

POOJA RAJAN

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EDUCATION

University of Southern California

Master of Science in Computer Science (Computer Networks)

Los Angeles, California, USA

Jan 2019 – May 2021

Coursework: Algorithms, Computer Networks, Applied Cryptography, Computer Communications, Advanced Operating Systems, Web Technologies, Information Retrieval System, Database System.

SRM Institute of Science and Technology

Bachelor of Technology in Software Engineering

Chennai, Tamil Nadu, India

Jul 2014 – May 2018

SKILLS

Languages: C/C++, Python, Java

Database: MySQL, NoSQL

OS : Windows 10, Ubuntu 16.04, RedHat 7.4

Web: HTML/CSS, Bootstrap, PHP, JavaScript, JQuery, AJAX, RestAPI, ReactJS

Tools: GCP, Atom.io, CrypTool 2, Solr, GitHub, Eclipse, VS Code, JUnit, BlueJ, Bash and Shell-scripting, Wireshark, Jira, Bitbucket

Libraries: hashlib, mymerkle, pyaes, pickle, IP-API, Google GeoCode, forecast.io, TShark, Wireshark, TCPDump, Traceroute, iPerf

EXPERIENCE

Information Security Intern - Integrated Control Systems Department, Bhilai Steel Plant, India

Jun 2018 – Aug 2018

- Generated public & private keys for users by applying the RSA key generation algorithm that uses the Miller-Rabin primality test.
- Implemented AES-128 encryption using pyaes to encrypt user files for secure transmission.
- Encrypted the AES keys using the receiver's public key to ensure the secrecy of the encrypted file.

Software Developer Intern - Computer and IT Department, Bhilai Steel Plant, India

Jun 2016 – Jul 2016

- Implemented Dijkstra's algorithm to compute routing table for all the nodes present in a network.
- Developed a PHP-based website to employ an Online Leave Management System for the department.

PROJECTS

DoS and DDoS Attack Monitoring Tool | Python, OSPF, BGP, TShark, iPerf

Sep 2020 – Nov 2020

- Programmed a daemon to monitor the live server traffic and watch for overload in live and replay attack modes.
- The daemon implemented OSPF and BGP routing rules to mitigate the impact of a DDoS attack on a DNS server.
- Implemented a scrubbing service to filter the attack traffic using iPerf and allow only the legitimate traffic to flow through the server.

Secure E-Voting System | Python, RSA Encryption, Merkle Tree Hashing, SHAKE-256

Jan 2020 – Apr 2020

- Registered the voters with a unique ID using SHAKE-256 and also generated public, private keys for that voter.
- Created unique ballot for the voter to cast his vote that is encrypted by RSA algorithm using the voter's private key and decrypted by his public key while counting and auditing.
- Used SHA-256 and Merkle Tree Hashing to store the votes for each candidate to prevent tampering.

Socket Programming | C++, TCP and UDP Communication, UNIX Sockets, Static and Dynamic Ports

Sep 2019 – Dec 2019

- Designed a client-server architecture consisting of a TCP Server and 2 backend computational servers communicating over UDP.
- The Client initiates a TCP connection with the Server responsible for the front-end requests. The Server distributes the data received for computation to the backend servers over UDP connection and responds back to the Client.
- A Monitor Server is also communicating to the Server over TCP, tracking all the events happening across all the servers.

Search Engine Optimization | PHP, HTML, JQuery, AJAX, Java, Python, Apache Solr

Nov 2020 – Dec 2020

- Implemented PageRank algorithm using JSoup & NetworkX in a pre-existing Solr-PHP based Search Engine.
- Compared the ranking of pages displayed for the above-performed PageRank against the already-existing Lucene.
- Applied Norvig's Spelling Correction Program to enhance the spell-correction feature and also employed an autocomplete feature.

DarkSky | PHP, JS, HTML, CSS, Bootstrap, XML, JSON, GCP App Engine

Oct 2019 – Nov 2019

- A PHP-based website that took an address input from the user. The current location is fetched using IP-API.
- Returned the current weather report for the above location along with a week's forecast using the APIs, Google GeoCode and forecast.io. It also displayed a graph depicting the hourly temperature across the day.

PUBLICATIONS

- ["Intelligent Wireless Sensor Networks for Precision Agriculture"](#) In: *Advances in Intelligent Systems and Computing*, Springer, Singapore vol.1056, pp.167–181, Feb 2020.
- ["Key Management for Enabling Security against Insider Threats in Body Area Networks"](#). In: *International Journal of Pure and Applied Mathematics* vol.118 (No.20B), pp.1021–1027, Mar 2018.