RAGHURAM KAMATH

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SUMMARY

Wireless Systems Engineer with 14+ years of experience in consumer electronics. Inventor of 8 granted U.S. patents in 4 patent families (with continuations) and 2 published applications; the granted families are cited by 55 later patent families, 33 from 25 organizations outside Apple and Meta, including Samsung, IBM, Huawei, Qualcomm, Canon, and Boeing. Drove system design and integration of wireless features shipped in hundreds of millions of Apple devices and millions of Meta Quest headsets, including two industry firsts (built-in UWB in iPhone 11; Wi-Fi time-averaged SAR in iPhone 12), Bluetooth Beamforming, and Wi-Fi coexistence algorithms; also develops Wi-Fi CSI-based sensing.

EDUCATION

Masters, Electrical Engineering (Wireless/RF) — University of Southern California, Los Angeles, California May '12
Bachelors, Electronics and Telecom Engineering — University of Mumbai, India June '10

PATENTS & INTELLECTUAL PROPERTY

- **US 11,422,692 B2 / US 12,443,284 B2** (Apple): “System and Method of Controlling Devices Using Motion Gestures.” [28 citing patent families, including Samsung, IBM, Huawei, Honor, and Canon]
- **US 10,117,084 B2** (Apple): “Context-Dependent Allocation of Shared Resources in a Wireless Communication Interface.” [20 citing patent families, including Qualcomm, Boeing, Toyota Research Institute, Amazon, BlackBerry, and Bosch]
- **US 10,416,747 B2 / US 11,150,717 B2** (Apple): “Dynamic Transmission Power Adjustment.” [4 citing patent families, including Hewlett-Packard and OPPO]
- **US 10,784,931 B2 / US 11,770,161 B2 / US 12,750,098 B2** (Apple): “Assisted Multi-User Multi-Input Multi-Output (MU-MIMO) Communication System.” [3 citing patent families: Sprint (T-Mobile), Spreadtrum (UNISOC), and BluWireless]
- **US 2024/0267907 A1** (Meta): “Systems and Methods of In-Device Coexistence Aware Wi-Fi Preemption Enhancement.” [Published August 2024]
- **US 2026/0169570 A1** (Apple): “System and Method of Controlling Devices Using Motion Gestures.” [Published June 2026; continuation in the gesture family]

KEY ACHIEVEMENTS

- **(Meta) In-Device Coexistence architecture for Meta VR headsets:** Designed and implemented a coexistence system for the Meta Quest 3 and Quest 3S product lines (millions of units), including Wi-Fi preemption control (US 2024/0267907 A1).
- **(Meta) Wi-Fi CSI-based sensing:** Developed Wi-Fi Channel State Information (CSI) sensing techniques for mixed-reality devices (patent application filed).
- **(Meta) Bluetooth SIG–Wi-Fi Alliance Joint Task Group (JTG) contribution:** Provided VR traffic profiles and user-experience KPIs measured on shipping Quest 3/3S headsets for the joint group’s Bluetooth/Wi-Fi coexistence simulation studies.
- **(Apple) Dynamic power management and spectral efficiency optimization:** Co-invented patented algorithms for dynamic power control, context-dependent resource allocation, and assisted MU-MIMO. The three families (US 10,784,931; US 10,416,747; US 10,117,084) are cited by 27 later patent families (25 outside Apple and Meta), including Qualcomm, Huawei, Boeing, Amazon, and Bosch.
- **(Apple) Motion gesture control system:** Invented a system for controlling devices using sequences of motion gestures (US 11,422,692 B2; first-named inventor), cited by 28 later patent families, including Samsung, IBM, Huawei, Honor, and Canon.
- **(Apple) First smartphone with built-in UWB (iPhone 11, 2019):** Led UWB wireless systems engineering and integration at Apple (ranging, angle-of-arrival, calibration, and coexistence with the phone's other radios). Apple introduced U1's Ultra Wideband as “the first ever in a smartphone” (September 2019; FCC grants BCG-E3305A and BCG-E3309A); Samsung followed in August 2020, and more than 436 million UWB-enabled devices shipped in 2024 (ABI Research).

