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Strahinja Trećakov

Since young age I wanted to make a difference in this word, however, I did not know how to. At the age of 5, I was introduced to tennis and since then my life goal was to become the best tennis player in the world. During my last year of middle school, I have realized that my mom could not financially support my tennis expenses that were needed for my growth. That was a hard period for me and I had to face the reality. However, during my freshman year of high school I was introduced to programming which was an eye opening that changed my life forever. I found a way that I could make a difference in this world. In 2012, I came to the U.S. on a tennis scholarship where I continued learning the science of computers. 6 years later, with 2 degrees in my pocket, software and systems developer experience, I am ready for the challenge of making a difference in this world. Specifically, interested in Security and Privacy, Internet of Things, Smart Grid, Information-Centric Networking and High-Performance Computing.

SKILLS

Strong teamwork and leadership skills.
Strong problem-solving skills.
Ability to learn new languages/concepts very quickly.
Good public speaking skills.

Experienced with:
Java / C / C++ / HTML / Assembly

Familiar with:
Python / ADA / C# / FORTRAN / PHP / JavaScript / CSS / MySQL / Lisp / COBOL / Pascal

LaTeX
WordPress
Visual Studio / Eclipse / Xcode
Vim
SVN / Git
GDB
Slurm / HTCondor
Spack

WORK EXPERIENCE

Systems Developer at New Mexico State University – July 2018 – present

Maintaining New Mexico State Universities High-Performance Computer and implementing Aggie-grid system that will be available for High Throughput Computing. Working with Slurm and HTCondor schedules as well as OSG repository and Spack for software.

Research Assistant at New Mexico State University – May 2017 – August 2017

Developed an Automated Vulnerability Analysis Tool (AVANT), a vulnerability tool that is architecture-agnostic and reports vulnerability found from our test suite. AVANT is used to evaluate the security performance of different architectures. This was primary developed to test our OSFA, however, I made it applicable to other architectures for comparison studies of e.g., reduction of impact, overhead, and performance. AVANT contains source code of traditional memory corruption vulnerabilities in e.g., MITRE CWE list. In addition to the vulnerable source code, AVANT, compiles, runs the analysis and outputs the results. I collected the results and showed that for reported vulnerabilities different architectures may differ in their stack values/addresses which can lead to some other attacks on these architectures.

Graduate Research Assistant at New Mexico State University – Summer 2016 & 2017

Helped organize Research Experience for Undergraduate(REU) BIGDatA - Big Data Analytics for Cyber-Physical Systems to inspire and prepare undergraduate students for academia and research. I worked closely with students helping them make their first research steps.

Graduate Assistant at ICT at New Mexico State University – January 2017 – May 2018

As a member of NMSU Cyber Infrastructure Architect and High-Performance Computing teams, I helped students and professors with their issues and questions about our cluster Joker. I helped prepare and present workshops about Linux, Supercomputers, Slurm and Joker. I maintained the software on our HPC cluster. Besides that, I worked on implementing the Aggie-grid system within our lab. Aggie-grid cluster will connect all NMSU's computer power when its available and allow researchers to use it.

Teacher Assistant in Computer Science at New Mexico State University – January 2017 – December 2017

CS474 (Operating System) and CS478/579 (Computer Security)
Helped teacher prepare course material, exams, homework and programming assignments.
Assisted teacher with grading, supervising and teaching the class.
Helped students with questions and concerns about course material, homework and programming assignments.

Assistant Men's Tennis Coach at New Mexico State University – August 2016 – August 2018

Assisted head coach with player development and coaching during practices and matches. Moreover, I assisted in recruiting, fundraising, travel, community service/outreach, and other duties as assigned.
Western Athletic Conference Tournament Champion 2018

Graduate Research Assistant at New Mexico State University – May 2016 – August 2016

Worked on capturing and analyzing data between IoT devices and smartphone on different setups. Specifically, the August Smart lock, Chromecast, TrackR Bravo, Wink light bulbs and hub, and Monster wireless speaker. After analyzing data captured between smartphone and IoT devices, I found that some of them are sending packed unencrypted.

Undergraduate Research Assistant at New Mexico State University for the U.S. Army Research Laboratory – May 2015 – August 2015

Worked on assuring the secure communication between different nodes under spoofing attack, as well as a data forwarding attack. This was done by fixing the software bugs in aodv-uu to make Common Open Research Emulator work better. Moreover, I worked on fixing the implementation of jad-hoc in java and creating and testing topologies.

