

# NATHAN HATCH

<https://nhatch.github.io> ■ Atlanta, GA, USA ■ [nhatch6@gatech.edu](mailto:nhatch6@gatech.edu) ■ +1 970-297-8081

## EDUCATION

### **Georgia Institute of Technology**

Ph.D. Machine Learning. Advisor: Dr. Byron Boots

Atlanta, GA

August 2017 – expected 2022

### **University of Chicago**

B.S. Mathematics with honors

B.S. Computer Science with honors

Chicago, IL

September 2010 – June 2014

### **Universitat Pompeu Fabra**

Study abroad program

Barcelona, Spain

January – March 2013

## PUBLICATIONS

A. Shaban, C. Cheng, **N. Hatch**, and B. Boots. *Truncated Back-Propagation for Bilevel Optimization*. Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS 2019). <https://arxiv.org/abs/1810.10667>.

**N. Hatch**. *Group Theory: An Introduction and an Application*. University of Chicago VIGRE REU; 2011. <http://www.math.uchicago.edu/~may/VIGRE/VIGRE2011/REUPapers/Hatch.pdf>.

## CURRENT PROJECT

*Curriculum-based learning to walk across stepping stones*

May 2018 - present

- Mostly on my own, review locomotion literature and invent a new ML-based approach
- Use the DART simulator to implement and iterate on the algorithm
- Gave a two-hour presentation summarizing prior work and explaining my current approach

## WORK EXPERIENCE

### **eSpark Learning**

Software engineer

Chicago, IL

June 2014 - July 2017

*Full-stack software engineering in a fast-paced startup environment*

- Led the annual iOS app release, removing 300ms tap delay and rewriting the video uploader
- Increased sales pipeline by 12% by integrating our product with Airwatch
- Improved academic fidelity metric from 80% to 87% by refining our app deployment system
- Implemented Apple's "Device Assignment" protocol, making our MDM first-to-market (solo project)
- Conducted ~20 interviews and code challenge reviews for recruiting

### **Dept. Computer Science, University of Chicago**

*chiTCP developer*

Chicago, IL

October 2013 - June 2014

- Implemented a TCP-over-TCP daemon for use in Borja Sotomayor's networks class
- Earned the position based on outstanding performance in that class the previous year

### **Mission Street Manufacturing**

Software intern

Santa Barbara, CA

June - August 2013

- Developed prototype front- and back-end software for consumer-friendly 3D printing

## **CLASS PROJECTS**

N. Hatch and E. Wijmans. *Probabilistic Graphical Modeling of Data-Dependent Annotator Accuracy for Active Learning*. CS 8803 Probabilistic Graphical Models; Spring 2018.

Paper: [https://nhatch.github.io/files/Hatch\\_Wijmans\\_final\\_report.pdf](https://nhatch.github.io/files/Hatch_Wijmans_final_report.pdf)

Slides: [https://nhatch.github.io/files/Hatch\\_Wijmans\\_presentation\\_slides\\_v2.pdf](https://nhatch.github.io/files/Hatch_Wijmans_presentation_slides_v2.pdf)

N. Hatch, A. Sundaresan, M. Dutreix, R. Kuppan, and P. Pattanashetty. *Google Landmark Recognition and Retrieval Challenges*. ECE 6254 Statistical Machine Learning; Spring 2018.

Paper: [https://nhatch.github.io/files/landmarks\\_report.pdf](https://nhatch.github.io/files/landmarks_report.pdf)

Poster: [https://nhatch.github.io/files/landmarks\\_poster.pdf](https://nhatch.github.io/files/landmarks_poster.pdf)

N. Hatch. *Unsupervised Curriculum Learning for Image Clustering*. CS 7643 Deep Learning; Fall 2017.

Poster: <https://nhatch.github.io/files/image-clustering.pdf>

## **AWARDS AND HONORS**

Georgia Institute of Technology, Presidential Fellowship	2017 – 2021
--	-------------

University of Chicago, Dean's List	2010 – 2014
------------------------------------	-------------

University of Chicago, University Scholarship	2010 – 2014
---	-------------

University of Chicago, National Merit Scholarship	2010 – 2014
---	-------------

University of Chicago, Student Marshal	2013
--	------

Phi Beta Kappa	2013
----------------	------

University of Chicago, Fulton Prize for Orchestral Excellence	2012
---	------

## **TECHNICAL SKILLS**

Languages:	Python, Ruby, Javascript/HTML/CSS, C
------------	--------------------------------------

Deep learning frameworks:	PyTorch, TensorFlow, Keras
---------------------------	----------------------------

Proficient in Spanish

## **TEACHING EXPERIENCE**

<b>Insight Tutoring</b>	<i>Chicago, IL</i>
-------------------------	--------------------

<i>Volunteer tutor</i>	January 2015 - May 2017
------------------------	-------------------------

- Reviewed homework and class material for three economically disadvantaged sixth-grade students
- Periodically revisited old material for spaced retrieval practice

<b>Dept. Computer Science, U. of Chicago</b>	<i>Chicago, IL</i>
--	--------------------

<i>Homework grader</i>	October - December 2012
------------------------	-------------------------

- Graded twice-weekly discrete math problem sets for Laszlo Babai's graduate-level class

<b>Dept. Mathematics, U. of Chicago</b>	<i>Chicago, IL</i>
---	--------------------

<i>SESAME teaching assistant</i>	July 2012
----------------------------------	-----------

- Assisted teaching a class for middle school math teachers on "problem-based learning"

<b>Dept. Mathematics, U. of Chicago</b>	<i>Chicago, IL</i>
---	--------------------

<i>Young Scholars Program Counselor</i>	June - July 2012
---	------------------

- Tutored four 9th/10th-grade math students in an advanced summer math program
- Assisted teaching a class in basic computer programming
- Gave weekly reports on student progress, including helping to write a diagnostic exam

## **HOBBIES**

*Viola performance:*

<b>Georgia Tech Symphony Orchestra</b>	<i>Atlanta, GA</i>	August 2017 – May 2018
<b>Lakeview Symphony Orchestra</b>	<i>Chicago, IL</i>	September 2016 - June 2017
<b>Chicago Metropolitan Symphony Orchestra</b>	<i>Chicago, IL</i>	March 2015 - August 2016
<b>University of Chicago Symphony Orchestra</b>	<i>Chicago, IL</i>	September 2010 - June 2014

Places visited: Spain, United Kingdom, Japan, Argentina, Brazil, Taiwan, Hong Kong, Singapore, China, Peru,  
South Africa, Namibia, Botswana, Zimbabwe, Turkey

Other interests: rock climbing, salsa dancing