Satvik Vemuganti

CS Undergrad | B.Tech Hons. in CSE, IIT Bhilai

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About Me

I'm a 3rd year Computer Science Undergrad at IIT Bhilai. I enjoy picking up new skills and love experimenting with software tools and technologies. Two years of Computer Science education has brought me to appreciate mathematical graphs and the range of problems that can be solved by them. I partake in CTF contests which has led me to develop a keen interest in cybersecurity and cryptography. Outside of my academics, I enjoy reading books and writing blogs.

Work

SOFTWARE HERITAGE
| Intern | GSoC 2022
Jun 2022 – Present
Built metadata indexers for SWHs archived content
Mentors: Dr. Stefano Zacchiroli, Valentin Lorentz and Kumar Shivendu

IIT BHU
| Research Intern
May 2022 – Jul 2022
Worked on android malware detection using Deep Learning, advised by Dr. Mayank Swarnkar

IIT DELHI
| Research Intern
March 2022 – May 2022
Worked on the issue of location privacy of UASs, advised by Dr. Dhiman Saha.

Projects

MINE INFORMATION FROM ARCHIVED CONTENT | Python
- ➔ I worked on adding mappings to Packagist (composer.json), NuGet (.nuspec), and dart (pubspec.yaml) packages.
- ➔ Additionally, I am currently working on a mapping for Cocoapods (.podspec) packages.
- ➔ Please find all my contributions **here**.

LINUX SHELL | C
- ➔ Built for Assignment 2 of CS250 (Operating Systems) at IIT Bhilai, 2021-22/W Semester taught by Dr. Anand Baswade.
- ➔ Shell supports redirection, piping and conditional execution.

ACTIVITY TRACKER MOBILE APP | Flutter
Android and NodeJS Server
- ➔ Used flutter bridging and channels to pass app usage data from java application to the flutter app.
- ➔ Harvested Geolocation data from GPS to keep track of device location.
- ➔ Created an endpoint API in the NodeJS server for the Activity-Tracker project (that exists for desktop and VSCode activity tracking).

Skills

PROGRAMMING

Proficient:
Python • C

Experienced:
Flutter • C++

Familiar:
Shell • Vim • JavaScript

TOOLS/PLATFORMS
Git • Jenkins • VSCode

Education

IIT BHILAI
Bachelor's in Computer Science
November 2020 - Present | Raipur, India
Department of EECS
Cum. GPA: 9.11

Activity

OPENLAKE
| Coordinator & Mentor
May 2022 – Present
The club building FOSS @ Bhilai

DE.CI.PHE.RED LABS |
Researcher
Feb 2022 – Present
Crypto Lab @ IIT Bhilai

DEVELOPER STUDENT CLUBS
| Core Member
Jan 2022 – July 2022
The Google Developer's Club, IIT Bhilai

TINKERING LAB | Founding
Core Advisor
Jul 2021 – Present
Student Run Tinkerers Lab @ IIT Bhilai

DUGC, IIT BHILAI | Student
Representative
May 2022 – Present
UG Student Representative for Dept. of EECS @ IIT Bhilai

Ongoing Research

BOTNET DETECTION BY RANDOMWALK-PAGERANK
Research internship at Indian Institute of Technology Varanasi (BHU)
- ➔ Implemented a PageRank algorithm tailored for Botnet detection by associating nodes with random walks
- ➔ Performed analysis using centroid-based, distribution-based, hierarchical-based and density based clustering techniques
- ➔ Experimented with Residual Neural Networks, Convolutional neural networks and obtaining results using Graph LSTM.
- ➔ Currently working towards publishing results in a research paper

VERACITY OF LOCATION INFORMATION IN UAV SYSTEMS
Research internship at Indian Institute of Technology Delhi
- ➔ Surveyed 75+ papers on topics ranging from privacy preserving proximity testing to information leakage from Location based services
- ➔ Consolidating all the work done on security of drones and privacy of location in UAV systems into a survey paper
- ➔ Experimenting with digital privacy preserving proximity testing techniques to verify location information provided by UAVs

LACK OF DRM PROTECTION IN INDIAN OTT MUSIC STREAMING SERVICES
de.ci.phe.red Labs
- ➔ Studied the flow of requests and responses that result in transfer of media from OTT service servers as presented in this earlier work of de.ci.phe.red Labs' researchers. **arxiv URL (Click here)**
- ➔ Working to automate the process of mapping out the information flow between client-server to simplify the process of extending the vulnerability to services like Spotify, WhatsApp, and Apple Music.

Some more projects

CS553-CRYPTOGRAPHY | Python, Carbon (Experimental, not published)

Code written for coursework and assignments of CS553-Cryptography by Dr. Dhiman Saha at IIT Bhilai.
- ➔ Stood first, among 20 groups, in the course-CTF which revealed both assignments so far given in the course
- ➔ Designed and implemented a toy cipher with a random S-box
- ➔ Performed differential cryptanalysis on the above cipher and ciphers discussed in class
- ➔ Used Gurobi MILP Optimizer to find the best possible 4-round trail for the above cipher

V-AI-DYA | Django

- ➔ AI voice based health assistant. (Vaidya is a practitioner of Ayurvedic Medicine)
- ➔ Global top 50 submission. **Certificate here**

TO-DO LIST APP | Flutter
Android and iOS

- ➔ Built an interactive cross platform application to track tasks and goals, using Flutter
- ➔ Employed widgets offered by Flutter for a clean and efficient UI.

MEDICAL-DIAGNOSIS-WEB-APP | Python

Click here!
- ➔ A data-science project that uses decision tree based modelling to predict the disease, given the symptoms. Trained on the following dataset. Model was returning accuracy in the range of 90% to 96%, on an 75-25 dataset split ratio.

Courses

CS100, CS200
Software Tools & Technologies
CS203, CS253
Theory of Computation
CS250
Operating Systems
DS250
Data Analytics & Visualization

Ongoing Courses

CS553
Cryptography
CS301
Computer Networks
CS502
Graph Theory & Applications

Volunteering

STUDENT MENTORSHIP PROGRAMME
| Mentor
IIT Bhilai
Jun 2021 – May 2022
Student mentor to 7 undergraduate students at IIT Bhilai

CLASS REPRESENTATIVE
| CS, Batch of '24
IIT Bhilai
Oct 2020 – Present
Student representative for academic issues for branch of computer science, batch of 2024.

INSTITUTE INNOVATION COUNCIL
| Coordinator
Sept 2022 – Present
| Volunteer
Jul 2021 – Jun 2022
Clubs set up as part of network of Ministry of Education's Innovation Cell

STUDENT ALUMNI CELL
| Volunteer
Dec 2020 – Jan 2021
First tenure of the cell to foster university-alumni relations

FOSS OVERFLOW
| OSS Intern
Jan 2022 – Feb 2022
Built a mobile version of Activity tracker mobile app. Find blog here!