Arselan Alvi

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EDUCATION

San Jose State University, San Jose, CA

M.S. in Software Engineering, focus in Network Computing **Expected Fall 2021**

- Courses in computer network design, software systems, network programming, virtualization technologies, system software architecture, computer architecture, Android app development, IoT.
- Completed projects in Linux kernel virtualization, Android smartphone apps, full-stack web apps, cloud services.

B.S. in Software Engineering **May 2019**

- Courses in data structures and algorithms, databases, web design, information security, server-side programming, object oriented programming, operating systems.
- Completed projects in gaming development, full-stack social network development, IoT, neural network design.

SKILLS & TECHNOLOGIES

- **Programming**: Java, Python, C ,PHP, Linux.
- **Front-end app design and web frameworks:** HTML, CSS, JS, Java Spring, Python Flask, REST & CURL APIs.
- **Databases:** MySQL, SQL Server, SQLite, DB2.
- **AWS Services:** EC2, RDS, AWS Cluster.
- **Dev Tools:** Android Studio, Eclipse, phpMyAdmin, VS code, Postman.
- **Experience in all aspects of software development life cycle.**
- **Linux kernel, networking stack, operating system fundamentals**.
- **Experience architecting and designing Android mobile apps**.
- **TCP/IP protocols, SMTP, OSI layer, SSL/TLS, Routing protocols, web server optimization techniques**.

RECENT WORK EXPERIENCE

Intel Corp., Santa Clara, CA
Software Engineer Intern – Client Computing Group **Aug 2019**

- Worked in PC business division. Studied analyses for optimizing Google Chromebook, with focus on pipeline allocation and media encoding.
- Analyzed the Linux Kernel module in C programming language to figure out file dependencies in Git.

RECENT PROJECTS

Enterprise Network Development using Raspberry Pi and Squid

- Developed enterprise network using Raspberry Pi devices. Integrated network components such as domain name server, web-proxy/cache, Wi-Fi router, web server, and firewall.
- Configured Raspberry Pi Model 3, as a node in network. Squid as web proxy server application whose functionalities include services for network protocols such as HTTP, FTP, SMTP.

Email Automation Tool

- Developed a python script which automates the procedure of sending emails to multiple clients by establishing a secure SMTP and reading contact data from CSV.
- User can send emails with HTML content, attachments. Tested it using Gmail SMTP server.

System Resource Monitoring using C programming

- Developed monitoring system that monitors hardware and software resources in real time. Presents data that utilizes CPIU, memory, I/O, bandwidth and display data.

Virtualizations using VMX, Linux kernel module, Hypercall

- **Discover VMX Features:** Wrote Linux kernel module that queries SVM features in processor. Determined virtualization features in CPU.

- **Instrumentation via Hypercall:** Modified CPUID emulation and the VMX code in KVM to report back additional information when special CPUID leaf nodes are requested. Returns number of exit for exit number provided.

Employee Management Systems using Java and SQLite
- Developed employee management system Android app for organizing and managing employee records.
- UI allows users can view, add, and delete records. Used SQLite database to store employee records.

Modifying Instruction Behavior in Kernel-based Virtual Machine (KVM)
- Modified processor instruction inside KVM hypervisor. Modified CPUID emulation code in KVM to report additional information when CPUID "leaf function" is called.
- Researched and built/compiled Linux Kernel source code and got the environment setup. Researched about the CPUID emulation code required to modify and load the KVM modules in Kernel.
- Tested by creating test.c file, and by loading new module and verifying output.

FULL STACK WEB PROJECTS

Bundle of Websites: Cross domain Enterprise Marketplace
- Created Cross Domain Enterprise online marketplace, where users can shop at different ecommerce enterprises from single domain. Implemented distributed system with PHP-based server-side backend, and MySQL database queries. Used HTML, CSS, JavaScript as front end.

Aurora (ImageSite) Image-based Social Network
- Developed full stack social networking website where users can post, buy, and sell images. Members receive points when they upload images. Earned points are used as currency to buy images.
- Built frontend using HTML, CSS, Bootstrap. Contributed to backend development with PHP based server side back-end, and MySQL database queries.

Cafe Mocha Coffee Shop Management Site
- Created coffee shop website for managers to track employee data with Single Sign On, CRUD, and search functions using HTML, CSS, JavaScript.
- Project Supervisor for 3-member team. Contributed to backend development and testing using JDBC and MySQL. Developed in Jenkins and Git.

"Foresite" Demand Forecasting using Neural Networks
- Developed website that makes prediction based on data provided using LSTM demand forecasting system. Used system to predict amount of views a website can aggregate on a certain day, given user's data over a period of time.
- Built complete system using Gunicorn, Nginx, Django, SQLite. Designed LSTM with Keras/Theano and Anaconda2 for Python. System works by feeding CSV data from text file to calculate prediction.