Vamsi Krishna K

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Pursuing Master's in Electrical Engineering concentrating on communications with expertise in Wireless firmware development. Looking to leverage my knowledge and experience into a suitable role.

PROFESSIONAL EXPERIENCE

Gained an overall 8 years of experience in WLAN code development and debugging in WiFi firmware. Studying and implementing IEEE 802.11 features for the WLAN firmware and driver. Expertise in handling and fixing roaming and connectivity issues.

- Software Engineering Intern at **Apple** (3 Months)
- Wireless Firmware engineer - II at **Broadcom Inc** (3 years)
- Software Engineer – II in wireless applications at **Microchip Technology**. (1 Year)
- Software Development Engineer at **Netgear Research India Pvt Lt**d. (4 Years 4 months)

TECHNICAL SKILLS

Languages	C, Data Structures, Python
Operating Systems	Linux, CentOS.
Protocols	IEEE 802.11 a/b/g/n/r/k/ac/ax
Tools	MATLAB, GNU Toolchain, Wireshark, GDB
Work Experience	**108** months (June 27, 2013, August 2021) 3 months (May 23, 2022, to August 19, 2022)

EDUCATION

UNIVERSITY AT BUFFALO — **Buffalo, NY**
Master of Electrical and Electronics Engineering, December 2022 — *CGPA 3.66*

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA — **Kakinada, AP**
Bachelor of Technology in Electronics and Communication Engineering, April 2013 — *CGPA 3.4*

PROJECTS

Software Engineering Intern, Apple – Cupertino CA — May 2022 to Aug 2022

❖ Roam Emulator for iOS Platforms.

- Developed a Low RSSI roaming framework without a host and real device on an x86 machine based on exact FW code for candidate selection.
- Emulated real-world experience by site survey from real network deployments.
- Provided (local) optimum on a given roaming profile.
- Enabled support for roam cache and hot channel list on emulator.

Wireless Firmware Engineer II, Broadcom Inc – India — Aug 2018 to Aug 2021

❖ IEEE 802.11V BSS Transition Management

- Implemented WNM feature BSS Transition Management action frame request and its response.
- Developed a WNM state machine to handle BTM states.
- Added support for different request modes in BTM requests like preferred candidate list, abridged, and disassoc

imminent.
- Added code to set proper reject reason codes like 1, 6, and 7 in BTM reject scenarios.
- Handled Priority of BTM requested scan with other scans in FW like host scan, low RSSI roam scan, and PNO scans.
- Implemented BTM throttle with sliding window, in which only configured the number of BTM requests are accepted in a particular period.
- Chips with this feature:
  4355c0(iPhone 7), 4357b1(iPhone 8), 4377b2(iPhone X), 4378b1(iPhone 11), 4387c2(iPhone12), 4388c0

❖ Roaming and Connectivity Algorithm
- Added code to improve the target AP selection algorithm from RSSI score based to WNM score-based.
- Implemented multi roam_prof command to configure various periodic scans
- WNM roam score algorithm will consider target AP capabilities like spatial streams, bandwidth, MCS, and channel usage load on AP into account.
- Scoring algorithm enhancements include removal of roam delta, and RSSI band boost.
- Estimate channel load using CCA of the channel when QBSS load IE is not available in target AP beacons.
- Chips with this feature:
  4378b1(iPhone 11), 4387c2(iPhone12), 4388c0.

❖ Roam scans Synchronization
- Synchronization periodic scans like low RSSI, partial, full, and low power scans are triggered as per the configured roam profile in the Firmware.
- Customer-specific roam requirements like the first scan of beacon loss roam and BTM request with disassoc imminent are supercritical scans and to have the highest priority of any other scans running in the Firmware.
- Trigger roam scan immediately when there was CI delta (7 dB)RSSI change in associated AP beacons.
- Priority to the first three scans of beacon loss roam.
- Fixed **136 roaming and connectivity issues** reported on iPhones.

Senior Wireless Applications, Microchip Technology – India June 2017 to July 2018

❖ Worked on Microchip WILC1000 and WILC3000 Wireless modules
- Added code in WILC driver required for developing Roaming features on WILC devices.
- Implemented Preferred Network Offload feature in which a set of management functions to be performed within the dongle to assist the host in making decisions about power management
- Knowledge of SPI interfaces.
- Added code to handle Power save and background scanning during the association process of WILC.
- Fixed bugs related to power on init sequence of WILC devices.
- Worked on different host processors issues to support the WILC driver.

Software Engineer Netgear Research India – Banglore India June 2013 to May 2017

❖ Worked on Netgear Wireless Controller WC9500
- Added code in Access point and wireless controller for implementation of Captive portal feature.
- Worked on Captive portal authentication.
- Extending the captive portal to multiple vaps on the access point and enhancing captive portal features.
- Developed a Dynamic channel switch algorithm that runs on the Access point.
- Added code from the application level to the driver in the Implemented Rogue AP detection feature.
- Fixed Captive portal-related issues.
- Experience in debugging kernel crashes, and debugging with gdb.

❖ IEEE802.11K - Radio Resource Management
- Developed new action requests and response frames in the LINUX stack to support **IEEE 802.11k** support.
- Added code for required radio resource measurements to send the measurement values in the response action frames.
- Implemented features are useful for STA to decide while roaming.

❖ Developed WLAN Test Automation System.
- Developed scripts of WLAN test cases for testing wireless boards in different modes such as a station, Micro

AP, Ad-hoc, MBSS, and their multiple combinations

- Developed test cases for testing various WLAN features.
- Test cases include Functionality, Security, RTS, CTS, Fragmentation, ERP Protection, HT Protection, Throughput, Power-save, Aggregation & Block Ack.