integrated products with external partners, debugged and solved multiple production issues, in Node.JS, iOS, and Python.

ISRAEL DEFENSE FORCES INTELLIGENCE BRANCH   Israel
Team leader, training instructor, software engineer   08/2008–10/2014
- Team leader: grew team of four software developers to ten, responsible for developing tools to enhance analysis capabilities and solve production issues. Reduced turnaround time more than 2x, contributed to Israel Defense Prize-winning project.
- Instructor: managed two other instructors, training ten pupils in software engineering and computer networking.
- Software engineer: built in-house data ingestion pipelines and analysis tools. Developed primarily in Python and Java and cultivated debugging and fault analysis expertise.

SKILLS

PROGRAMMING LANGUAGES
- Python (PyTorch, TensorFlow, Keras, Numpy, Sklearn)
- Javascript • Matlab • Java
- Shell • C • C++ • R • HTML/CSS

INTERESTS
- Native in **English** and **Hebrew**
- Proficient in **Spanish**
- Avid Ultimate Frisbee player (Played on Israeli national team)