Jennings Leavitt

726 N Valley View Dr
St. George, UT, 84770

(435)-414-1164
jennings.leavitt@gmail.com

BACKEND SOFTWARE DEVELOPMENT ENGINEER

5+ YEARS PROFESSIONAL EXPERIENCE

RELEVANT SKILLS

- **Languages:** Go, C++, C, Python, Java
- **Tools/Frameworks:** gRPC/Protocol Buffers, Docker, Kubernetes, GCP, Github, GitLab, SQLite, CI/CD, CI pipelines, Linux/Unix OS, Shell: Bash & Zsh including scripting
- **Coding Standards:** REST api's, Unit & Integration Testing, Code Reviews, Design Patterns, microservices
- **Databases:** PostgreSQL, MongoDB, SQLite
  - Introductory experience with Hadoop, CassandraDB, DynamoDB, Apache Spark, CouchDB, and Redis

CAREER

TCN, Inc., St. George, UT - *Software Engineer II - Backend*

MAY 2021 - AUGUST 2022

Company focus: Cloud-based services for call centers.

- Active collaborator in an agile-style front & back end team.
- I wrote Go & Python REST APIs as part of a new—complex, web-based, workforce management—product for call centers. As needed by the APIs, I also wrote numerous effective PostgreSQL queries to create, select, update, and delete data from a large number of tables in our database.
  - This product uses historical call load data as one of a number of inputs to several algorithms, including machine learning, to predict future call loads and then create schedules to handle those call loads—including scheduling agents with corresponding skill sets to successfully field the predicted call load.
- Stack and Procedures:
  - Go, Python, gRPC, PostgreSQL, Docker, Kubernetes, GCP, REST api's, Unit & Integration testing, GitLab - VCS, CI/CD - bi-monthly releases, CI - pipelines, Hexagonal Architecture, Code Reviews - Peers and Code Owners, microservices

BYU – Configurable Computing Lab (*Graduate Research*), Provo, UT

Back End Software Engineer *(Embedded Systems)*

MAY 2017 - APRIL 2021

- ➔ Refactored a “Macgyvered” repository, improving one of the tools most widely used by the academic and industrial communities for data collection during radiation testing, making it more flexible, modular, extensible, and maintainable.
    - ◆ Solo project which I refactored, set up and passed regression testing, used successfully, and continues to be used in radiation testing.
    - ◆ Extensive use of design patterns
    - ◆ OOP
    - ◆ Interfacing with linux kernel drivers
    - ◆ Overall linux knowledge
    - ◆ Regression testing
    - ◆ Strong refactoring experience
    - ◆ C++
- ➔ Pioneered a new method of device monitoring for radiation testing by creating new tools that use the onboard CPU of a Xilinx Zynq Ultrascale+ MPSoC (Multi-Processor System on a Chip) to monitor itself as the device under test (DUT), removing the need for a secondary monitoring device entirely!
    - ◆ To create these tools I integrated:
        - Custom firmware, Linux kernel drivers, and Linux applications
            - I also automated the initialization of the application on boot, logging radiation effects, and configuring a watchdog timer (WDT) based system reset of the device(s) for when radiation effects had produced an unrecoverable state on the board.
    - ◆ Skills:
        - Extensive experience with linux: Building embedded linux kernels, embedded kernel drivers, and embedded applications
        - Expertise in learning from complex technical documentation
        - Experience with real-time operating systems (RTOS)
        - C++ & C
        - Familiar with brick walls and have a thick skull to keep smashing!

Jiffy Lube, Orem, UT- *Assistant Manager*

JANUARY 2014 - MAY 2017

- ➔ I helped lead our store’s team to its goal of hitting $1M in net sales in a single year!

EDUCATION

Brigham Young University, Provo, UT

B.S. in Computer Engineering, Computer Science & Mathematics Minors

JANUARY 2014 - DECEMBER 2018

RELEVANT CLASSES:

- ➔ **Tools of Machine Learning:** I coded from scratch algorithms like K-Nearest-Neighbor, Backpropagation, Decision Tree Learning, and others, and then trained the models using actual data which I randomized and then split into the train, validation, and test sets. I also worked on an open-ended team project where our chosen experiment was to see if we train a model to rate a cookie recipe based on the quantity and type of ingredients, using existing ratings of the recipes as the correct output. As an extra challenge, we reversed the process and had the trained model create its own “best” cookie recipe. In the end, the model was highly accurate in rating recipes accurately, though not so good at generating a tasty recipe.

- Machine Learning, Algorithms, Python, Tensorflow
- Repository link below:

https://github.com/TimWhiting/CreatePerfectRecipe

- **Software Design and Testing:** Collaborated in a team project where we designed an android app based on the board game "Ticket to ride."
  - Software Design, UML, XML, Design Patterns, UI, FE/Client(s), BE/Server, J Unit Testing, MongoDB, SQLite, Java
  - Proof of skills can be found in the team repository:

https://github.com/gaskint/CS_340/

Brigham Young University, Provo, UT- *Graduate studies in Electrical and Computer Engineering*

JANUARY 2018 - APRIL 2021

RELEVANT CLASSES:

- **Self-Driving Cars:** My team and I implemented lane-following, object avoidance, Indoor positioning system (IPS) path-following, and basic traffic rules like stop signs and traffic lights.
  - System level programming, Multithreading, Task Scheduling, Multithreaded Communication (Queues in this case), Image processing, State Machines — all in Python
  - Repository link below:

https://github.com/hgsphere/selfdrive

- **Hardware/FPGA Verification:** I ran exhaustive automated testing on the L3 16-bit processor with a simple one-line command to verify that all the processor's design was correct!
  - Testing frameworks, Assertions, and Test Automation
- **High-Level-Synthesis:** I competed with classmates to get the most efficient and/or fastest designs of common computations like matrix multiply or sorting functions to convert from software to hardware.
  - Algorithms, Optimization, Virtual and Physical memory models
- **Advanced Computer Networking:** During this class I worked on two team projects to analyze data retrieved from BYU's DNS servers. Ultimately we discovered, and proved, that we could prevent a device from receiving a DHCP lease by assigning multiple identical hostnames.
  - Network protocols, Network security, Collaboration
- **Advanced Wireless Networking:** For a project, my partner and I hacked several different personal android devices via bluetooth.
  - IEEE Protocols and Security for WiFi, IoT, BL, ZigBee, etc.

PUBLICATIONS

Anderson, Jordan & Leavitt, Jennings & Wirthlin, Michael. (2018). Neutron Radiation Beam Results for the Xilinx UltraScale+ MPSoC. 1-7. 10.1109/NSREC.2018.8584297.