

DEEBTHIK RAVI

linkedIn/deebthik | +91 9566596100 | +971 566132785 | deebthik@gmail.com

EDUCATION

B.Tech First Class - Electrical and Electronics Engineering
NATIONAL INSTITUTE OF TECHNOLOGY TIRUCHIRAPPALLI

Trichy, India | 2020

CBSE AISSCE
THE INDIAN HIGH SCHOOL

Dubai, UAE | 2016

WORK EXPERIENCE

VISTEON | SECURITY ENGINEER

Bangalore, India | Aug 2020 – Present

- Member of the Global Cybersecurity Team
- Working on various aspects of automotive security - Secure Boot, Secure Storage, PKI, and Secure Diagnostics
- Covering different phases such as development, integration and validation of security implementations

VISTEON | CYBERSECURITY ENGINEERING INTERN

Bangalore, India | Jun 2019 – Jul 2020

- Worked on the secure and verified boot implementation for embedded systems(NXP I.MX6 and Qualcomm SM8150 processors) - securing each stage of the boot process with digital signatures
- Had a detailed study and hands-on experience with the hardware security components on the I.MX6 processor - TrustZone, HAB, SNVS, CAAM, CSU, etc.

PROBE INFORMATION SERVICES | SOFTWARE ENGINEERING INTERN

Bangalore, India | Dec 2018 – Jan 2019

- Had a detailed exposure to hands-on industry practices and routines in Software Engineering (efficient programming principles and practices)
- Understood and observed the birth and lifecycle of code from the server side to the client side
- Understood and observed the structure and function of servers and implemented the same with NGINX

ABB | CYBERSECURITY AND SYSTEM AUTOMATION INTERN

Chennai, India | May 2018 – Aug 2018

- Worked with the Cybersecurity team, learned and worked with the Cybersecurity structure of MACH and SCM for substations, and was also involved in Patch Management
- Learned and worked with core concepts on the Substation Automation and Control & Protection teams

RESEARCH EXPERIENCE

NEW YORK UNIVERSITY ABU DHABI | RESEARCH INTERN

Remote | Jun 2020 - Jul 2020

- Worked with the team in the MoMA (Modern Microprocessors Architecture) Lab, under Prof Dr. Michail (Mihalis) Maniatakos and Hadjer Benkraouda
- Carried out research in the field of static binary analysis using semantic segmentation
- The objective of the research was to automate one of the stages of binary analysis, code, and data separation. Our method converts the binary files into images.

IIT MADRAS | RESEARCH INTERN

Chennai, India | Dec 2019 – Jan 2020

- Was involved in research pertaining to side-channel attacks, under Prof Dr. Chester Rebeiro (CSE Department)
- Studied the various areas of power attacks: SPA, DPA, Hiding, Masking, and Attacks
- Worked on masking a 32-bit adder circuit (that was a module of a much larger architecture) in order to protect the operands from Differential Power Attacks (DPA)

NIT TRICHY | RESEARCH INTERN

Trichy, India | Mar 2019 – Apr 2020

- Worked under the guidance of Prof Dr. S. Moorthy (EEE Department) on Cybersecurity in Smart Grids
 - This project mainly focused on introducing Cybersecurity in Smart Grids, using Elliptical Curve Cryptography, mostly implemented using C++
-

PROJECTS

PRIVACY PRESERVING TRANSPARENT SUPPLY CHAIN MANAGEMENT THROUGH HYPERLEDGER FABRIC [↗](#) **BLOCKCHAIN: RESEARCH AND APPLICATIONS (ELSEVIER)**

The objective of this research was to identify whether permissioned blockchain platforms could help the stakeholders in the supply chain industry engage in a less-corruptible alternative to traditional web technology and whether they could enable a more positively nuanced blockchain system that draws the best balance between traditional web technology and a public blockchain, including privacy protection and security.

