

# Anand Agrawal

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BITS Pilani, Hyderabad Campus  
Telangana  
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## EXPERIENCE

*Research Engineer*

June 2019 - Aug 2020

**New York University, Abu Dhabi**

**Technology: Gidra, Radare 2, RSCAD, Codesys environment**

- Working in Modern Microprocessors Architecture Lab. [Website](#)
- Development and Cyber Security assessment of federated smart grid and smart city testbeds.
- Developed detection tool using Ensemble learning (Boosting method Light-GBM) to classify attack and normal events.
- Analysis of Codesys compiled binaries in different Languages and Architectural context.
- Studying the dependencies of critical infrastructure testbeds
- Automated collection of ICS compiled and project binaries.

*Software Engineer*

Sep 2017 - May 2019

**National University of Singapore, Singapore**

**Technology: Python, NS Simulator, Ansible, Vagrant**

- Worked in National Cyber-Security R&D Lab. [Website](#)
- Develop Virtual environment for Critical infrastructure(OT Testbed) and develop IT based attack on OT, and detection of physics based attack using SVM classifier.
- Develop Pentest lab testing environment and Evaluation platform for security solution
- Maintained a shared national infrastructure that provides computing and networking resources for CyberSecurity research and development community.
- Federation of the industrial testbeds to enrich its capabilities

*Software Engineer*

Nov 2016 - Aug 2017

**YuppTV.com, Hyderabad, India**

**Technology: Scala, Slick, Postgres, Redis**

- Worked on project Rivulet (Mutli Tenant LIVE and VOD Streaming OTT Platform). [Website](#)
- Developed YuppFLIX content crawler for movie and their cast(YuppFlix brings an easy access to Indian movies and TV Shows across 9 regional languages).
- Developed Bazaar kids Category for kid content to broadcast in YUPPTV Bazaar section.

*Research Assistant*

Feb 2016 - Oct 2016

**Singapore University of Technology and Design, Singapore**

**Technology: Python, Mininet, Ladder Logic, Flask**

- Worked in a Cyber-Physical Security Project "CYPRO" at SCy-Phy group leading by Assist. Prof Nils Ole Tippenhauer. website link: [Scy-Phy](#)

- CYPRO project is about analyzing the vulnerabilities in Critical Infrastructure and different attack surfaces are investigated on Secure water treatment plant in "iTRUST" lab.

*Assistant Professor*

July 2014 - Jan 2016

**Vignan Foundation of Science and Technology in Research University, India.**

**Technology: C, C++, Java**

- Taught subjects on Data Structure and Advance Problem Solving.
- Involved in funded projects along with technical committee team member.

## EDUCATION

*Doctor of Philosophy,*  
BITS Pilani, Hyderabad Campus

March 2021 - Ongoing

*Master of Technology in computer science with 7.68 CGPA ,* July 2012 - June 2014  
IIIT Hyderabad, Hyderabad, India

*Bachelor of Engineering in computer science with 73.6 % ,* August 2008 - June 2012  
Shri Vaishnav Institute of Tech. and Science, Indore, India

*Senior Secondary with 84 percentage,*  
Universal Academy, Indore, India

July 2007 - June 2008

*Secondary with 87.6 percentage,*  
Baithal H S school, Indore, India

July 2005 - June 2006

## TECHNOLOGY SKILLS

*Programming Languages:* C, C++, Core Java, Python, Ladderlogic, Scala, MIPS

*Web Technologies:* HTML, CSS.

*Database:* MySQL, Sqlite, Postgres, Redis.

*Development Tools:* Eclipse, IntelliJ IDEA, Cisco Packet Tracer, Mininet, Slick, Latex, Github, NS3

*Area of Interest:* Algorithm and Complexity, Cyber Physical System Security, Wireless Network Security and Cryptography.

## PROJECTS

Running Projects: BITS Pilani, Hyderabad Campus

*Vulnerability in Wireless Security Protocols*

- Analysis of wireless security protocols like WPA/WPA2 and passive detection of attacks like KRACK using Machine Learning.
- Classification of different type of Rogue Access point created by different traditional routers and the smart IoT device.

*Smart Lake Testbed for data analytics, monitoring and feedback capabilities.*

- Development of robust and scalable smart lake testbed.
- Perform data analytics and monitoring of the water quality and take prior decision for benefiting the aquatic animals

## ARTICLE

*Published Article*

- "Cyber-Security Solution Evaluation published in Association of Small & Medium Enterprises(ASME) Singapore in January 2019 issue"

## RESEARCH

### *Research Papers*

- **Anand Agrawal**, Urbi Chatterjee, Rajib Ranjan Maiti. "CheckShake: Passively Detecting Anomaly in Wi-Fi Security Handshake using Gradient Boosting based Ensemble Learning" submitted in Transaction of Dependable and Secure Computing and is in under review.
- **Anand Agrawal**, Urbi Chatterjee, Rajib Ranjan Maiti. "kTRACKER: Passively Tracking KRACK using ML Model" published in CODASPY 2022 held in Baltimore-Washington DC Area, USA (Virtual).
- **Anand Agrawal**, Marios Sazos, Ahmed Al Durra, Michail Maniatakos. "Towards Robust Power Grid Attack Protection using LightGBM with Concept Drift Detection and Retraining" published in CPSIoTSEC 2020 held in Orlando USA(Virtual).
- Chuadhry Mujeeb Ahmed, Jay Prakash, Rizwan Qadeer, **Anand Agrawal**, Jianying Zhou. "Process skew: fingerprinting the process for anomaly detection in industrial control systems" published in WiSec '20 held online.
- Sajal Sarkar, **Anand Agrawal**, Yong Meng Teo, Ee-Chien Chang. "VOTNET: Modeling and Simulation approach for Operational Technology" published in WSC 2018 held in Gothenburg, Sweden.
- **Anand Agrawal**, Chuadhry Mujeeb Ahmed, Ee-Chien Chang. Poster: "Physics-Based attack detection for an Insider threat Model in a Cyber-Physical System" published in Asia CCS 2018 held in Incheon South Korea.
- Daniele Antonioli, **Anand Agrawal**, Nils Ole Tippenhauer. "Towards High Interaction ICS Virtual Honeypot-in-a-Box" in Cyber-Physical System Security and Privacy(CPS-SPC) in conjunction with the 23<sup>rd</sup> ACM Conference on Computer and Communications Security(CCS) in Vienna, Austria.
- Naman Govil, **Anand Agrawal**, Nils Ole Tippenhauer. "On Ladder Logic Bombs in Industrial Control Systems" in Proceedings of the Workshop on the Security of Industrial Control Systems and of Cyber-Physical Systems (Cyber-ICPS), co-located with ESORICS in Oslo Norway, 2017  
Harbin, China. DEC 2015
- link: [Google Scholar](#)

## ACADEMIC HONOURS

Secured All India GATE Rank 419 and 608 in the year 2014 and 2012 respectively. GATE is the highest Technical level National examination in India for the entrance of post-graduates aspirants in prestigious colleges.

## EXTRA-CURRICULAR ACTIVITIES

- TPC member of 2nd & 3rd International Workshop on Artificial Intelligence and Industrial Internet-of-Things Security (AIoTS).
- Technical challenge maker team in Scy-phy week 2016. Scy-phy week is an annual event of SUTD to discuss and mitigate cyber attacks in future.
- Conducted Technical events "logic killer" & "code Exchange" in Vignan University.

Place: Hyderabad

Date: 20<sup>th</sup> of July 2022

ANAND AGRAWAL