KUANG-YU LI

IT Master Student focus on Cloud Computing

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EDUCATION

Universität Stuttgart – Stuttgart, Germany   Oct. 2019 - present
M.S. in Information Technology, German Grading: 1.8 (Gut)
National Chiao Tung University (NCTU) – Hsinchu, Taiwan   Sept. 2009 - Oct. 2015
B.S. in Electrical Engineering and Computer Science, GPA: 3.9/4.3 *M.S. in Electronics Engineering and Electronics*, GPA: 4.27/4.3

EXPERIENCE

IBM – Böblingen, Germany   Apr. 2021 - present
Intern, IBM Systems

· Developing a software as IDE plug-in with remote development capabilities on IBM Z mainframe servers including debugging, static code analysis and unit test integration.

MediaTek, Inc. – Hsinchu, Taiwan   Dec. 2015 - Aug. 2019
Firmware Engineer, Communication System Design

· Developed embedded firmware in MediaTek's Android platform for 4G LTE and 5G NR physical layer (PHY) digital signal processing
· Contributed to 6k and maintained 20k lines of code in C/C++ for 3 large-scale projects (over 200k lines and 1,000 developers) including 2019 world's fastest 5G modem Helio M70 with downlink throughput of 4.7 Gbps
· Designed mobile modem receiver modules, implemented OFDM signal processing algorithms accordant with 3GPP Spec, integrated build and auto testing process for design and system verification with Perl and Python scripts
· Resolved urgent system function and performance issues for over 10 MediaTek's Helio X and P series smartphone products with log examination, signal and procedure analysis, solution formulation and implementation, patch verification and release
· Received 7 MediaTek vAwards (top 10% monthly team performance) including improving 4G downlink data rate by 300% (14→42 Mbps) with Massive MIMO feature and reducing 5G control channel decoding computation cycles by 72% (3700→1000 cycles)

TECHNICAL STRENGTHS

Program	Best at Java; Fluent in C; Familiar with C++, Python, JSP, HTML/CSS, and shell scripts
Tool	Git, GitHub, Perforce, IntelliJ, PyCharm, Apache Tomcat, VirtualBox, Docker
Platform	AWS: EC2, SQS, Google Cloud: Kubernetes Engine, Functions, Pub/Sub, IBM Cloud: Hyper Protect Virtual Server
Database	SQL: DynamoDB; NoSQL: Firebase, Datastore **Web Technology** HTTP, TCP/IP, XML, REST, SOAP, WSDL

PROJECTS

Content-Based Router for Publish-Subscribe Service Java, REST API, HTTP   Distributed System Lab

· Developed a routing controller in a Java module, which provides content-based routing for pub/sub service to minimize network traffic and reduce application filtering effort. The routing algorithm is based on sorting and merging interval of encoded IP-address
· Developed a "Subscriber" Java application which can subscribe to publishing service via REST API and receive UDP from publisher.
· Developed a one-to-many publishing service in Floodlight controller, which can receive subscription via HTTP request (GET, POST, and DELETE) and perform content-based routing in a OpenFlow network.

Dynamic Routing for Software-Defined Network Java, Dijkstra's algorithm   Distributed System Lab

· Developed a Java module in Floodlight controller, which provides 2 dynamic routing modes in OpenFlow network.
· Reactive mode routes with shortest path. Adaptive mode routes TCP flow with load balancing by querying network traffic statistics dynamically and matching IP addresses and TCP ports. The implementation is based on Dijkstra's algorithm.
· Verified application with Iperf in MiniNet on Linux and achieves 6x bandwidth increase (582kbs vs 3478kbs) in adaptive mode

Java Application for Wireless Ad-hoc Network Java, UDP, Raspberry Pi   Mobile Computing

· Developed 4 Java server and client applications which implement 2 protocols: Flooding and Dynamic Source Routing (DSR). Flooding achieves high robustness with UDP messages broadcast. DSR achieves reduced data transfer overhead with route discovery in control messages. Applications use DatagramSocket classes from java.net package for UDP transmission.
· Verified applications on Raspberry Pi with real mesh 802.11 WiFi network.

Android App for City Temperature with Google Firebase Java, Android   Mobile Computing

· Developed an Android application, which can update, subscribe, and calculate daily average of designated city temperature
· Implemented functions for accessing and querying data in JSON in a shared Realtime NoSQL database with Google Firebase API

ATP Tennis Player Network Analysis Python, Graph, NetworkX   Complex Network System

· Developed Python programs to generate complex network and derive structural insights such as Page Rank, Connectivity, Clustering, etc.
· Implemented algorithms with NetworkX package and built an undirected graph by processing real tennis match statics in csv format.
· Discovered, visualized, rendered and exported network topology with open-source software Gephi

Forest Cover Type Prediction – Python   Machine Learning

· Implemented *Decision Tree* and *Support Vector Machine* with *Scikits-Learn* package, evaluated and discussed the performance on forest type classification problem