Renlord Yang

https://renlord.com

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Interest: Site Reliability Engineering, Cloud Platforms, Distributed Systems, System Security

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EDUCATION

- **University of Melbourne** Melbourne, VIC, AU
  Doctor of Philosophy in Software Engineering *Mar 2017 — June 2021 (Expected)*

- **University of Melbourne** Melbourne, VIC, AU
  Master of Science in Computer Science w. Distinction *July. 2014 — Dec. 2016*

- **ETH Zurich** Zurich, CH
  Master of Science (Exchange Program) *Sep. 2015 — Mar. 2016*

- **University of Melbourne** Melbourne, VIC, AU
  Bachelor of Science in Computer Science *Mar. 2011 — July. 2014*

EXPERIENCE

- **University of Melbourne** Melbourne, VIC, AU
  Teaching Assistant *Mar. 2015 – Dec 2020*
  - **SWEN90006 Software Testing**: Ran tutorials teaching software testing topics that involve test partitioning, fuzzing and ways to model and measure software reliability.
  - **COMP30023 Computer Systems**: Ran tutorials and workshops teaching elementary OS and network topics. As part of the 2017 curriculum, I've designed an assignment that required students to implement a trivial proof-of-work mining program that works like a Bitcoin stratum server. Also appointed head tutor for Semester 1, 2020. Authored automating testing using docker, docker-compose and bash scripts. This enabled students to gain instant feedback using CI pipelines when pushing their code submission.
  - **COMP90043 Cryptography and Security**: Ran tutorials on elementary cryptography covering topics such as public key cryptography, introducing RSA, Elgamal encryption and digital signature schemes. As part of the 2015 curriculum, I've also designed assignments for the course coordinator that involved implementing the feistel cipher for DES.
  - **COMP90007 Internet Technologies**: Ran tutorials that introduced the basics of computer networks to students through a study of layered models of computer networks and applications.
  - <u>**Tools and Programming Languages Used**</u>: Bash, Docker, Openstack, C, Java, Python, GitlabCI

- **Medipass** Melbourne, VIC, AU
  Software Engineer *Jan 2017 – Dec 2018*
  - **Transaction Risk Analysis Engine**: Solo-built and maintained a rule-based transaction risk analysis engine. The backend implementation utilized a combination of javascript and mongodb aggregation pipelines to identify statistical anomalies in incoming transactions. Transactions were analyzed in real-time in the order of milliseconds and risk scores computed using a set of rules. This enabled our downstream clients to view transaction risk factors and to apply their own custom risk assessments
  - **Outbound Email Service**: Email security was taken seriously. To prevent our customers and clients from being victims of phishing emails, we implemented strict DMARC rules and properly setup SPF and DKIM on our self-hosted email servers. Based on DMARC statistics collected, email providers have reported thwarted phishing attempts by malicious adversaries.
  - **Inhouse Analytics**: Set up and maintained an self-hosted inhouse analytics server — Metabase for business analytics. Enabled our inhouse business team to identity popular usage scenarios and anonymized transactional patterns by our users.
  - **Devops Practice**: Setup and maintained the blue/green development environment and prototyped deployment strategies for production. Not only was this setup for the transaction risk analysis engine, this was further extended to other products owned by other team members. Achieved high development throughput and seamless A/B deployment with no downtime.

- ○ **Tools and Programming Languages Used**: Bash, Docker, Terraform, Consul, AWS, MongoDB, PostgreSQL, Metabase, Node.js, Javascript, Python, OpenDKIM, OpenDMARC, OpenSMTPD
- **Odecee/Cognizant Australia**   Melbourne, VIC, AU
  Associate Software Engineer   *Jan 2016 — Dec 2016*
  - ○ **Workflow Improvement**: Large scale projects were common in ANZ bank and integration tests can take hours to run when done serially. I've implemented a parallel integration testing strategy that spins up multiple development environments to run integration tests for each CI pipeline job that reduced CI runtime significantly.
  - ○ **Dev Environment**: Helped maintained and prototyped new deployment strategies for development environment. Also assisted other software engineers to setup their CI pipeline and CI workflow.
  - ○ **CI Maintenance**: Helped setup and maintained project-specific CI infrastructure. Responsibilities include maintaining a self-hosted, internal network-isolated docker registry and a web proxy that has direct access to the internet.
  - ○ **AWS Deployment Setup**: Helped with setting up a novel deployment strategy for a complicated in-house web stack on AWS using cloudformation.
  - ○ **Tools and Programming Languages Used**: AWS, Python, Bash, Java, BambooCI, JIRA

Projects

- **Home Cloud**: `https://github.com/renlord/homecloud`   I run many self-hosted services such as Nextcloud, bitcoind, lightningd and etc. in my home cluster using docker swarm and version-controlled infrastructure as code.
- **Katmail**: `https://github.com/katmail-xyz/mail.katmail.xyz`   Self-hosted email service with strict and state of the art IETF spec-compliant security setup. Supports opportunitistic DANE, MTA-STS, good TLS cipher suits only (i.e. no CBC-based cipher suites and weak ciphers), only accepts TLS1.2+. Checkout my mail server at the `internet.nl` email server hall of fame.
- **Biternet**: `https://github.com/renlord/biternet`   A university project I did that involved implementing a system that allows users to pay for each byte of net traffic they used using bitcoin non-duplex micropayment channels

Open Source

- **Graphene OS**: Regular contributor at GrapheneOS. The OS is a privacy and security focused mobile OS with Android app compatibility developed as a non-profit open source project.

Honour and Awards

- **Google PhD Travel Scholarship**   2019
  IEEE European Symposium on Security and Privacy   *Stockholm, Sweden*

- **Pearson William Tewksbury Scholarship**   2019
  IEEE European Symposium on Security and Privacy   *Stockholm, Sweden*

- **Australian Government Research Training Program Scholarship**   2017
  PhD Merit Scholarship   *Melbourne, Australia*

- **Data61 PhD Scholarship**   2017
  Top-up PhD Merit Scholarship   *Melbourne, Australia*

- **Endeavour ISEP Scholarship**   2015
  ETH Zurich Exchange Semester   *Zurich, Switzerland*

- **First Place Award**   2014
  Unihack   *Melbourne, Australia*

Programming-Specific Skills

- **Programming Languages**: C, C++, Rust, Python, Javascript, Go, Java, Kotlin, Bash

- **Perftools**: BPF Compiler Collection, perf, strace, systemtap, lttng

- **Operating Systems**: Linux, Android, MacOS

- **Cloud Orchestration, Devops Tools**: Docker, buildah, podman, Docker Swarm, Kubernetes, Rancher, Terraform, Vagrant, Ansible, Openstack, AWS, GCP

- **Devtools**: Git, Subversion, GNU Binutils