

Summary

I am a multifaceted senior software development/machine learning engineer, and computer scientist. I love working with software, especially developing, testing, writing, and analyzing code.

Experience

Senior Machine Learning Engineer, VMware, Inc. — Palo Alto, CA April 2022–January 2024

- Lead machine learning engineer on Project Crest AI/ML tool that checks and tests accessibility.
- Led the effort of moving the prototype to production and adding new features and tests to Project Crest.
- Analyzed and debugged bugs, faults, and glitches in Project Crest when they occurred.
- Utilized the AI/ML frameworks: Nltk, Numpy, Pandas, Pillow, PyTesseract, PyTorch, Keras/Tensorflow, Transformers.
- Conducted research on new AI/ML frameworks, porting from Flask to FastAPI moving prototype to production.
- Experimented with using a backend LLM to augment verification and tests.
- Created, debugged, and integrated new tests using AI/ML functionality into Project Crest.
- Made demonstration videos and presentations showing new tests running in Project Crest.
- Ported Project Crest from Flask RESTful framework to FastAPI for performance and reliability.
- Researched and investigated new AI/ML frameworks, and libraries to use in Project Crest.
- Supervised, trained, and reviewed others' work developing checks and tests for Project Crest and Windows.

Senior Member of Technical Staff, VMware, Inc. — Palo Alto, CA July 2020–April 2022

- Developed new features to add into the RDT Internet protocol.
- Improved memory efficiency and performance moving vSAN to solid-state storage.
- Developed code fixes for bugs tested for defects in C source code.
- Diagnosed triage problem reports with VSAN source code.
- Purged legacy, obsolete bugs from the Bugzilla database.
- Diagnosis and analysis of customer problem report/service report for CMMDS/RDT.

Web Content Editor/Writer, Hummingbird Innovations — Beaverton, OR September 2019–July 2020

- Research material from various online sources, articles, blogs, books, and research papers.
- Author content in WordPress template and edit a content template for best quality.
- Resolve any content issues or web issues in accessing and viewing content.
- Created a prototype working website to analyze, evaluate, and test web content.

Unemployed/Free Agent — Salem, OR July 2019–September 2019

I was a software development engineer, working on some projects while a free agent.

- WEJAC — simpler Java compiler. <https://wgilreath.github.io/WEJAC/>
- DBXShell — DropBox shell to manage DropBox storage. <https://wgilreath.github.io/DBXShell/>
- ZeptoN — ZepC transcompiler in Java for ZeptoN language. <https://github.com/wgilreath/ZeptoN>

Technical Review Editor, Packt Publications Mumbai, India (remote) January 2019-July 2019

- Technical Contributor "Java Data Structures and Algorithms" lesson technical assessment questions.
- Technical Contributor "Java Fundamentals" pre- and post-assessment technical assessment questions.
- Technical Contributor "Java Fundamentals" lesson 1 and 2 follow-up technical assessment questions.
- Review Editor "Professional Javascript" checking, evaluation, and testing of technical content and source code.

New Life Fellowship, Union Gospel Mission Salem, OR September 2015–September 2018

I was homeless and thus lived at the Union Gospel Mission of Salem in a recovery program to get back on my feet. I volunteered and worked doing computer support.

- Graduate of the New Life Fellowship (NLF) program to recover from homelessness.
- Computer support for the front desk, computer laboratory, and staff computers.
- Developed a web app to email evaluations from form to staff.
- Created documents and spreadsheets used by staff in Microsoft Office.

Freelance Software Developer — Picayune, MS November 2006–May 2014

I was my mother's caregiver during her declining years. I worked software gigs and odd programming jobs through word of mouth, solo gigs, etc.

- Worked on small software projects, gig to gig, unemployed between gigs.
- Ported legacy code to more modern languages such as FORTRAN Pascal to Java, C++, and C#.
- Wrote custom programs, tools, and utilities for macOS, Windows, and Linux.

