Shivanshu **Singh**

Final Year Undergraduate ·
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Education

Indian Institution of Technology Kanpur *Kanpur, India*
Bachelor of Technology, Major in Mechanical Engineering *2014-2018 (Expected)*
- Cumulative Performance Index / CGPA: 8.1/10

Work Experience

Auto Scaling of Docker containers *Pune, India*
Software Intern, AutoDesk (Received Pre-Placement Offer) *May. 2017 - July. 2017*
- Worked on adding the auto-scaling functionality for containers of DC/OS cluster running microservices
- Designed, implemented and deployed the required architecture in AWS cloud. (using Lambda functions, Redis database, CloudWatch and a SNS topic)
- Employed a machine learning technique to make the calculated guess of amount of scaling (up/down) for each service

Projects

Secure Memory Deduplication and Covert Channel Construction in Linux Kernel *IIT Kanpur*
Course Project, Prof. Debadatta Mishra *Sep. 2017 - Nov. 2017*
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Large Margin Multi-Modal RGBD Object Recognition *IIT Kanpur*
Course Project, Prof. Vinay Namboodiri *Sep. 2017 - Nov. 2017*
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Securing Zoobar Server *IIT Kanpur*
Course Project, Prof. Sandeep Shukla *Jan. 2017 - Apr. 2017*
- Simulated various exploitations in a web application called Zoobar, written in C and serving CGI scripts
- Employed control hijacking techniques like buffer overflow, integer overflow and format string attacks to exploit the vulnerabilities
- Performed various browser-based attacks like SQL injection, XSS, CSRF on Zoobar web application
- Fixed security bugs in web server, implemented privilege separation and server-side sand-boxing
- Demonstrated the limitations of various mitigation techniques like stack canaries, address space layout randomization (ASLR) etc.

Hackathons

AMR (Advanced Recognition System)
Winner, 24-hours hackathon, Microsoft's Code.Fun.Do *Apr. 2017*
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HashTag
Winner, 24-hours hackathon, Google Developer Group *Nov. 2016*
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Mini Projects

- Implemented various locking mechanisms like spin lock, semaphores, sequencial lock, RCU etc. in linux kernel and compared them empirically
- Built chat room for processes, when in kernel mode, using a char device and employing the monolithic nature of linux kernel
- Studied the various proof methods like coinduction, fusion etc. for corecursive programs of functional languages and gave a presentation
- Conceptualised and designed a responsive website for Cultural Council using CodeIgniter MVC framework, jQuery etc.

Technical Skills

Programming	C/C++, Python, Haskell, bash scripting
Software and utilities	Linux shell utilities, Docker, Vim, Emacs, LaTeX, PyTorch, ROS
Operating Systems	Arch Linux (with i3wm and xmonad), Debian Linux (Ubuntu, Kali)