W. Ryan Livingston

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SUMMARY

A self-motivated software engineer returning to the workforce with 12 years of experience in technical computing as an individual contributor, manager, and product owner. Combines technical strength, a proven ability to learn new technology, a strong user focus, a demonstrated ability to deliver important projects, leadership, and excellent communication skills. Delivers software that is tested, maintainable, performant, documented, and of maximal utility.

PROFESSIONAL EXPERIENCE

MathWorks - MATLAB Coder May 2022 - September 2023
Software Engineering Manager *Natick, MA*

- Led a team of 4-6 engineers working on MATLAB Coder, a MATLAB to C/C++ source-to-source optimizing compiler
- Team designed, enhanced, and developed core workflows, generation of multithreaded OpenMP parallel C/C++, compiler transforms, a multithreaded runtime library, static code checkers, command-line APIs, and GUI workflows for MATLAB users to convert their MATLAB code to deployable C/C++
- Provided technical and career mentorship to team members and interns. Wrote and delivered performance reviews.
- Developed technical documentation and knowledge-sharing resources improving team and collaborator effectiveness
- Acted as a technical point of contact on a broad multi-language (C/C++/MATLAB) codebase
- Interfaced with other product teams to negotiate strategies and collaboration
- Worked with cross-functional teams including documentation, user experience (UX), quality engineering, marketing, project management, and senior management to design features and set direction
- Met with customers and customer-facing engineers to understand product gaps, pains, and opportunities
- Presented product plans and features at customer conferences to solicit feedback
- Set product direction with a sibling team lead based on this feedback, company priorities, and product vision
- Acted as a technical and directional point of contact for a remote development team in Bangalore, India
- Led hiring and recruiting for the team. Participated in interview teams for our other cross-functional teams.

MathWorks - MATLAB Coder October 2017 - May 2022
Senior Team Lead *Natick, MA*

- In addition to Software Engineering Manager responsibilities, contributed to development efforts by implementing new functionality and debugging and fixing bugs
- Got company buy-in for and participated in the redesign of the main MATLAB Coder workflow GUI
- Coordinated a multi-year project to remove 200k lines of Java from our codebase
- Helped design the ability to call the FFTW library in the generated code. Mentored implementing team.
- Used TypeScript to implement a Language Server Protocol (LSP) server for MATLAB to provide IDE-like functionality (e.g. code navigation, completions, etc.) while editing MATLAB code in Emacs, Visual Studio Code, Sublime, and Vim for hundreds of MathWorks engineers
- Acted as an advisor to the team who shipped similar LSP support to customers

MathWorks - MATLAB Coder July 2012 - October 2017
Software Engineer, Senior Software Engineer *Natick, MA*

- Participated in the full software development lifecycle including requirements specification, design, implementation, functional testing, performance testing, and user documentation
- Added the ability for generated standalone C/C++ to call the high-performance libraries BLAS and LAPACK yielding speedups of up to 40%
- Extended an LLVM-based JIT to call BLAS and LAPACK for relevant operations
- Implemented support for MATLAB runtime library capabilities like file I/O and string processing to enable user workflows
- Performed performance evaluation and performance optimization of the generated C/C++ code using VTune
- Added support for 64-bit integers and extended enumeration types to MATLAB Coder
- Designed and implemented the MATLAB Coder version of the MATLAB sparse matrix type
- Led and mentored a team implementing sparse matrix algorithm support
- Adapted random number generation to support multiple streams in generated OpenMP parallel code

- Diligently authored functional and performance tests ensuring quality and efficiency in shipped code
- Developed 2 web apps with JavaScript and Python Flask used by the team and others
- Implemented various editor enhancements and tools for Emacs and Visual Studio Code
- Designed and set up a CI/CD pipeline using Gitlab with a colleague for our team's internal tooling

MathWorks July 2011 - July 2012
Application Support Engineer *Natick, MA*

- Provided technical support for users of MathWorks products in areas like code deployment, parallel computing, external language interfaces, and hardware interfaces. Answered direct customer calls and emails and mentored new technical support team members.
- Implemented software development projects:

  Extended MATLAB TIFF reading and writing capabilities to support the BigTIFF file format (files larger than 4GB)

  Used the EDG C++ front end to gather info about classes, templates, and types from a user-provided C++ file

PERSONAL PROJECT

FZF Fuzzy Quick Open Visual Studio Code Extension
`https://github.com/rlivings39/vscode-fzf-quick-open`

- A Visual Studio Code extension to integrate the searching speed and power of tools like fzf, fd, and ripgrep

EDUCATION

The University of Georgia 2009 - 2011
Master of Arts in Mathematics *Athens, GA*

- Wrote programs to discover and test a finite solution set for a conjecture in an algebraic geometry research group
- Taught precalculus and worked as a TA for upper-level undergrad math courses

Youngstown State University 2005 - 2009
Bachelor of Science (BS) Mathematics and Computer Science *Youngstown, OH*

- Presented at national undergraduate conferences as a member of Pi Mu Epsilon
- Worked as a MATLAB programmer and tutored in the undergraduate math center

SKILLS

Programming Languages	C, C++, Python, MATLAB, JavaScript, TypeScript, some NumPy experience
Frameworks And Tools	Visual Studio Code, Emacs, bash, fish, gcc, clang, gdb, Git, Perforce

W. Ryan Livingston
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Dear Sergey and hiring team,

I'm a software engineer with over 11 years of experience building scientific computing tools looking to apply my skills to broad-impact cutting-edge problems. I'd love the opportunity to bring my experience and enthusiasm to your team and nvmath-python. My past colleagues and current Nvidians Xi Wang and Yancheng Zheng forwarded this role to me on LinkedIn. Working for MathWorks allowed me to serve users working in a high-level environment needing to access cutting-edge performance and functionality. I'm thrilled to have the opportunity to bring my skills and user focus to your broad audience at NVIDIA while pushing the boundaries of technology.

As a senior software engineer, senior team lead, and manager on the MATLAB Coder team at MathWorks my team and I enhanced the ability for users to write MATLAB code, compile it to C++, and deploy their algorithms to standalone hardware while achieving excellent performance. During my tenure, I worked to expand the compiler's support for the MATLAB language and libraries by adding 64-bit integer support and developing a sparse matrix type for the compiler. I worked to improve the performance of the generated code by making it call high-performance libraries like BLAS and LAPACK, reducing runtimes up to 40%.

Understanding and engaging with users' needs to deliver meaningful functionality is a top priority and passion of mine. While driving product direction, I prioritized improving ease of use, optimizing generated code, and expanding MATLAB support in code generation for our users. I would love the opportunity to bring my experience and passion to the nvmath-python team and work with you to continue serving the scientific computing community.

All the best,

W. Ryan Livingston