

Rabimba **Karanjai**

OPEN SOURCE DEVELOPER / DEVOPS ·

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Graduated from Rice University and past Research Assistant at Mozilla Research Mixed Reality team. Have worked on the field of application security, blockchain, biometrics and JavaScript parallelization as part of research and IBM Research.

Education

Rice University

Houston, Texas, U.S.

MASTERS THESIS IN COMPUTER SCIENCE

Jan. 2015 - Aug. 2018

- **Fellowships:** Recipient of Graduate Tuition Fellowship, Recipient of Mozilla Research Fellowship
- **Courses Taken:** **Advanced Computer Networks**, Bioinformatics: Sequence analysis, Computer architecture, Computer Networks, Compiler Construction, **Introduction to Computer Security** (Also TA), Discrete Structures, **Language based Security**, **Information Security**

Relevant Experience

- **Python:** Twimintel backend involving data modelling pipeline, Data pipeline of Pliny project and Askbayou for ingesting and source code synthesis - also utilizes pyspark, Rice University Data Science Bootcamp modules designing as a TA, Mozilla Winter of Security - MozDef first prototype, DeepQA semantic relation extraction pipeline with IBM TJ Watson Research Center
- **Core Competency:** Compiler Construction (C++), Advanced Networks (C++), Building rule engine for MozDef (C++, Go).
- **JavaScript:** Most of my projects with Mozilla, Web Mixed Reality projects, Masters thesis on optimization, Large scale data visualization with IBM Watson and Omniscl.
- **Data Science Experience:** Analyzing and Visualizing Massive Scale data (OmniSci), Building topic models using Berta and Roberta (Twimintel), Implementation of System for synthesizing Java API idioms, powered by Neural Sketch Learning (AskBayou)
- **DevOps Experience:** Handling and building pipeline for ingesting and analyzing massive scale code analysis in EC2 used in Pliny and Askbayou, worked on docker, ELK stack, Kubernetes.

Talk, Workshops and Code Contributions

- **Talks on WebXR/VR/aframe:** Developer-Week DWX (Upcoming), Seleniumconf 2020 (Upcoming), FOSDEM 2020, GUnify 2019, Hackference India, All Things Open, Gracehopper 2018, ACM Tapia 2018, O'Reilly OSCON 2018, SVR 2017, Open Networking Summit, GraphicalWeb 2016, Mozfest 2016, Openlot 2016, JSFoo 15, HongKong OpenSource, Open Source Bridge
- **Talks on IoT and Security:** Linuxcon China, LibrePlanet, Embedded Linux Conference, Open Source Bridge 16 **Google Developer Expert** in Web Technologies and **Mozilla TechSpeaker**
- Open Leader in Mozilla Open Leaders and also a Expert in 2018 and 2020 cohort.
- **Codes, Documentation and Workshop** materials are available at github: <https://github.com/rabimba> and Mozillian Profile: <https://mozillians.org/en-US/u/rabimba/>

Work Experience

AI/ML Lead

Twimbit

TWIMINTEL

May 2020 - Present

- Architect of twimintel. Developing data modelling pipeline and leading the development.

Research Assistant - Intern

Mozilla Corporation

MOZILLA RESEARCH

August 2017 - Jan. 2018

- *Investigating parallelism and performance for Web Virtual Reality and WebGL, focusing first on three.js improvements*
- Investigating performance optimization of resource heavy computation using WebAssembly in VR
- Parallelizing Object Loading into Threejs and texture rendering in a nonblocking way in GPU

Summer Research Intern

IBM Research - Almaden, U.S.

IBM ALMADEN RESEARCH CENTER

May 2017 - Aug. 2017

- *Development of multi-factor authentication with biometric features and blockchain:*
 1. Hyper ledger fabric identity specifications in blockchain
 2. Novel approach to Android multi party fingerprint authentication , iris recognition utilizing cancellable biometrics
 3. Way to extract fingerprint template and features using commodity mobile device

Summer Research Intern

IBM Research - Almaden, U.S.