BINSEG: LEVERAGING SEMANTIC SEGMENTATION FOR CODE AND DATA SEPARATION IN NON-STANDARD BINARY FORMATS [↗](#)

Began with research in the field of static binary analysis using semantic segmentation, which facilitated the objective of this project which was to automate one of the stages of binary analysis, code and data separation. Leveraged several space-filling curves in order to transform various types of executable binaries into 2D images that were then fed into a DCNN model trained on Deeplab. The method eventually achieved an accuracy of 91% in separating code and data sections in unknown/proprietary binary formats (CODESYS binaries were used as the validation dataset)

POWER MASKABLE ARITHMETIC CIRCUIT AGAINST DPA [↗](#)

Covers various areas of power attacks as preliminary research: SPA, DPA, Hiding, Masking and Attacks. The work in this project revolves around masking an arithmetic circuit that is part of a much larger architecture - a 32-bit adder circuit, in order to protect the operands from Differential Power Attacks (DPA). Utilizes the method of precomputation and the dynamic width of possible operands to introduce a high activation probably resulting in a reasonable reduction of power and scope for randomization

SMART GRID SECURITY THROUGH ECC [↗](#)

This project mainly focused on introducing Cybersecurity in Smart Grids, using Elliptical Curve Cryptography, mostly implemented using C++. Formulated and implemented the E2E flow: Calculation of jump points, Generation of private-public keypairs, Encoding/Decoding messages to a point on the curve, and finally, Retrieving the point and converting it back to the original message. Designed the modules for point arithmetic operations. Optimized the implementation of point multiplication and point addition operations in the binary finite field $GF(2^{163})$

VISCOIN [↗](#)

A blockchain incentivization system for drivers, serving the solution to the problem of driver fatigue and drowsiness by detecting the same using OpenCV and calculating and storing a custom drowsiness index that is used to reward or deduct a custom coin called VisCoin using IPFS and blockchain, hence incentivizing the driver which would lead to road safety. Finalists at the Pragyan Hackathon 2019.

PUBLICATIONS AND PREPRINTS

PRIVACY PRESERVING TRANSPARENT SUPPLY CHAIN MANAGEMENT THROUGH HYPERLEDGER FABRIC [↗](#) **BLOCKCHAIN: RESEARCH AND APPLICATIONS (ELSEVIER)**

Ravi, D., Ramachandran, S., Vignesh, R., Falmari, V. R., Brindha, M. (2022). Privacy preserving transparent supply chain management through Hyperledger Fabric. Blockchain: Research and Applications, 100072.

BINSEG: LEVERAGING SEMANTIC SEGMENTATION FOR CODE AND DATA SEPARATION IN NON-STANDARD BINARY FORMATS [↗](#) PREPRINT

Benkraouda, H., Ravi, D. and Ansari, A., Kumar, G., Maniatakos, M. Code and Data separation for Unknown Binary File Formats Using Semantic Segmentation. [In progress].

SKILLS

Languages: Python, Bash, Java, C/C++, Javascript, PHP, Ruby, SQL

Development: Android (Java), Unity (C#), Web (HTML/CSS)

Technology: Git, Docker, Unity, Apache, Pentesting (Kali Linux)

CERTIFICATIONS

Cryptography | Stanford Online - Coursera

Machine Learning | Stanford Online - Coursera

CompTIA CySA+ | *In Progress*

POSITIONS OF RESPONSIBILITY

VYUWING | CYBERSECURITY MENTOR

Remote | June 2021 - Present

OWASP - NIT TRICHY | CO-FOUNDER AND HEAD-CTFS

NIT Trichy, India | October 2019 – July 2020

TEDXNITTRICHY | HEAD OF GRAPHIC DESIGN

NIT Trichy, India | February 2018 – March 2019

DELTA FORCE | SYSTEM ADMINISTRATOR & SOFTWARE DEVELOPER

NIT Trichy, India | June 2017 – May 2018

MUSIC TROUPE | SAXOPHONIST & KEYBOARDIST

NIT Trichy, India | June 2019 – February 2021

AREAS OF INTEREST

Cybersecurity | Cryptography | Machine Learning & AI | Blockchain | Web & App Development | Graphic Design

AWARDS

TCL Exhibition Award | Received the Trinity College London Exhibition Award - Music, Grade 8, Electronic Keyboard (Distinction)

LANGUAGES

English | Native or bilingual proficiency

Tamil | Native or bilingual proficiency

Hindi | Professional working proficiency

Arabic | Elementary proficiency

French | Elementary proficiency
