# HEMANT SINGH RAUTELA

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## EDUCATION

**Binghamton University, Thomas J. Watson College of Engineering, NY, USA** *Expected May 2024*
*Master of Science in Computer Science | Watson Fellowship* *CGPA – 3.61/4.0*
**Relevant Coursework:** Computer Networks, Design & Analysis Comp Algo, Programming Languages, Computer Security, Systems Programming, Operating Systems, Cloud Computing, HPC

**Dwarkadas J. Sanghvi College of Engineering, Mumbai, India** *Aug 2014–Jun 2018*
*Bachelor of Engineering in Electronics and Telecommunications* *CGPA – 3.6/4.0*

## TECHNICAL SKILLS

**Coding:** C, Python3, C++, shell scripting
**Operating Systems:** Linux(Ubuntu, Fedora), MacOS, Windows 7, 10
**Debugging Tools:** GDB debugger, Strace, Valgrind, Objdump, READELF
**Protocols:** IEEE 802.11 WLAN, ISO OSI, I2C, SPI, Wi-Fi Drivers, 5G, PyTorch, TCP/IP, UDP, ICMP, AMD CPU+GPU
**Tools:** Terminal, GCC, Git, Make, Wireshark, MATLAB, Google Gerrit, Cisco packet tracer, Visual Studio, Verilog Language, Jenkins

## PROFESSIONAL EXPERIENCE

**Global Edge Software Limited (Capgemini Group), India**
*Wireless Local Area Network (WLAN) Device Driver Engineer (Google Development Team)* *May 2021 - Aug 2022*

- Developed network layer stack functionalities in C language on Linux kernel to enable WPA3 encryption mode in IEEE 802.11 wireless networking devices which encapsulate more than 95% of packets with WPA3 encryption and rest 5% are faulty packets that are re-transmitted which was deployed on Open source QEMU for the Linux sub-systems
- Wi-Fi Feature implementation on long-distance communication on MAC80211 drivers which works up-to 95% accuracy validated through packet capture on Wireshark on Linux 4.20.22 kernel version. Reported bugs were then resolved using GDB tool which helped me master my debugging skills
- Configured local DHCP sub-network for the team on Linux platform to have 100% internet connectivity independent of external network and created LAN network with IPv4 and IPv6 addresses both enabled at the server using shell scripting
- Customized the proc file system to fetch the memory consumption of running processes *(meminfo)*, CPU information (cpuinfo), and available mounted filesystems to release 100% Overhauled inactive and cached memory to obtain stability and run time environment to other scheduled processes which enhances the performance by almost 85%

**Global Edge Software Limited (Capgemini Group), India**
*IoT Device Automation Engineer (Google Automation Team)* *Dec 2018 - May 2021*

- Designed PHP code on Mobly framework to automate Google Home Android Application to create a mesh network between multiple Google access points and connect Linux and chrome OS clients using *UI Automator, openpyxl*, and Pandas python modules which serve 100% of the desired operations and requirements of the project
- Developed PHP scripts on IoT devices like castOS, ChromeOS, and google AP and implemented iperf3 performance check between server and client which gives 100% accuracy compared to an average of multiple manual executions on Mac and Windows OS
- Designed code to set the *iptables* rules and NAT rules in Google access points to allow and block traffic from the provided destination to block 100% of attacks from a public network and prevent private network
- Implemented scripts to analyze the sniffer captures using Wireshark and extract multiple instances like a first beacon, data rate, encryption mode, transmission, and receivers addresses to calculate the boot time of the Access point and file bug if the boot time exceeds more than 20% of the expected time
- Implementation and writing code to perform AP port forwarding for forwarding packets from WAN to WiFi client in autotest framework so that 100% of the packets received by the WAN interface of the AP is delivered to desired client destination
- Coded in Python3 and Mobly framework to automate test cases that require manual performances and devices interaction over the internet and complex hardware configurations

## ACADEMIC PROJECTS

**Self-Balancing Robot,** *Co-programmer* *Jan 2018–May 2018*

- Customized self-balancing robot using an Arduino Uno board programmed in embedded C with a voltage regulator IC.
- The bot effectively works on non-uniform surfaces due to its balanced control system which manages the bot to remain at $90^0$ w.r.t ground and controls were given from an Android App installed on the phone to move the bot forward and backward

## AWARDS/HONORS

**The Young Turk Award** – *Global Edge Software Ltd.* *Jan 2022*

- Awarded "*excellent performance*" in the team to meet clients requirements

**Annual Excellence Award** – *Global Edge Software Ltd.* *Jun 2019–Oct 2020*

- Took end-to-end project ownership and delivered complex technical issues to Google

## VOLUNTEER ACTIVITY

**Education Volunteer** – *eVidyaloka NGO* *Jun 2021–Nov 2021*

- Led teaching sessions on Chemistry and Maths for rural regional students with batch size 25 - 30 twice a week

**Library Technician –** *Mumbai University* *Jan 2018 – June 2018*

**Event Volunteer –** *World Robot Olympiad, India* *Aug 2017*

- Participated in managing the Mumbai regional championship competition