

Charlie Gagnon

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EDUCATION

Brown University

Sc.B. – Computer Science, *magna cum laude*

September 2018 - May 2022

Providence, RI

EXPERIENCE

MathWorks

Senior Associate Engineer

July 2022 - Present

- For the **MATLAB Coder**, added code generation support for MATLAB's `.*` operator, enhanced code motion optimizations for compatibility with profiling tools, and analyzed memory use in definite assignment analysis.
- For the **Simulink Design Verifier**, improved property-proving decidability for enabled subsystems in Simulink.
- For the **HDL Coder**, implemented timing-slack calculations and multiple path analysis for pre-synthesis critical path estimation on hardware models designed in Simulink.
- For the **Deep Learning Coder**, added IR constructs for tensor pooling, improving type safety and extensibility.
- Leading the **DTA Support** team, coached more than 40 team members to advance their technical knowledge and operational skills, optimized processes for knowledge sharing, and redesigned team performance metrics. Supported customers using external language interfaces, external hardware, and server products, via phone and email.
- Leading the **SIT Plan** team, designed and implemented a CI/CD system for training course code and solutions, and authored internal training materials on server products used by hundreds of new hires worldwide.
- Led **technical interviews** for more than 40 engineering applicants, assessing work experience and programming skills.

MathWorks

Software Engineering Intern

May 2021 - September 2021

- In the **Cloud Platform** team, developed a log anomaly detection and remediation system for Kubernetes apps, coordinating Fluent Bit, Elasticsearch, and AWS Lambda to discard unhelpful log files.

National Park Service

Virtual Student Intern

September 2020 - May 2021

- Designed a machine learning and vision system to classify and count colonial nesting birds in Biscayne National Park.
- Team of 3 selected as **Team Project of the Year, 2021**, from a pool of more than 3,000 interns.

Brown University

Teaching Assistant & Tutor

October 2019 - May 2022

- Within the **Computer Science Department**, guided students at weekly code and conceptual hours, responded to student questions on course forum pages, and revised assignments and solution code.
- As a **Sheridan Center** tutor, prepared and delivered weekly lessons for multiple groups of five students in introductory statistics, multivariable calculus, and physics.

SKILLS & SELECTED COURSEWORK

- **Languages:** C++, C, Rust, Python, MATLAB, Verilog, Java, Scala, Lisp, OCaml
- **Tools:** Git, Perforce, Kubernetes, Docker, NumPy, pandas, TensorFlow, Simulink, \LaTeX , Vim, Emacs, Unix/Linux
- **Systems Courses:** Compilers, Programming Languages[†], Operating Systems^{*†}, Networks, Architecture
- **Modeling Courses:** Machine Learning, Info & Learning Theory^{*}, Computational Statistics^{*}, Vision, Graphics

ENGAGEMENT & AWARDS

^{*} graduate level, [†] teaching assistant

Brown University Band

Vice President

Nov. 2019 - Nov. 2020

- Set event schedule, prepared marching forms for field and ice shows, and represented the Band to Brown Athletics.

National Merit Scholar

May 2018

MA Speech & Debate State Champion

April 2017

Student Congress