

Nathan James Brunelle, Ph.D.

Assistant Professor

Department of Computer Science

University of Virginia

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Professional Experience

Assistant Professor August 2017-present
University of Virginia, Department of Computer Science

Intern Software Developer Summer 2015
Intentional Software Corporation

Lecturer Spring 2015
University of Virginia Department of Computer Science, Charlottesville, VA

Education

University of Virginia, Ph.D., Computer Science, 2017
Dissertation: Super-Scalable Algorithms
Advisor: Gabriel Robins
Research Interests: Algorithms, Automata Theory, Compression, Hardware accelerators

University of Virginia, M.CS., Computer Science, 2013
Advisor: abhi shelat
Topic: Compression-aware Algorithms

University of Virginia, B.A. With Distinction, Computer Science and Mathematics, 2011

Honors and Awards

All-University Teaching Award
University of Virginia, 2021

Thomas E. Hutchinson Award Finalist
Trigon, University of Virginia, 2021

Thomas E. Hutchinson Award Finalist
Trigon, University of Virginia, 2019

Recognition for commitment to Students in SEAS
P.R.I Society, University of Virginia, 2018

ACM Professor of the Year
ACM student chapter at the University of Virginia, 2018

Distinguished Graduate Teaching Award in STEM
University of Virginia, 2017

Graduate Student Award for Education and Service
University of Virginia Department of Computer Science, 2012

BSA Eagle Scout 2007

Publications

Conference Publications

- N. Brunelle, J. Hott, J. Myers, J. Rassen and a. shelat. KD-Tree Algorithm for Propensity Score Matching With Three or More Treatment Groups. *Technical Report Series. Division of Pharmacoepidemiology And Pharmacoeconomics, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School*, 2012.
- N. Brunelle, G. Robins, a. shelat. Algorithms for Compressed Inputs. *Data Compression Conference (DCC)*, 2013.
- T. Tracy, M. Stan, N. Brunelle, J. Wadden, K. Wang, K. Skadron, G. Robins. Nondeterministic Finite Automata in Hardware - the Case of the Levenshtein Automaton. *Workshop on Architectures and Systems for Big Data (ASBD), in conjunction with the International Symposium on Computer Architecture (ISCA)*, 2015.
- N. Brunelle, G. Robins, a. shelat. Compression-Aware Algorithms for Massive Datasets. *Data Compression Conference (DCC)*, 2015.
- J. Wadden, V.Dang, N. Brunelle, T.Tracy II, D.Guo, E. Sadredini, K. Wang, C. Bo, G. Robins, M. Stan, K.Skadron. ANMLZoo: A benchmark suite for exploring bottlenecks in automata processing engines and architectures. *International Symposium on Workload Characterization(IISWC)*, 2016.
- J. Wadden, N. Brunelle, M. El-Hadedy, K. Wang, K. Skadron, M. Stan. Generating efficient and high-quality pseudo-random behavior on automata processors. *International Conference on Computer Design (ICCD)*, 2016.
- N. Brunelle, J.R. Hott, Ask Me Anything: Assessing Academic Dishonesty. *Poster at SIGCSE Technical Symposium*, 2020.
- N. Brunelle, J.R. Hott, Fix the Course, Not the Student: Positive Approaches to Cultivating Academic Integrity. *BOF discussion leader at SIGCSE Technical Symposium*, 2020.
- N. Brunelle, D. Evans, Comfy Cohorts and Tractable Teams: Making Large CS Theory Courses Feel Small *Experience Report at SIGCSE Technical Symposium*, 2022.

Theses

- N. Brunelle. Super-Scalable Algorithms, Ph.D. Dissertation

Online Materials

- Introduction to Programming, CS1110, fall 2018: <http://cs1110.cs.virginia.edu/f18/>
- Algorithms, CS4102, fall 2018: <http://www.cs.virginia.edu/~njb2b/cs4102/f18/>
- Introduction to Programming, CS1110, spring 2018: <http://cs1110.cs.virginia.edu/s18>
- Theory of Computation, CS3102, spring 2019: <http://www.cs.virginia.edu/~njb2b/cs3102/s19/>
- Introduction to Programming, CS1110, fall 2019: <http://cs1110.cs.virginia.edu/f19>
- Theory of Computation, CS3102, fall 2019: <http://uvatoc.github.io/f19>
- Theory of Computation, CS3102, spring 2020: <http://www.cs.virginia.edu/~njb2b/cstheory/s2020/>
- Introduction to Programming, CS1110, spring 2020: <http://cs1110.cs.virginia.edu/s20>
- Algorithms, CS4102, fall 2020: <http://www.cs.virginia.edu/~njb2b/cs4102/f20/>
- Theory of Computation, CS3102, fall 2020: <http://uvatoc.github.io/f20>
- Theory of Computation, CS3102, spring 2021: <http://www.cs.virginia.edu/~njb2b/cstheory/s2021/>

- Theory of Computation, CS3102, fall 2021: <http://uvatoc.github.io>
- Discrete Math and Theory 1, CS2120, fall 2021: <http://www.cs.virginia.edu/~njb2b/cs2120/f2021/>
- Theory of Computation, CS3102, spring 2022: <http://www.cs.virginia.edu/~njb2b/cstheory/s2022/>

Graduate Students Directed

None

Undergraduate Theses Supervised

- Matthew Jenny
- Linda Zhang
- Matthew Bongiovi
- Thomas Steimal
- Caleb Smith
- Simonne ter Weele
- Arman Lokhandwala
- Akhil Indurti
- Jesse Alloy
- Nikki Pope
- Shubham Patel
- Faylinn Park
- Kevin Melloy
- Rowan Dakota
- Robbie VanDerzee
- Petar Duric
- Nathaniel Saxe
- Daniel Patel
- Yonathan Fisseha
- Noah Holloway

Postdoctoral Students Supervised

None

External Research Grants and Contracts

None

Keynotes and Invited Presentations

None

Patents

- J. Wadden, N. Brunelle. System, Method, and Computer-Readable Medium for High Throughput Pseudo-Random Number Generation. No. 9977652, awarded March 22, 2018.

Service

Departmental Service

- Undergraduate Research Coordinator, 2017-present
- Academic General Faculty Search Committee, 2017-2018
- ACM International Collegiate Programming Contest Co-Coach, 2017-present
- New Curriculum Discrete Math and Theory Subcommittee Chair, 2018-2020
- Co-Curator of Computer Museum, 2015-present
- BS major Capstone Coordinator, 2019-2020
- High School Programming Contest, 2019-present
- Undergraduate Student Experience Committee, 2021-present

Engineering School Service

- SEAS Core Curriculum Task Force, 2019-present

University Service

- Graduate Teaching Awards selection committee, 2022

Article Reviewing

- STACS 2013
- STACS 2015
- FONDECYT 2017
- TCAD (Transactions on Computer-Aided Design of Integrated Circuits and Systems) 2020