OTHER PROJECTS

Java2UML – Software that converts Java source code into visual UML class diagram. This software extracts classes, variables, methods, along with their access modifiers from Java code and turns them to usable tokens that allow us to implement a diagram visualizer. It also enables us to consider association relationship as well as multiplicity.

Simple DB – I have implemented the core modules required to access stored data, operations such as selection, join and aggregation. The final product is a simple database system that can perform simple queries over multiple tables.

Cache Memory Simulator – Designed a cache simulator that takes valgrind memory trace as input and simulates the behavior of cache accesses with different block sizes, associativity and capacity. This simulator is implemented in C and it uses least-recent use replacement policy for line eviction.

Data Encryption Standard(DES) – Implemented DES program that facilitates both encryption and decryption without any libraries. It is compatible with OpenSSL's CBC mode and it utilizes default padding schema.

Simple File Transfer – Implemented simple file transfer using the socket API. Even knowing that UDP is connectionless and unreliable, I used it in this project. I have also implemented mechanisms to allow multiple clients to download simultaneously or in series as well as recovery from lost or rearranged chunks of data.

Network Simulator – Developed a discrete event network simulator that simulates the functionality of a real computer network. This simulator has is capable of randomly generating a network topology of 150 nodes where nodes are capable of behaving as a flow source, flow destination or forwarding router. The connectivity of the graph is checked by depth-first search and the routing table is generated by running Dijkstra algorithm.

Virtual Memory Manager – Designed a program that translates logical addresses to its corresponding physical address. The program outputs the byte stored at the translated physical address.

C Compiler – Designed a basic C compiler using C-- features. Developed lexical, semantical and syntax analyzer, as well as the code generator for MIPS and x86. This compiler uses YACC tool for parsing.

HTMLEditor – Developed a user-friendly software that allows you to input text and media and place it where ever you want on the screen. The rendering engine will calculate the coordinates and convert anything inputted on the workspace to the html file. This project was implemented in javafx.

Solar Panel – This project was developed using Assembly language. I designed a moving solar panel using Lego's, with photo sensor attached on top of it. Solar panel was designed to move toward the light source, however, it always starts east and follows the light towards west as the sun's trajectory is.

EDUCATION

Master of Science in Computer Science 2017 – 2018
New Mexico State University

Bachelor of Science in Computer Science 2012 - 2016
New Mexico State University
Thesis topic: An Experimental Study of Security and Privacy of the Internet of Things Devices
Minors in Mathematics, Computer Systems, and Software Development

AWARDS/ACHIEVEMENTS/VOLUNTEER

- Volunteer in the Youth Office and in the Youth Initiative NGO.
- Participant in the Serbian Youth Leadership Program (SYLP).
- Crimson Scholar.
- Member of Student Athlete Advisory Committee.
- Member of MENSA INTERNATIONAL.
- Professional Tennis Registry Certified.
- Graduate Scholar - Athlete Award(2016).
- Western Athletic Conference All - Academic List 2012-2016.
- Intercollegiate Tennis Association All – Academic List 2013-2015.

PUBLICATIONS

Trecakov, S., Tran, C., Badawy, H., Siddique, N., Acosta, J., & Misra, S. (2017, October). Can Architecture Design Help Eliminate Some Common Vulnerabilities?. In *2017 IEEE 14th International Conference on Mobile Ad Hoc and Sensor Systems (MASS)* (pp. 590-593). IEEE.

CLASSES TAKEN

Computer Science I, Object Oriented Programming, Introduction in Data Structure, Machine Programming, Discrete Math for CS, Compilers and Automata, Software Development, Data Structure and Algorithms, Programming Languages I, Architectural Concepts I, Operating Systems I and II, Computer Security, Introduction to Cryptography, Advanced Cryptography, Artificial Intelligence I, Database Management Systems I and II, Computer Networks I and II, Analysis of Algorithms, Automata, Languages and Computability, Advanced Software Development, Calculus I and II, Statistics for Engineers and Scientists, Differential Equations and Matrix Theory and Applied Linear Algebra.

LANGUAGES

Serbian: native proficiency
English: full professional proficiency