KARAN BANSAL

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Academic Qualifications

Degree/Board	Year	Institute	CPI/Percentage
B.Tech: Computer Science and Engineering	2016*	Indian Institute of Technology, Kanpur	ongoing
Class 12th: C.B.S.E	2012	Aklank Public School, Kota	84.4%
Class 10th: C.B.S.E	2010	Aklank Public School, Kota	9.6/10

Scholastic Achievements

- Secured **All India Rank of 192** (amongst 4,85,000 students) in IIT-JEE 2012 having a percentile of 99.95%
- Secured **All India Rank of 201** (amongst 1.3 million students) in AIEEE 2012 having a percentile of 99.98%
- Awarded **Merit-Cum-Means Scholarship** for the terms 2012-13, 2013-14 and 2014-15.

INTERNSHIPS

Summer Internship (Security Researcher at CITRIX) **Supervisor – Mrityunjay Gautam (Manager)**

- **Designed a Distributed Automated Secure Idle State Fuzzing System for the Enterprise** *(May'14-July'14)*
  - Idle State Detection of a client using Artificial Intelligence and automated distribution of fuzzing task to clients.
  - Scheduling and termination of fuzzing process with no interruption to normal user of machine.
  - Upload and management of the fuzz files, transfer of files over the network, storage of dump files in an optimum manner to minimise the resource consumption and network usage.
  - This project was presented in **c0c0n 2014**, the ***International Cyber Security and Policing Conference***.

Winter Internship (SIDBI IITK) **Supervisor – Rahul Garg (IT Head)**

- **Unauthorised File Intrusion Detection System based on system monitoring** *(Dec'14-ongoing)*
  - Designed a system monitoring tool (exe running in background) with various access levels in Python.
  - Server updates of activity and emails of screenshots in regular time intervals with alerts in case of intrusion.

Summer Internship (FIREEYE) **Supervisor – Vignesh Srinivas (Manager)**

- **Designed a Vulnerability Scanner Tool for Windows** *(May'15-July'15)*
  - Generated a detailed analysis of all the vulnerable applications installed on any windows machine.
  - Periodic updating of vulnerability database and various APT's and exploit kits to their corresponding CVE's.

PROJECTS

Protocol Reverse Engineering (UGP- III) **Supervisor – Prof. Sandeep Shukla**

- **Reverse Engineering Network Protocols to extract Application Level Specifications** *(Aug'15-ongoing)*
  - Modifying network packets at bit level and analysing memory trace and assembly instructions to extract protocol specifications, generating fuzzed data and extending the approach to non-encrypted binary (non-text) protocols.

Watermarking Relational Databases (UGP - II) **Supervisor – Prof. Arnab Bhattacharya**

- **Studying and Improving Various Techniques for Database Watermarking** *(Jan'15-Apr'15)*
  - Compared the efficiency, accuracy and redundancy in data for various techniques and their security analysis.

Malware Classification (CS365 Project) **Supervisor – Prof. Amitabha Mukherjee**

- **Classifying Malware into Families based on file content and characteristics** *(Jan'15-Apr'15)*
  - Discovered malware signature by analysing and observing the patterns in the assembly level instructions of various x86 malware binaries as captured by the IDA disassembler to prevent antivirus evasion by polymorphic malwares.
  - Using various machine learning techniques like Random Forest Classifier, SVM etc. to train the classifier using the features discovered and assigning probabilities to malware for it to be present in each class.

Secure IP (CS425 Project) **Supervisor – Prof. Dheeraj Sanghi**

- **Secure IP implementation for securing the communication using encryption** *(Aug'14-Nov'14)*
  - Used Diffie Hellman key exchange protocol to setup a session key with proper entity authentication.
  - Used AES-128 bit encryption in CBC mode and integrity check using md5 checksum.

Cashless Campus (CS252 Project) **Supervisor – Prof. Arnab Bhattacharya**

- **Designing a Cashless Transaction System using IITK Smart ID** *(Aug'14-Nov'14)*
  - Used Pyscard api in python for interacting with SCOSTA smart id cards from a windows machine.
  - Designed a sophisticated payment gateway focussing towards security aspects of the protocols.

Extracurricular Achievements

- Conducting a training on **Applied Crypto for Infosec** at **DEFCON|OWASP** 2016, the ***International InfoSec Conference***.
- Qualified and represented IIT Kanpur in **Grand Finale** of **Build the Shield'15** (security contest) by **Microsoft**.
- Got **Honourable Mention** for creating a **Fully Homomorphic Encryption API** for cloud in **Yahoo Hacku'13**.
- Instructor for the course '**Cryptography for InfoSec**' on **OWASP Academy** and **Chapter Lead**er at **OWASP IITK**.