Software Engineer, Planning Systems, Inc. Stennis Space Center, MS June 2006–November 2006

- Administration of information on MySQL sensor/buoy data database on Linux server system.
- Held "Secret" clearance for access to classified information and data.
- Developed Java application library for database management utilizing JDBC database driver.
- Wrote a data population application with Java and shell scripts to import and export raw data from the database system.
- Assisted in improving and verifying documentation presented on the intranet that other scientists and software developers used.
- Worked on developing an XML-based message software service project in Java.

Independent Technical Author, Kluwer/Springer-Verlag Picayune, MS March 2002–February 2003

- Lead author on computer architecture book, with Dr. Phillip A. Laplante, "Computer Architecture: A Minimalist Perspective," published March 2003.
- Researched the text's technical material relating to computer architecture and engineering.
- Created tables, diagrams, and visual aids for book chapters illustrating concepts and principles relating to computer architecture.
- Wrote chapter questions and exercises to assess the material's level of understanding and comprehension.
- Created example programs in C assembly language to demonstrate computer architecture principles.

Java Consultant/Developer, J.R. Simplot Company Boise, ID February 2002–June 2002

- Mentored software engineers through hands-on training with Java and the object-oriented paradigm.
- Rewrote and translated existing code to Java for several in-house applications.
- Developed a Java applet for interactive data visualization with other developers.
- Authored reference documentation for training and education with Java and the object-oriented paradigm using UML.

Firmware/Software Developer, Hewlett Packard/Adecco Boise, ID March 2001–February 2002

- Build printer firmware and debug failed builds on a distributed build system using C/C++.
- Investigate and assist in debugging scripts, utilities, and tools in C/C++, UNIX shell, Perl script, and JavaScript.
- Worked and developed embedded C source as part of printer firmware development kit.
- Maintenance testing of software documents and development tools in C/C++ in UNIX.
- Provided support for libraries and scripts for the distributed build system.

Software Engineer, Micron Technology Boise, ID June 1999–November 2000

- Developed for manufacturing data communication system and internal middleware library using TCP/IP and UDP protocols in C++ for Unix/Windows.
- Developed and assisted in database development on Oracle, Sybase in PL/SQL, and Transact SQL.
- Code maintenance, revision, and support for legacy software in C/C++ on Windows UNIX systems.
- Assisted in assessing and planning requirements for application programming interfaces relating to SOAP and XML-based software.
- Using distributed middleware messaging, we developed regression test suites for software applications and utilities in C++.
- Instructor for an introductory training class for XML and application library in C++.

Research Assistant, CS Department, Mississippi State Starkville, MS July 1996–December 1996

- Lead researcher for a research project with a professor in a machine learning project for military application.
 - Genetic algorithm - formulate a deployment plan for engineering missions in 60 seconds.
 - Neural network - generate a map from satellite imagery for cartographic information.
- Developed, tested, and maintained C/C++ code for machine learning app.
- Modified source code for Improvements in runtime performance, memory usage, and removal leaks.
- Ported source code from SunOS/Unix SPARC engineering workstation to Linux on a PC.
- Coordinate research efforts with other researchers and report to the professor.

Education

- Mississippi State University, Starkville, MS Bachelor's of Computer Science
- Nova Southeastern University, Ft. Lauderdale, FL Master's of Computer Science (incomplete)

Links

- LinkedIn: <https://www.linkedin.com/in/wfgilreath/>
- GitHub: <https://github.com/wgilreath>
- Home Site: <https://wfgilreath.xyz>
- Book Site: <https://www.caamp.info>

Skills/Tools

Database Systems/Languages	Data Standards
<ul style="list-style-type: none"> • Informix • MySQL • Oracle • Sybase • SQL/PL-SQL/T-SQL 	<ul style="list-style-type: none"> • JSON • JSONL • OpenAPI • RESTful API • SOAP • XML