IBM ALMADEN RESEARCH CENTER

May 2015 - Aug. 2015

- *Development of Tamper Evident Mobile Application Solution:*
 1. Working on provably verifying if an application has been tampered with or not in a mobile application.
 2. Implementation of Tamper Evident data structure and logging, ARM TrustZone and blockchain.
 3. System assumption: The Mobile OS is untrusted and can be rooted or jailbroken and the user can be an adversary

Summer Research Intern

IBM Research - TJ Watson, U.S.

IBM T. J. WATSON RESEARCH LAB

May 2014 - Nov. 2014

- *Embedding Cognitive computing and NLP as solutions to real-world Watson problems:*
 1. Creating document parsing system using OCR, Utilizing DeepQA pipeline, training datasets and optimizing
 2. Making system and optimizing algorithm and to handle very large datasets and making front end and visualization libraries
 3. Train and create the Natural Language Processing and evidence scoring systems efficient for self-learning for specific need

Programmer Analyst

Cognizant Technology Solutions

ORACLE SOLUTION PRACTICE AND INNOVATION LABS, COGNIZANT TECHNOLOGY SOLUTIONS

Dec. 2010 - Jul. 2013

- *Virgin Atlantic Airways Ltd. Test Suit Design, Automation Test Suite Design*, Project Estimate (Excel, Java+Selenium, QTP, Word)
- *Cognizant Technology Solutions (GTO – R&D Advanced Web and OSP):* Real-time collaborative communication module inception and development and Customizing and developing on Mantis,Testlink and JIRA APIs based on needs

Academic Research

- *Working on AskBayou:* Building de-duplicated code corpora from github to use in Neural Sketch Learning for Conditional Program Generation. Deployed in Bayou. Analysis of massively scaled github code corpus.
- *Optimizing Web Virtual Reality (MS Thesis) (Work in Progress Presentation, Web3D 2017):* Exploit task parallelization in context of JavaScript and WebGL to **improve performance** of Web Virtual Reality, Augmented Reality and Mixed Reality applications in mobile and web.
- *Security Implications in AR MMOG games like PokemonGo:* Take PokemonGo as an example and delve into reverse engineering, how application securities can be broken and showing how AR based games can be cheated and how that influences game makers and black-market economy of game account trading
- Coming up with a statistical machine learning model to identify compromised but successful logins from historical ssh logs to flag anomalous behavior of compromised user

Involvements, Awards & Open-Source Contributions

CONTRIBUTIONS

- Google Developer Expert in Web Technology ([WebXR](#)) and Mozilla TechSpeaker
- Mozilla Winter Of Security project "Fraud Detection" – Mozilla MIG
- Developing self-learning word prediction system for Firefox OS supporting native Indic scripts - Mozilla.
- Designed SecurityPi. A IoT framework for securing Raspberry Pi
- Facilitates Rice Ken Kennedy Data Science Bootcamp

COMPETITIONS

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| 2018 | Winner , HackHouston : Browser Extension to fact check social media posts using Machine Learning | <i>Texas Southern University</i> |
| 2018 | Winner , Hackrice 7.5 : Browser Extension to filter toxic posts using sentiment analysis | <i>Rice University</i> |
| 2017 | Featured , NoConnect : Equal Rating Innovation Challenge | <i>Mozilla</i> |
| 2017 | Winner , Codered 2017 , University Of Houston | <i>UofH</i> |
| 2017 | Winner , Hackrice 7: Best Hack for Disaster Response Using Social Media Data | <i>Rice University</i> |
| 2017 | Winner , NoConnect : Equal Rating Innovation Challenge | <i>Mozilla</i> |
| 2017 | Runners Up , IBM Bluehack. Blockchain Category | <i>IBM Research</i> |
| 2015 | Runners Up , IBM Research HackChain. Block Chain Hackathon | <i>IBM Research</i> |
| 2014 | Winner , <i>Mastery Of Computer Science</i> , HackRICE Hackathon | <i>Rice University</i> |
| 2013 | Innovator , Young Visionary Awarded | <i>Cognizant Technology Solutions</i> |

PATENTS

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| 2019 | US 16/372,593 , Mobile Multi-Party Digitally Signed Documents and Techniques for Using These Allowing Detection of Tamper | <i>IBM Research</i> |
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