- **(Apple) Dynamic SAR averaging for Wi-Fi (iPhone 12, 2020), industry first:** Owned the wireless systems engineering (algorithm, averaging window, power control logic, and failsafe design) and worked with the WLAN chipset vendor on compliance. The iPhone 12 FCC filing (October 2020) is the earliest documented smartphone Wi-Fi time-averaged SAR implementation and carried into later iPhones (hundreds of millions of units). Qualcomm (Smart Transmit 3.0, 2022) and Samsung (Galaxy Z Fold5, 2023) followed.
- **(Apple) Bluetooth Beamforming (iPhone 11, 2019):** Led wireless systems engineering for a novel application of beamforming to Bluetooth, including RF calibration and over-the-air evaluation. Up to 45% more audio-streaming range than iPhone XR (Apple); carried into later iPhones (iPhone 11 alone: 64.8 million units shipped in 2020, Omdia).
- **(Apple) Apple-Google COVID-19 Exposure Notification system:** Made wireless domain contributions to Bluetooth-based exposure notification, built into iOS and Android and used by public health apps in 50+ countries, states, and regions by December 2020.
- **(IEEE) Peer review and membership:** Completed 37 peer reviews of 35 manuscripts and papers: 13 for five IEEE journals, including IEEE Internet of Things Journal and IEEE Communications Magazine, and 24 for ICASSP 2027, VTC 2027-Spring, ISCAS 2027, and EuCAP 2027; IEEE Senior Member (2026).

PROFESSIONAL EXPERIENCE

Meta

Wireless Systems Engineer, Reality Labs – Sunnyvale, CA May '22 – Present

- **Own end-to-end wireless system architecture** for Meta's VR/MR platforms, including the Quest 3 and Quest 3S product lines: chipset evaluation, link-budget definition, RF architecture, and power optimization.
- **Designed and implemented the In-Device Coexistence (IDC) architecture** for head-worn MR devices, including Wi-Fi preemption control (US 2024/0267907 A1).
- **Developed Wi-Fi CSI-based sensing** techniques for mixed-reality devices (patent application filed).
- **Product programs:** Meta Quest 3/3S, Touch Plus controllers, Quest 3S Xbox Edition, Logitech MX Ink for Meta Quest, and Meta VR Glasses (announced September 2026).
- **Led cross-functional collaboration** with chipset vendors, antenna design teams, and firmware teams to optimize end-to-end system performance under extreme SWaP constraints.

Apple Inc.

Wireless/RF Systems Engineer (Connectivity) – Cupertino, CA April '15 – May '22

- **Led wireless system design** and characterization for multiple iPhone generations, iPads, and Apple Watch. Defined link budgets and KPIs for devices shipped to hundreds of millions of users.
- **Primary technical authority** for end-to-end wireless system performance across multiple Apple products, resolving complex field and customer issues with chipset vendors.
- **Co-invented 4 patented technologies** (MU-MIMO optimization, dynamic power control, resource allocation, gesture control), now 8 granted U.S. patents cited by 55 later patent families.
- **Delivered industry-first wireless features:** the first smartphone with built-in UWB (iPhone 11) and the earliest documented smartphone Dynamic SAR averaging for Wi-Fi (iPhone 12); also Bluetooth Beamforming (iPhone 11).
- **Contributed to the Apple-Google COVID-19 Exposure Notification system,** making wireless domain contributions to Bluetooth-based exposure notification used by public health apps worldwide.

Qualcomm Atheros Inc.

Wireless/RF Systems Engineer – San Jose, CA July '12 – April '15

- **Drove RF performance characterization** (throughput, rate vs. range, EVM, Rx sensitivity) and early-phase PHY/firmware feature tuning (antenna diversity, beamforming, MIMO) for flagship 802.11ac WLAN chipsets, supporting OEM evaluations and design-wins.

TECHNICAL SKILLS

Wireless Technologies: Wi-Fi, Bluetooth, Ultrawideband (UWB), GNSS

Specializations: Multi-radio coexistence, MU-MIMO, dynamic power management, Wi-Fi CSI-based sensing, OTA characterization, link budget analysis