

# CURRICULUM VITAE

## Edwin A. Hernandez Mondragon, PhD

### Expert Witness

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### Expertise Areas

- **AirInterface and LTE Source:** Experience with SDRs, OpenAirInterface project, reviewing code for handover, RRC Channels, and handoff parameters
- **Cloud Storage and Data Synchronization:** GlusterFS, File Systems, Dropbox/S3 integration, implementation of the hula drive product and a massive storage device for EGLA. Cloud computing in general, Load balancing, AWS.
- **Wireless Communications:** 4G, 3G, LTE signaling, WLAN, Software-defined Networks, and RF emulation with a patent in wireless emulation/dissertation on this field.
- **Mobile Devices and Systems:** User Interfaces in mobile, mobile operating systems, Expert in mobility and wireless roaming 2G-3G-4G systems
- **Blockchain:** Bitcoin, Litecoin, Consensus Algorithms, Gossip Protocols
- **Power Management:** Wireless Power Management Issued Patent for Microsoft Wireless Service and Wireless Charging Patent with over 80+ references
- **Personal Area Networking:** Expertise in Personal Area Networks and Wearable Systems. Issued Patent for Windows PAN Driver.
- **Multimedia Streaming:** Cable Systems and TV distribution, DVB, Music platforms and automated playlist creation, real-time encoding, and cloud storage systems
- **Smart phones and wireless embedded software development:** Personal Area Networking, Virtual Machines and Operating Systems, Bluetooth

### Academic Background

Ph.D., **University of Florida**, Gainesville, FL,  
Major: Computer Engineering,

*Research Areas:* Mobile Computing, Wireless Networks, Handoff Optimization, and Adaptable Network Protocols, Linear Prediction, Network Emulation

*Dissertation:* An Adaptive Networking Protocol for Rapid Mobility Environments

Advisor: Dr. Sumi Helal, August 2002

M.Sc., **University of Florida**, Gainesville, FL.

Major: Electrical and Computer Engineering

*Research Areas:* Computer Networks and Intelligent and Information Systems (Artificial Intelligence). Thesis: Adaptive Sampling for Network Management

Advisor: Dr. Alan D. George December 1999

B.Sc. **Costa Rica Institute of Technology**, Costa Rica,

Major: Electronics Engineering

Thesis: Monitoring system for a packet-based data network, RACSAPAQ  
Advisor: Dipl-Ing. Luis P. Mendez July 1995

## Industry Experience

**Expert Witness Services**, 3/16 – now, Boca Raton, FL

**Experience:** Expert witness services for patent and trade secret cases in Federal court, filing expert reports, consultant, software auditing. <https://eglacomm.net/expert-witness-services/>

**EGLA COMMUNICATIONS. Developer//Founder**, 7/11-now, Boca Raton, FL.

**Experience:** Created MEVIA and the "Mediamplify" Platform. Mediamplify is the platform that merges cloud and Cable TV systems and simplifies music and video distribution to web, mobile and Cable TV. Mediamplify is a "Software as a Service" and a cloud-based platform that enables "Mediamplify Music" currently in operation in several countries including Brasil, Honduras, and United States. Supplied and maintained REST/SOAP/JSON APIs to handle more than 500K subscribers with SKY TUNES application. Our technologies powered DMX Media before its **\$16M** acquisition by Stingray Digital. The Mediamplify platform is a cloud-based system designed to distribute digital music and video content to any device including cable operators using our patent-pending Mediamplify appliance. Links: [mediamplify.com](http://mediamplify.com), [mevia.co](http://mevia.co) and [www.eglacomm.net](http://www.eglacomm.net)

**Rapid Mobile Technologies, Inc. CEO/Founder**, 7/10-7/14, Boca Raton, FL.

**Experience:** Commercialization of MobileCAD (Patent 7,231,330) a mobile emulation environment for 3G/4G networks, propagation models simulation, virtual drive testing and RF scenarios. Prototype build using GSM/OpenBTS, but reusable for LTE/WiMAX/UMTS as well as, MobileIPP (Patent 7,697,508) for seamless mobility in Mobile IP networks. Major wireless technology companies currently license my patents.

