Nate Gillman
ngillman@brown.edu   (301)-789-4849   nategillman.com   www.linkedin.com/in/ngillman

EDUCATION

Brown University, Providence, RI
- **PhD** (Machine Learning, Computer Vision, Natural Language Processing)   *September 2020 – present*

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   *Spring 2019*
Math in Moscow, Moscow, Russia   *Fall 2018*

RELEVANT TECHNICAL SKILLS

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

RELEVANT WORK/PROJECT/RESEARCH EXPERIENCE

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
- Patterns of primes in the Sato-Tate conjecture. *Research in Number Theory (2020)*
- From partitions to Hodge numbers of Hilbert schemes of surfaces. *Philosophical Transactions of the Royal Society A* (2019)