RAJSIMMAN RAVICHANDIRAN

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PROFILE STATEMENT

Self-motivated Masters graduate with strong research and technical acumen in cloud computing and software development; experienced professional with ability to engineer reliable solutions for production platforms

EDUCATION

Master of Applied Science, University of Toronto (U of T) 2016-2019
Major in Electrical Engineering
Thesis: *Autonomic Management System in SAVI-IoT*

Bachelor of Applied Science, U of T 2009-2014
Major in Electrical Engineering with 1 year Professional Year Experience (PEY)

- Final year GPA: 3.51 on a scale of 4.0, Dean's List

TECHNICAL SKILLS

- **Programming**: Python, C, Shell Scripting, SQL, HTML, JavaScript, CSS
- **Operating Systems**: Linux (Ubuntu, RedHat, Kali) and Windows
- **Applications**: OpenStack, Google App Engine, Docker, Elasticsearch, Kafka, Kibana, Splunk
- **Tools**: Git, Jira, Confluence, NGINX, Matlab, WireShark, BigQuery, Scikit-learn, Keras

RELEVANT ENGINEERING EXPERIENCE

Master of Applied Science Thesis Research, U of T Sept. 2016 - Dec. 2018

- Designed and developed Autonomic Management System (AMS) for OpenStack-managed cloud environment to manage IoT applications hosted on microservices and virtual machines
- Implemented adaptive autoscaling modules for Docker to efficiently manage infrastructure
- Incorporated Software-Defined Networking (SDN) mechanisms for AMS to manage network bandwidth and adhere to service level agreements for applications
- Integrated Hierarchical Temporal Memory machine intelligence-based anomaly detection models to mitigate security attacks on AMS in (near) real-time
- Created crowd monitoring IoT application using WiFi data to showcase protocol flaws
- Published 3 scientific papers in various conferences to present thesis research

Research Assistant, Smart Applications on Virtual Infrastructure (SAVI) May - Dec. 2014

- Actively worked on national cloud testbed (comprised of 7 Canadian universities) that was utilized for research and development of future network protocols and architectures
- Implemented communication drivers between Kafka and Cassandra (Python) for data processing pipeline between streaming components in resource management
- Created email notification functionalities (Python) for management services and inform administrators of any abnormal behaviour in infrastructure
- Installed software and hardware servers for cloud infrastructure management
- Developed automated scripts to monitor health of management services

WORK EXPERIENCE

Backend Developer, FOOi Inc. Feb. 2019 - Aug. 2019

- Developed REST APIs on Django backend (Python) for FinTech application to process transactions and user data interactions securely
- Implemented functionalities to incorporate incentive program for the application
- Created user interface using Vue.js for charities to send tax receipts for donors
- Produced data intelligence reports using Google BigQuery to present application usage
- Methodically resolved MySQL database migration issues during application upgrades

Network Analyst, Bell Canada Jan. 2015 - Sept. 2016

- Developed full stack application using Django backend (Python) to manage virtual resources
- Created web application using Tornado backend (Python) to troubleshoot network issues
- Designed software for analytics teams to query customer data usage information
- Built automated scripts using Scapy (Python) to analyze network data for management
- Produced customer intelligence reports using Splunk to provide interesting insights on usage

PROJECTS

Team Lead, User Behaviour Analysis using OSSEC on Cloud, U of T Sept. - Dec. 2016

- Analyzed user behaviours to profile users based on input shell commands on virtual machines for OSSEC Host-based Intrusion Detection System (HIDS)
- Utilized Naive Bayes supervised machine learning model to accurately classify multiple users
- Trained learning model using open-source UNIX public dataset
- Achieved 69% accuracy without any hyper-parameter tuning or advanced training
- Implemented prototype on SAVI Testbed and released source code for community use

PUBLICATIONS

Rajsimman Ravichandiran, Hadi Bannazadeh, Alberto Leon-Garcia, "eDoS Mitigation for Autonomic Management on Multi-Tier IoT", *14th International Conference on Network and Service Management (CNSM 2018)*, Nov. 2018

Rajsimman Ravichandiran, Hadi Bannazadeh, Alberto Leon-Garcia, "Anomaly Detection using Resource Behaviour Analysis for Autoscaling systems", *2018 IEEE Conference on Network Softwarization (NetSoft 2018)*, June 2018

Hamzeh Khazaei, **Rajsimman Ravichandiran**, Byungchul Park, Hadi Bannazadeh, Ali Tizghadam, Alberto Leon-Garcia, "Elascale: autoscaling and monitoring as a service", *27th Annual International Conference on Computer Science and Software Engineering (CASCON 2017)*, Nov. 2017

Jieyu Lin, **Rajsimman Ravichandiran**, Hadi Bannazadeh, Alberto Leon-Garcia, "Monitoring and Measurement in Software-Defined Infrastructure", *Integrated Network Management (IM 2015) IFIP/IEEE International Symposium*, May 2015

INTERESTS

Playing chess and team sports including Flag-Football and Basketball; Raspberry Pi projects

References Available Upon Request