Machine Learning Frameworks/Toolkits	
<ul style="list-style-type: none"> • Nltk - natural language toolkit • Numpy - scientific computing framework • Pandas - data analysis framework • Pillow - Python imaging framework 	<ul style="list-style-type: none"> • PyTesseract - optical character recognition toolkit • PyTorch -- deep learning, tensors, neural nets • Transformers - pre-trained ML models for text, vision, audio

Recent Programming Languages	Other Programming Languages	
<ul style="list-style-type: none"> • bash (shell scripting) • C • Java • Python • Rust 	<ul style="list-style-type: none"> • C# • C++ • FORTRAN • Golang • LISP 	<ul style="list-style-type: none"> • Pascal • Prolog • Kotlin • Pascal • Prolog • Ruby

Operating Systems	Virtualization Tools
<ul style="list-style-type: none"> • Windows 10/11 • Linux (q4os, LUbuntu, Ubuntu, Debian) • MacOS/Darwin 	<ul style="list-style-type: none"> • QEMU • Virtual Box • VMware Fusion

Source Control Tools	Other Technologies/Tools
<ul style="list-style-type: none"> • ClearCase • CVS • Git/GitHub • Perforce • SVN (Subversion) 	<ul style="list-style-type: none"> • Apache Web Server/Tomcat • Confluence • Docker/Containers • HTML/CSS • HTTP protocol • JIRA • Python FastAPI and Flask RESTful framework • Python Selenium Web Driver/Automation • Tibco Middleware Framework/Server

Publications

- "Smart Shell: Bash PaLM Shell Accessing the Google Pathways LLM from a Bash Script," *Linux Message*, Issue 282, May 2024.
- "Zinger: Have a Bash with the Zing network utility," *Admin Magazine*, Issue 77, October 2023. <https://www.admin-magazine.com/Archive/2023/77/Have-a-Bash-with-the-Zing-network-utility/>
- "Zing Me: Introducing the Zing zero-packet network utility," *Linux Magazine*, Issue 265, December 2022. <https://www.linux-magazine.com/Issues/2022/265/Zing>
- "Adding Range Type to Java," Java Code Geeks, July 2020. <https://www.javacodegeeks.com/adding-range-type-in-java.html>
- "ZeptoN is Putting Program into Java," Java Code Geeks, March 2020. <https://www.javacodegeeks.com/zepton-is-putting-program-into-java.html>
- "The Problem with Creating Generic Arrays," Java Code Geeks, October 2019. <https://www.javacodegeeks.com/the-problem-with-creating-generic-arrays.html>
- "The Two Couriers Problem A Problem of Division by Zero in Transmathematics," *Transmathematica Journal*, June 2019. <https://transmathematica.org/index.php/journal/article/view/7>
- "Instruction Set Completeness Theorem: Concept, Relevance, Proof, and Example for Processor Architecture," *General Science Journal*, March 2017. <https://www.gsjournal.net/Science-Journals/Research+Papers-Miscellaneous/Download/6855>

Books

- Gilreath, William F., and Laplante Philip A. Computer Architecture: A Minimalist Perspective. Springer-Verlag/Kluwer, New York, New York, 2003. <https://www.caamp.info/>
- Gilreath, William F. Non-Negative in Value Absolute in Function—the Cogent Value Function, Lambert Academic Publishing, Republic of Moldova, Chisinau-2068, str. A. Russo 15, of.61, 2018.
- Gilreath, William. WEJAC: Will's Elided Java Api Compiler UserBook, Smashwords, Inc., Pacific Grove, California, 2019. ISBN: 9780463593578. <https://www.smashwords.com/books/view/948750>.
- Gilreath, William. Interview with the Autist: Neurodivergent Accommodation Concepts and Experiences, Lulu Press, Inc. Research Triangle Park, North Carolina, USA, 2022. Smashwords, Inc. <https://www.smashwords.com/books/view/1139587>
- Gilreath, William. Computer Architecture: A Minimalist Perspective Exercise Solutions Manual, Lulu Press, Inc. Research Triangle Park, North Carolina, USA, 2022.