MICHAEL A. RAMALHO, PH.D.

Remote or Northeastern US or Miami/Tampa or Dallas/Austin or CA

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Lead Scientist / Senior Director / Business Development Manager for Acoustics, Speech/Audio/Signal Processing using AI/ML

Extensive experience as a chief technologist, director, lead architect, lead business development manager, principal investigator, and engineering manager of high-talent engineers and graduate students in acoustics, speech and signal processing algorithm development using machine learning/artificial intelligence, spread-spectrum communications, blockchain/crypto mechanics and governance, real-time media networking, coding, unified comms, and IoT.

Excellent negotiation and outbound communications skills; often chairs and defines external high-tech forums. Defined, sold and led research and pragmatically developed cutting-edge technical products in both start-up and established company settings.

Excels and strives in developing technology solutions which require optimization in graduate level math, engineering, and computing disciplines such as machine learning, algorithmic convergence, reliable distributed computing or networking. Research initiative manager for million-dollar research projects. Technical manager for software-defined, high-tech features.

- Expert in acoustics and signal processing algorithms in normal (reverberant) acoustic volumes. Please see my AcousticComms Consulting URL for details (https://ac.ramalho.us).
- Developed microphone steering algorithms for non-close-talking microphone arrays in headset and desk capture designs. Developed detailed measurement capability for noise-reduction designs using anechoic chambers (TX, CA, Norway) and industry standard tools (e.g., HATS). Acquainted with acoustic hardware I/O limitations (AOP, dynamic range, noise figures, etc.) and how they translate into real product limitations.
- Preeminent specialist for acoustic communications in low ultrasound region (~20 kHz) where signals can be process by consumer electronics (smart phones/tablets). Developed robust watermarking technology for both acoustic and video signals.
- Proven track record for on-time, high-quality, analytically challenging product designs or applied research in C-suite, managerial, and individual contributor roles. Creative problem solver and technology innovator with over 59 patents, several peer reviewed papers and recipient of many technical awards in company and academic settings.
- Negotiation: Championed designs in delicate external standards organizations (ITU-T, IETF, ETSI, 3GPP) and corporate settings. Co-chaired VoIP Forum. ITU-T Moderator.
- Active in professional activities and university research. IEEE Florida West Coast Section Joint Signal Processing and Communications Society Chair and Blockchain LG chair.

Experience

CISCO SYSTEMS, San Jose, CA / Remote **1999 – 2019**

Independent Contributor & Standards, 2004 – 2019

Developed new Direct Sequence Spread Spectrum (DSSS) system for ultrasonic transmission in reverberant conference room environments (nine patents). System is in widespread use in

Cisco's telepresence product for proximity pairing services (over a million endpoints) and is still a significant differentiator for Cisco's telepresence offerings over competitors.

- Primary architect for video conferencing rate control. Proposed, designed, and built lab capability for the assessment of media rate-control algorithms. Co-authored rate control standards (e.g., IETF RFC 8698) supporting superior operation of Cisco's product.
- Primary architect and designer for the media monitoring and failover algorithm used in Cisco's Intercompany Media Engine. Work was Pioneer Award finalist (highest award).
- Developed the first-ever application of lossless codec technology specifically for use in VoIP. Design resulted in the ITU-T G.711.0 standard (was ITU-T moderator for work).
- Primary author or co-author of seven IETF standards (RFCs 2805, 3758, 7655, 8698, 8867, 8888, 8869).

Engineering Manager – Corporate Research, 1999 – 2004

Manager of industry-leading IETF MTS and Distinguished Engineers. Instrumental to nascent VoIP and VoIP failover technologies, helping to position Cisco as number-one provider of enterprise voice. Internet transport expert. Major liaison between key internal teams, external standards and university research (e.g., Stanford). Co-author of PR-SCTP (IETF RFC 3758).

Additional Relevant Experience

Voxware, Princeton, NJ

Chief Telephony Technologist for VoIP Startup (C-suite). Instrumental to successful IPO.

Telcordia / Bellcore / Bell Labs, Navesink, NJ / Morristown, NJ / Whippany NJ

Applied Research Manager: Internet Telephony. Presented at many leading research labs.
Director: Network Analysis and Characterization. Telco C-Suite readout responsibility.
District Manager and MTS: Co-invented and prototyped DSL line codes.

Education

Udacity Nanodegree: Artificial Intelligence and Specializations - July 2018
Rutgers University: Doctor of Philosophy (Ph.D. in Speech Signal Processing) – Jan 1994
Cornell University: Master in Engineering (M.Eng.)
Rutgers University: Bachelors in Electrical Engineering (B.S.E.E.)

Awards & Special Skills

- Awards: 2021 IEEE Region 3 Outstanding Engineer Award, Cisco Pioneer Award finalist, Bellcore Award of Excellence winner, Bellcore Presidents Award winner. Fifty-nine issued US patents. Major author in IETF, ITU-T, ETSI standards.
- Python and AI Framework (Keras, TensorFlow) in both 1-D (RNNs) and 2-DD (CNNs).
- MATLAB expert, MATLAB to C, Unix/PowerShell scripting. AWS experience (S3, EC2, etc.).
- University/Industry/Professional: IEEE FWCS Sig Proc and Comms Chair and Blockchain LG Chair. Rutgers University CAIP Fellow. ICC TPC Vice-Chair, and Globecom TPC. Research outreach for Stanford, UT Dallas, Rutgers, USF, UCF, UND, & Cleveland State.
- Moderator in many standards bodies (ITU-T, ANSI Committee T1, IMTC / VoIP Forum).
- Wharton Business School Executive Program coursework. Public media training.