

# Ellis L. Brown, II | *curriculum vitae*

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## Education

<b>Stanford University</b> <i>Non-Degree Graduate Student, Computer Science</i> AA222/CS361: Engineering Design Optimization	<b>Palo Alto, CA</b> 2020
<b>Columbia University</b> <i>Non-Degree Graduate Student, Computer Science</i> EECS E6699: Mathematics of Deep Learning	<b>New York, NY</b> 2019
<b>Vanderbilt University</b> <i>B.S., Computer Science; B.A., Mathematics</i>	<b>Nashville, TN</b> 2013 – 2017

## Experience

### Industry.....

<b>BlackRock AI Labs</b> <i>Machine Learning Engineer – Palo Alto, CA</i>	2020 – pres.
<ul style="list-style-type: none"><li>Building a simulator with realistic models of the securities lending market to optimize and evaluate policies.</li><li>Building a causal model to forecast the effect of a potential fee reduction on inflows for all iShares ETFs.</li></ul>	
<b>Data Engineer – New York, NY</b>	2019
<ul style="list-style-type: none"><li>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).</li></ul>	
<b>BlackRock</b> <i>Rotational Software Engineer – New York, NY</i>	2017 – 2018
<ul style="list-style-type: none"><li>Built a text classifier to identify compliance rules in Investment Management Agreements using OCR and an ensemble of a bag-of-words model and a ConvNet. Previously, 30+ FTEs manually located these rules.</li><li>Built a distributed ETL pipeline for daily mutual fund reference data.</li><li>Built a UI to facilitate the AML/KYC process for new client onboarding.</li></ul>	
<b>Software Engineering Intern – New York, NY</b>	2016
<i>1<sup>st</sup>, Intern Hackathon – NLP system to extract contract terms from legal documents during new client onboarding.</i>	

### Research.....

<b>Artificial Intelligence and Visual Analogical Systems Lab</b> <i>Research Assistant, Prof. Maithilee Kunda's group</i>	Vanderbilt University 2016 – 2018
<ul style="list-style-type: none"><li>Developed a computational cognitive architecture used to model and understand human visual attention in the context of visual search for a spatiotemporal target (MATLAB).</li><li>Helped create and test a novel image classification dataset "EMMI" from the viewpoint of toddlers playing with toys, described in Xiaohan Wang et al. [ICCV-17]</li></ul>	

### Teaching.....

<b>Department of Electrical Engineering and Computer Science</b> <i>Teaching Assistant, CS 201: Program Design &amp; Data Structures</i>	Vanderbilt University Fall 2015
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## Open-Source Projects

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- 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.
- Name2Gender** | [Blog Post](#) | [GitHub:// ellisbrown/name2gender](https://github.com/ellisbrown/name2gender) 2017  
Gender Inference from Character Sequences in Multinational First Names  
○ Implemented Naive Bayes (NLTK) & Char-RNN (PyTorch) approaches
- 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

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- 3<sup>rd</sup> Place, Graduate Student Research Competition, American Indian Science & Engineering Society National Conference, 2019
- 1<sup>st</sup> Place, BlackRock Intern Hackathon, 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

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- 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

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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](#)]