Ellis L. Brown, II | *curriculum vitae*

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Education

Carnegie Mellon University — **Pittsburgh, PA**
M.S., Computer Science — *2021-2022*

Stanford University — **Palo Alto, CA**
Non-Degree Graduate Student, Computer Science — *2020*

Columbia University — **New York, NY**
Non-Degree Graduate Student, Computer Science — *2019*

Vanderbilt University — **Nashville, TN**
B.S., Computer Science; B.A., Mathematics — *2013 – 2017*

Experience

Industry

BlackRock AI Labs

Founding team member. We apply Big Data, Statistical/Machine Learning, & Optimization to strategic projects throughout the firm. *Advised weekly by Stephen Boyd, Mykel Kochenderfer, Trevor Hastie, & Rob Tibshirani.*

Machine Learning Engineer | Palo Alto, CA — *2020 – Pres.*
- Building a realistic simulator of the securities lending market in order to directly optimize & evaluate policies.
- Building a causal model to forecast the effect of a potential fee reduction on inflows for all iShares ETFs.

Data Engineer | New York, NY — *2019*
- Built an ETL pipeline and SparkML model to assign decomposable operating event risk scores to all 12k portfolios under management using 3k+ features from around the firm. Project presented to Larry Fink (CEO).

BlackRock

Software Engineer | New York, NY — *2017 – 2018*
- Built a text classifier to identify compliance rules in Investment Management Agreements using OCR and an ensemble of a bag-of-words model + a ConvNet. Previously, 30+ FTEs manually located these rules.
- Built a distributed ETL pipeline for daily mutual fund reference data.

Software Engineering Intern | New York, NY — *2016*

1st, Intern Hackathon – NLP system to extract contract terms from legal documents during new client onboarding.

Research

Artificial Intelligence and Visual Analogical Systems Lab — Vanderbilt University
Research Assistant, Prof. Maithilee Kunda's group — *2016 – 2018*
- Developed a computational cognitive architecture used to model and understand human visual attention in the context of visual search for a spatiotemporal target (MATLAB).
- Helped create the "Egocentric, Manual, Multi-Image (EMMI)" dataset, containing 6k images each of 360 objects from the viewpoint of toddlers playing with toys, as described in Xiaohan Wang et al. [ICCV-17]

Interests

AI • Cognitively-inspired ML • (Deep) Reinforcement Learning • Meta-Learning • Safety

Teaching

Department of Electrical Engineering and Computer Science Vanderbilt University
Teaching Assistant, CS 201: Program Design & Data Structures *Fall 2015*

Open-Source Projects

SSD.PyTorch | GitHub:// amdegroot/ssd.pytorch ★ 4k ⑂ 1.5k *2017*
Co-authored the canonical PyTorch implementation of Single Shot MultiBox Detector, a real-time object detection framework using a single network. [W. Liu et al., 2016]

BNN-Uncertainty | GitHub:// ellisbrown/BNN-Uncertainty *2019*
Keras implementation of a Bayesian Neural Network with dropout
- Examine the effect of weight prior & network architecture on uncertainty estimates.

DeepGenres.Torch | GitHub:// amdegroot/deepgenres.torch *2017*
Music genre classification from audio snippets using a ConvNet, built in Torch/Lua.

Awards and Honors

- *GEM Full Fellowship (Declined),* The National GEM Consortium, *2021*
- *3rd Place,* Graduate Student Research Competition, American Indian Science & Engineering Society National Conference, *2019*
- *1st Place*, BlackRock Intern Hackathon, *2016*
- *Finalist*, Lime Connect Fellowship Program For Students with Disabilities, *2016*
- Osage Nation Higher Education Scholarship, *2013 – 2017*
- AP Scholar with Distinction, *2013*
- Academic All-American, USA Water Polo, *2012, 2013*
- National Merit Commended Scholar, *2012*

Extracurricular Activities

American Indian Science & Engineering Society
Mentor, Full Circle Mentorship Program *Spring 2020 – pres.*
Scholarship Reviewer, AISES Undergraduate Scholarship *2020*
Judge, Undergraduate Student Research Competition, National Conference *2019*

Code/Interactive
Mentor to minority high school students interested in technology. *2018*

Vanderbilt Admissions
Tour Guide *2014 – 2016*

Kappa Sigma Fraternity (Kappa Chapter)
Social Chairman, Executive Council *2014 – 2016*

Water Polo
- *Captain & President,* Vanderbilt Club team (2014 SEC Champions) *2014-16*
- USA Olympic Development Program & Junior Olympics *2010 – 2013*

Publications

Journal

Ellis Brown, II, Soobeen Park, Noel Warford, Adriane Seiffert, Kazuhiko Kawamura, Joe Lappin, and Maithilee Kunda. (2018). An Architecture for Spatiotemporal Template-Based Search. *Advances in Cognitive Systems, 6*, 101-118. [paper]

Conference

Ellis Brown, II*, Melanie Manko*, Ethan Matlin*. (2019, Oct. 10). *Modeling Uncertainty in Bayesian Neural Networks with Dropout: The effect of weight prior and network architecture selection*. Abstract and Poster presentation, American Indian Science and Engineering Society National Conference, Madison, WI. (*equal contribution) [poster]

Ellis Brown, II, Soobeen Park, Noel Warford, Adriane Seiffert, Kazuhiko Kawamura, Joe Lappin, and Maithilee Kunda. (2018, Aug. 20). *SpatioTemporal Template-based Search: An Architecture for Spatiotemporal Template-Based Search*. Paper and Oral presentation at the Sixth Annual Conference on Advances in Cognitive Systems, Stanford, CA. [paper, slides]

Ellis Brown, II, Adriane Seiffert, Noel Warford, Soobeen Park, and Maithilee Kunda. (2017, Sep. 21). *Computational Cognitive Systems to Model Information Salience*. Abstract and Oral presentation, American Indian Science and Engineering Society National Conference, Denver, CO. [slides, link]

Reports

Ellis Brown, II. (2020, Jun.). Securities Lending Policy Optimization. Department of Computer Science, Stanford University, Palo Alto, CA. [paper, video]

Ellis Brown, II*, Melanie Manko*, Ethan Matlin*. (2019, May). Modeling Uncertainty in Bayesian Neural Networks with Dropout. Department of Electrical Engineering and Computer Science, Columbia University, New York, NY. (*equal contribution) [paper, slides]