Nicolas El Haddad

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EDUCATION

MS in Computer Science — 2016 — Present

American University of Beirut

BS in Computer Science — 2012 — 2016

American University of Beirut

WORK EXPERIENCE

Institute for War & Peace Reporting — July 2014 — Jan 2015

Digital Security Officer/Software Developer

Description of Services/Scope of Work:

- Coordinating and contributing to the development of digital security applications
- Keeping up to date with international developments in the field of digital security
- Monitoring of current developments related to digital security in the Arab world
- Preparing of training material on digital security
- Training journalists and activists on the subject of digital security
- Writing of digital security related articles in English or Arabic
- Supplying advice to journalists and activists in the field of digital security
- Managing and operating secure web services
- Installing, maintaining and operating server applications
- Analyzing digital threats (virus attacks, hacks, etc) and testing apps
- Research on Digital Security

Interactivelife — August 2015 — Jan 2017

Senior Full-Stack Software Engineer

I worked on the android platform side, building a highly customizable SDK that enables the build of various different applications with no time, coupled with automated scripts that creates/updates/builds all the different apps. Complex apps can extend behavior and customize the UI by attaching plugins or extending SDK modules. Customizations are registered in the SDK using dependency-injection, annotation processing and the builtin Manifest Merger.

The SDK provides generic implementations for chat, live-streaming, billing, triggering, push-notifications, server communication and generic UI animations. We were able to serve 30+ apps with our generic platform.

I also participated in the design and development of a dynamic system that manages and auto-generates database schemas, UI for matching forms for the mobile apps, and code for validity tests and consistency checks on the data as it gets stored in the database or migrates between different components.

I helped maintain, configure, deploy, and scale the servers providing services and API. During these tasks I had to deal with letsencrypt, NFS , Amazon EC2, load balancers, wrk, wowza streaming engine, git bare, openfire, postgreSQL.

I met with clients to discuss business ideas and requirements and worked closely with management to provide insight on development decisions that fit the client requirements best. I transformed business ideas and requirements into viable code while integrating work between different local and remote members of the team. I also helped interview and recruit developers into to the company. During my work, I was assigned the position mobile development team manager, and was tasked to lead that team.

American University of Beirut — January 2017 — Present

Research Assistant

I worked with Professor George Turkiyyah on High Performance Surgical Simulation. This project was in collaboration with faculty members from North Carolina University at Chapel Hill and Qatar Robotic Surgery Center.

Surgical simulation are an extremely challenging types of simulations. They require high performance and absolute robustness. Surgical simulators must be realistic and consistent both geometrically and mechanically. A single error regardless of its location and time may result in an incorrect and visually distracting simulation.

The long term aim of the project is to simulate surgical operations on bodily organs modeled as 3D tetrahedral meshes. This can be used for either procedure rehearsal or training. I worked with another researcher on the geometric model for cutting tetrahedral meshes efficiently. We defined a mathematical framework for representing, analyzing, and evaluating different nonlinear cuts on the mesh.

We implemented a C++ library for that purpose. The next stages of the project involve designing a geometric collision detection algorithm and employing finite element methods to efficiently update the model while carrying out the simulation.

PROJECTS

Most of these projects can be found on my Github account.

- Simulation of a packet traveling inside a network written in c++ using Omnet++ framework.
- A basic Social Network where you can share pictures, send personal messages and get notifications. It was written in a typical lamp environment and everything was done manually.
- Tutor finder website written in Python flask, where students/tutors can schedule tutoring sessions.
- A basic Vehicle detection algorithm written in processing that counts cars, it was part of a bigger project to enhance traffic lights performance.
- Nasty blocker is an android application that blocks phone numbers by answering the incoming calls and hanging out really fast, making the caller loose money.
- CyberArabs is a cross platform app written in Html5 and Javascript that uses Cordova, the app is just an rss parser with push notifications and offline storage. The app was released on android google play.
- Video tutorial on how to hack snapchat on Android to access private photos
  https://www.youtube.com/watch?v=LiqXC3MY4MU
  (300k+ viewers, outdated)

INTERESTS

- Cybersecurity, ethical hacking, offensive security.
- Applied Cryptography.
- Distributed Systems.
- Privacy in the digital world.
- Software engineering.
- Free Software.
- Chess, table tennis.

SKILLS

- Languages: C++, Python, Java, Javascript, PHP, Bash.
- Web Development: HTML, CSS, JQuery, JQuery Mobile, Handlebars, Knockout.js, node.js, Flask.
- Mobile Development: Android, Gradle, Cordova, PhoneGap.
- Databases: MySQL, PostgresSQL, SQL-Alchemy.
- Distributed Systems: Hadoop.
- Other: Latex, Git, Amazon Web Services.