# RAJVARDHAN SOMRAJ DESHMUKH

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## OBJECTIVE

To pursue a career in the area of Computer Networks and Systems which would improve my skills, help me gain related work experience as well as contribute, especially in the fields of Wireless Sensor Networks, Networking and Adaptive bitrate streaming.

## EDUCATION

**Master of Science**, Electrical and Computer Engineering — Fall 2016-Present
Major: Computer Networks | Advisor: Prof. Michael Zink | GPA: 3.714/4
University of Massachusetts, Amherst

**Bachelor of Technology**, Electronics and Communication Engineering — Summer 2016
Vellore Institute of Technology, Tamil Nadu, India | GPA: 8.53/10

## RELEVANT COURSEWORK

Computer Networks, Wireless Sensor Networks, System Software Design, Advanced Algorithm, Trustworthy Computing.

## COMPUTER SKILLS

Software: Android Studio, NS3, Mininet, Matlab. Languages: C, C++, Java, Python, Javascript.

## EXPERIENCE

**Graduate Research Assistant**: Computer Networks, University of Massachusetts, Amherst — Spring 2016-Present

- Compared IP based approach to Information Centric Approach (ICN) to disseminate information in NS3 simulation. (published)
- Compared Adaptive bitrate strategies (SQUAD and BOLA) over application layer protocols (QUIC, HTTP1 and HTTP2) on Cloudlab nodes using Astream player and Caddy server. (ongoing)
- Offloading the LTE base-stations using ICN and comparing various parameters in NS3 simulation. (ongoing)

**Engineering Intern**: Zoho Corp, Web-NMS group, IoT subgroup, Chennai, India — Feb-May 2016

- Integrated the Modbus RTU protocol with their Web based Agent.
- Retrieved and wrote Modbus data from power meter connected to the server using Modbus RTU (application layer), Zigbee and 802.15.4 protocols.
- Pushed that data from the local agent to the user and enabled the agent to write data to the power meter holding registers.

## ACADEMIC PROJECTS

**Implementation of Thread-based Web-Server (**https://github.com/deshmukhrajvardhan/MultiThreadServer**)** — Spring 2017

- Created persistent and non-persistent multi-threaded web server using C++ socket library.
- Used Chrome web browser to request content (all data formats(.txt, .jpeg, .gif, etc)).
- Demonstrated scalability, efficient Stack Management and resource aware scheduling, by comparing the performance with Apache web server.

**Secure Payment via Mobile Phones (**https://github.com/deshmukhrajvardhan/MobileBankingSecuritySystem**)** — Fall 2016

- Demonstrated proof of concept for secure mobile payment system by creating Mobile App using Android Studio for Client.
- Created Certification Authority Server (used X.509v1 certificates), Merchant Server and Bank Server using Eclipse (Java).
- Created Algorithm to secure the transaction process, using Secure Electronic Transaction (SET) Algorithm as a base.
- Implemented OTP during verification and email for notification and tested the system against Masquerade and Replay attack.

**Analysis of Software Defined Network Switch (**https://github.com/deshmukhrajvardhan/SDNopenflowSwitchAnalysis**)** — Fall 2016

- Implemented Learning Switch using Pox controller.
- Analyzed switch in Mininet, and observed flows created for various traffic like UDP and TCP generated by iperf.
- Implemented different hard timeouts and compared the flows programmed.
- Used the emulation results show that hard timeout at T=8 is the most optimum.

**IoT Based Precision Agriculture System (**github.com/deshmukhrajvardhan/IoT-Based-Precision-Agriculture-System) — Spring 2016

- Constructed a Wireless Sensor Networks consisting of Atmega 328 microcontroller and Raspberry pi processor, using Xbee S2 transceivers to automatically monitor and control the environment of the crop.
- Programmed the Xbee S2 using XCTU software to adhere to the hierarchy of one root node and other leaf nodes.
- Developed sensor - actuator system to measure and control environmental conditions.
- Used apache server, php, html and python with the Raspberry pi to act as the border router to host the webpage.

## CONFERENCE PAPERS


- R. S. Deshmukh and M. Zink, "An information centric networking approach for sensor to vehicular network communication in disasters," *2017 IEEE 13th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Rome, 2017, pp. 227-234. doi: 10.1109/WiMOB.2017.8115849
- T. S. Chouhan and R. S. Deshmukh, "Analysis of DSDV, OLSR and AODV Routing Protocols in VANETS Scenario: Using NS3," *2015 International Conference on Computational Intelligence and Communication Networks (CICN)*, Jabalpur, 2015, pp. 85-89. doi: 10.1109/CICN.2015.26