Jacob Lopez

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EDUCATION

University of California, Berkeley — Berkeley, CA
Bachelor of Arts in Computer Science — *Aug. 2015 – May 2019*

- **Relevant Course Work**: Machine Learning, Artificial Intelligence, Operating Systems/System Programming, Compilers, Virtual Reality, Computer Security, Efficient Algorithms, Machine Structures, Internet, UNIX, Data Structures

EXPERIENCE

Socket Mobile, Inc — Newark, CA
Software Intern — *Summer 2017 and 2018*

- **Scanner Model Web API**: Developed a website that allows developers using our SDK to pull json data from the Azure database into their scanner applications. Created an Azure database and utilized the C# web api using .NET's MVC framework. Implemented an admin page for database maintenance, authenticated and secure login, account creation, and an sql database of users.
- **Scan Engine Updater**: Developed a tool to install and update scan engine firmware over a serial connection. Implemented and utilized the YModem transfer protocol in C#.
- **Automatic Sharepoint Uploader**: Developed several Powershell and python programs that use Microsoft's Sharepoint web api in order to authenticate and automatically upload new scanner firmware builds.
- **Data Converter**: Implemented a C# helper application that compresses raw json data from a website, re-formats certain entries, and uses Microsoft's Azure C# library to insert the data into an Azure database.
- **Firmware Installers**: Developed several Microsoft Installer applications with WiX and xml to install new firmware builds to internal testing machines.
- **HID Keyboard Table scripts**: Developed a python program to map HID keyboard codes to keys based on different international keyboard layouts.

Cal Band Computer Committee — Berkeley, CA
Computer Assistant — *August 2018 - Present*

- **Members Only Website**: Implemented a page to handle rehearsal excuse requests in python. Automatically approves requests if the member still has their "free" pass. Uses the Django web framework. Currently working on javascript projects.

PROJECTS

- **APYC(A Python Compiler)**: Developed a python 2.7 compiler written in C++ in a team of 3. Python code is lexed/parsed into an abstract syntax tree. This tree is then analyzed for its static semantics, resolving scoping and other rules of the language. The tree is then used to generate c++ code which is compiled into binary.
- **PintOS**: Developed core features of the PintOS operating system in a team of 4 in C. Implemented a clock system to sleep and reawaken threads, synchronization primitives (locks semaphores), a priority scheduler, an MLFQ scheduler, argument passing for user programs, process control syscalls, file operation syscalls, a buffer cache for disk blocks, an extensible file system, and a directory system.

PERSONAL PROJECTS

- **Virtual Reality Drum Simulator**: Developed a virtual reality application in a team of 4 for the Oculus Rift in which a user can practice playing on a drumkit in a virtualized environment. Written in C#/Unity. Implemented features such as teleportation to play different percussion instruments, the ability to record and play back beats or melodies, tactile feedback, etc.
- **Efficient Graphics Engine**: Designed an efficient 2D and 3D polygon/text graphics engine in C++ using OpenGL. Optimized code to render 10000+ textured sprites at 60 frames per second, implemented smooth text rendering and 3D "sandbox" mode.

PROGRAMMING SKILLS

- **Languages**: Python, C, C#, C++, GoLang, Java, javascript, xml, SQL, shell/batch scripting
- **Technologies**: .NET, Microsoft Azure, Django, Unity, Maya, Visual Studio, Linux, Windows, Android, Flex, Bison, VirtualBox/Vagrant, Docker