

Nate Gillman

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EDUCATION

Brown University, Providence, RI

- **PhD** (Machine Learning, Artificial Intelligence, Time Series Forecasting) *September 2020 – present*
- **ScM** (Mathematics) *May 2022*

Wesleyan University, Middletown, CT

- **B.A.** (High Honors in Mathematics; secondary coursework in Computer Science, Hebrew) *May 2020*
- *Honors: Class rank 1 out of 748*, Barry Goldwater Scholar, Phi Beta Kappa

Budapest Semesters in Mathematics, Budapest, Hungary; **Math in Moscow**, Moscow, Russia *2018-2019*

RELEVANT TECHNICAL SKILLS

- *Programming/scripting languages*: Python, C, Standard ML, R, LaTeX, SageMath
- *Data science*: PyTorch, Tensorflow, Numpy, Pandas, Matplotlib, Google Cloud, Microsoft Azure
- *Expertise/interests*: deep learning, time series forecasting, computer vision, natural language processing, autonomous vehicles, machine learning, transportation logistics, cryptography and security, UX design

RELEVANT WORK/PROJECT/RESEARCH EXPERIENCE

Data Scientist at Amex AI Labs, American Express, New York City *Summer 2022*

- Created chatbot using open source software; improved customer UX when disputing fraudulent charges
- Managed end-to-end data science pipeline (data procurement, model/experiment design, testing/validation)

PhD Research in Computer Vision, Brown University *Winter 2022 – present*

- Developing novel architectures for pedestrian intention forecasting; working with Honda self-driving datasets

PhD Research in Machine Learning, Natural Language Processing, Brown University *Spring 2021 – Fall 2021*

- Invented a rigorous mathematical method for measuring uniformity of spatial utilization, applied to NLP
- Designed and executed numerical experiments using Numpy to evaluate properties of competing metrics
- Published paper in conference, *Findings of the Association for Computational Linguistics*

PhD Research in Cryptography, Brown University *Spring 2021 – Fall 2021*

- Researched digital signature schemes which are secure and efficient enough for autonomous vehicles
- Deployed computational experiments using Pandas, and Brown's supercomputer, against adversarial attacks

Data Science Intern, Split Technology (ride-sharing startup in Washington DC) *Summer 2015 – Fall 2015*

- Cleaned and mined large taxi data using R to determine the potential for ride-sharing departures from DC

PURE MATH RESEARCH EXPERIENCE

Number Theory Research Internship, Emory University *Summers 2018, 2019*

- Conjectured and proved theorems about distribution of primes, and distribution of geometric invariants
- Published three peer-reviewed journal articles, presented at three professional venues

Analysis Research Internship, Budapest Semesters in Mathematics *Spring 2019 – Fall 2020*

- Optimized eigenvalue estimates relevant to Hamiltonian mechanics, and high-dimensional geometry
- Published two peer-reviewed journal articles, presented technical results at two professional venues

LEADERSHIP/TEACHING EXPERIENCE

- *Seminar organization*: Brown math graduate student seminar (2021), arithmetic dynamics seminar (2020)
- *Teaching*: PhD student teacher training (2021), mentored a directed reading program in cryptography (2021), course assistant for algebra, analysis, calculus, discrete math, number theory (2017-present)
- *Outreach*: organized activities "Numbers in Nature with Nate" and "Math Yoga" at youth summer camps

SELECTED PUBLICATIONS (full list of 6 articles on personal website)

- IsoScore: Measuring the Uniformity of Vector Space Utilization. *Findings of Association for Computational Linguistics* (2022). Code with pip install: https://github.com/bcbi-edu/p_eickhoff_isoscore