

Ellis L. Brown, II | *curriculum vitae*

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Education

Stanford University <i>Non-Degree Graduate Student, Computer Science</i> AA222/CS361: Engineering Design Optimization	Palo Alto, CA 2020
Columbia University <i>Non-Degree Graduate Student, Computer Science</i> EECS E6699: Mathematics of Deep Learning	New York, NY 2019
Vanderbilt University <i>B.S., Computer Science; B.A., Mathematics</i>	Nashville, TN 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

- 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

Rotational 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](#)]

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](https://github.com/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](https://github.com/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](https://github.com/amdegroot/deepgenres.torch) 2017
Music genre classification from audio snippets using a ConvNet, built in Torch/Lua.

Awards and Honors

- 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 2014-16
 - SEC Champions, Vanderbilt Club team 2014
 - Competed in Junior Olympics 2012, 2013
 - Trained in USA Olympic Development Program 2010 – 2013

Publications

Working (titles and authors may change).....

Hristo Paskov, **Ellis Brown, II**. (2020). *A Krylov Method for Fast Parameter Tuning in Ridge Regression*. Unpublished Manuscript, BlackRock AI Labs, Palo Alto, CA.

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 Saliency*. 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](#)]