CHELSEA JAGGI

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Employment:

Cisco Meraki, SF, CA (Senior Software Engineer) **March 2021 - Present**

- Implemented a monitoring class that captured IOS-XE logs, correctly modelling the underlying state of the architecture based on partial information, then propogating it via Protobuf to the UI
- Facilitated cross-team collaboration between four or more teams, allowing a feature to be executed that required a portion of the implementation on multiple different platforms
- Managed a number of high-priority bugs on a week-to-week basis, selecting and resolving new tasks over rolling sprints

Riverbed Technology, SF, CA (Software Engineer) **October 2016 - February 2021**

- Added both virtual and hardware interfaces to the abstraction layer for capturing network traffic, allowing traffic capture on AWS (virtual) and 40/100Gbit fiber (hardware) interfaces
- Fine tuned several API functions, letting us export over several hundred time ranges at once instead of opening a socket for each, turning an operation which took minutes into seconds
- Created hardware-specific profiles that forced certain processes on to certain CPUs in a multi-CPU system, ensuring the capture card was directly tied to the CPU
- Added forced compiler checks that ensure success/fail return values are being consumed
- Repackaged neccesary open-source software for our custom Redhat-based distribution
- Cleared a considerable amount of legacy code that required explicitly initializing/deinitializing objects, letting the constructor do the work
- Participated in regular code review and improvement, as well as triaging and reprioritizing bugs, assigning and updating estimates

Elk Products, Hickory, NC (Software Engineering Intern) **May 2013 - October 2016**

- Rewrote several server softwares from the ground up to be streamlined, greatly reducing latency and significantly reducing memory and CPU footprint
- Developed a custom distributed server for devices connecting via a custom protocol
- Designed an open-source C++11 API and library to abstract away a legacy protocol
- Wrapped the above API using SWIG, for automated use in Android, iOS, Windows
- Designed a hardware-independent embedded firmware in C++11

Skills:

General Programming

- Expert knowledge of **C++17, Python, C#** and **Java**
- Experienced in **C99, Perl, PHP, Visual Basic, JavaScript,** and **NodeJS**
- Experienced in **Android development**, and creating **cross-platform libraries** with **SWIG**
- Very experienced in creating **networked applications**, including **distributed servers** and clients
- Some experience in writing **compilers and interpreters** for custom languages
- Experience developing with **Microsoft Visual Studio, Eclipse IDEs**
- Use of **debugging utilities** (valgrind, GDB, GDB Embedded)
- In-depth experience with **Git** and **SVN** version control systems
- Prior use of **profiling tools** to optimize hot-paths in expensive applications
- Experience in **threaded applications** and resolving **parallelism issues**
- Comfortable developing on/for **Windows, Linux, Android** and other platforms

Embedded Systems

- Experienced in programming **high-level, hardware independent code** for **embedded systems**
- AVR/ARM Microcontrollers: **ATMega** and **ATTiny series**, and several **Freescale** processors
- Resolving issues in provided µOS to support **high level C++11 firmware**

Machine Learning

- Experienced in several **machine learning** toolkits, expecially python-nolearn and AML
- Some experience using **GloVe word embeddings** for **Natural Language Analysis**
- Experience with **facial recognition** correlation to match users to faces

3D/CAD development

- Strong experience in software-side **Blender**, facilitating development of several plugins
- Experienced in manipulating 3D data both through an interface and **raw data manipulation**
- Moderate experience in **Unity**, allowing for editor-side scripts to allow **runtime-generated geometry** and unusual data-packing, as well as consistent application of lighting settings

Projects:

Virtual Reality (cats-blender-plugin, OpenVR-AdvancedSettings, dolphin-vr, and more)

- Developed an open-source method for instantly producing optimized variants of any avatar by utilizing Blender's own internal rendering engine and a number of data manipulations, bringing production-quality models to the Oculus Quest/Android in a single step (Github: cats-blender-plugin, 'CATS Bake')
- Allowed for instant generation of 'twist bones', animation helper bones that prevent models from distorting when twisting
- Implemented a method for producing 30+ face-tracking shape keys instantly from traditional visemes, by detecting the upper/lower lips using a heuristic, then manipulating the existing transforms in different directions (VRCFaceTracking-blender-plugin)
- Helping develop open source API-level methods for VR locomotion, including vestibular motion and redirected walking (on the Steam store: OVR Advanced Settings)
- Managing the crossplatform work neccesary to run Dolphin VR (Gamecube emulator) on Linux, and assisting with the new official support via OSVR
- Development of interfaces for Virtual Reality technology (Vuzix VR920, Wii, Oculus Rift DK1/DK2)

Machine Learning (morewell, face_recognition)

- Implemented a natural-language learning bot for a chat program which attempts to detect inflammatory messages via a neural network, forwarding them to an administrator chat
- Sourced the above implementation to create a bot for a chat program that signs in as me, automatically learning what messages I'd be most interested in and notifying me when they are posted
- Created a facial recognition command-line script that infers which face belongs to which user in a chatroom, automatically exporting VCARD contacts that can then be imported into a phone

Open Source Community (meshlab, geometric-weather, todoagenda, KISS)

- Improved the scriptability of MeshLab, allowing for fully automatic point cloud generation/meshing/texturing of 3d scans from video sources
- Ongoing development of VR software for Linux, including VRUI, OSVR, and numerous others
- Active Github user, with numerous contributions to a number of well-known open source projects (android apps, blender plugins, desktop applications, and more)
- Resolving bugs tracked in GitHub's issue tracker, creating and merging pull requests, and resolving potential issues with PRs via realtime feedback
- Helped juggle feedback and issues from a large userbase to resolve ongoing pain points in the application

3D Printing

- Developing a number of parametric 3D models using OpenSCAD, as well as more traditionally designed models in Blender
- Worked with the embedded C firmware code loaded onto the printer motherboard

Misc Projects (Chordinated Keyboard)

- Created and published an Android app for WearOS (on the Play Store: Chordinated Keyboard), which uses a huffman-coded chorded keyboard to allow you to touch-type with muscle memory on only four keys
- Created a calendar bot which scrapes several calendars, formatting them and displaying in a chatroom to encourage San Francisco locals to come to events
- Created a bot which signs in as me on a chat program, automatically detecting when someone posts my name or a picture of my face
- Hosting and managing several small communities, including coordinating regular meetups at different venues

Education:

University of Texas at Dallas, Richardson, TX — **August 2013 - May 2016**

Bachelor of Science in Computer Science

Collin College, Plano, TX — **August 2011 - May 2013**

Associates of Sciences