**Motorola Inc, Principal Staff Software Engineer**, Mobile Devices, 11/07-5/10, Plantation, FL.

**Experience:** Google Android Platform/Application Development, Kernel-level prototyping, Data support, implemented HTTP Push/MMS, DRM content management, Webkit and Opera- based browsers, Lead discussions with customer Sprint/Nextel and Nextel International. I defined Android architecture and the concept of iDEN+5, which seeded Android in Plantation.

**Motorola, Inc Sr. Software Staff Engineer**, Mobile Devices, 11/03 -10/07, Plantation, FL.

**Experience:** Feature lead for Java Virtual Machine for Dual-mode devices, J2ME Expert, JSR implementation on BREW architectures, and iDEN/CDMA software interactions. As a feature lead, program management interactions, customer interactions, and 3rd party vendor relationships (ie Qualcomm). Platform design and development for Windows CE devices and Microsoft Smartphone Platforms, i930 mobile phone.

**Microsoft, Technical Program Manager**, Windows Networking, 8/02-9/03, Redmond, WA

**Experience:** Feature lead for Bluetooth Personal Area Networking. Responsibilities driving Architecture, Design, Test Automation, security analysis for PAN, and drive testing over networking protocols such as IPv4 and IPv6 networks/

**Microsoft, Program Manager Intern**, Windows Networking, 5/01-8/01, Redmond, WA

**Experience:** Wireless Zero-Configuration (WZC) for Windows XP Service Pack, Power Management algorithm using self-similar traffic modeling, and adaptive adjustment of the duty

cycle. IEEE 802.11b/g/a services could be optimized to reduce power consumption from 0 to 80% depending upon network traffic characterization.

**COMPUNET, Entrepreneur/Lead Engineer**, 4/97-11/09, Honduras/Remote

**Experience:** Cisco/Linux administrator, Webmaster and senior system engineer and owner. Lead developer for: authentication services, security, web, and networking configuration.

## Expert Witness for IP/Patent Cases

- University of Florida Research Foundation, Inc. et. al. v. Motorola Mobility LLC. Filed in U.S. District Court for the Southern District of Florida
- Virtela Technology Services v. Andrew Funk, File in the US District Court of Denver, Colorado, Representing Andrew Funk
- Del Castillo v. Bank of America – Representing Bank of America
- Seven Networks v. Google, Representing Seven Networks
- Blue Radios vs Kopin, Representing Blue Radios
- Mobility Workx v. T-Mobile and Mobility Workx v. Verizon Wireless, Representing Mobility Workx, LLC in Texas
- Mobile Manufacturer v. Carrier, Eastern District of Texas, Representing Mobile Manufacturer (Confidential)
- Talent Mobile Development v. Headios Group (California, Trademark/Mobile Software)
- Pre-trial / 4 Confidential Defendants/Plaintiffs

## Software Audits

- Honduran Government, National Institute of Properties, transfer from the World Bank to the Honduran Government
- Auditing of Honduran Elections, fraud detection and analysis (Pro-Bono)

## Publications

- J. Zablach, E. Hernandez, et.al "Analysis of Honduras technology transfer efforts and implementation of a high-performance computing and networking infrastructure," accepted World Development Journal, Jan 2016.
- E. Hernandez , "War of Mobile Browsers," IEEE Pervasive Computing, vol. 8, no. 1, pp. 82-85, Jan.-Mar. 2009
- E. Hernandez, A. Ayyagari, "Heavily-tailed Network Traffic Modeling for Power Management", IEEE Workshop on Performance and Management of Wireless and Mobile Networks Australia, November 2005
- E. Hernandez, M. Chideste, and A. George, "Adaptive sampling for network management," Journal of Networks and System Management (JNSM), Vol. 9, No. 4, Dec 2001.
- E. Hernandez, A. Helal, "Predictive Mobile IP for Rapid Mobility," IEEE Conf. Wireless Local Networks 2004, Tampa, FL
- E. Hernandez, A. Helal "RAMON: An emulation approach," IEEE Conf. Local Computer Networks 2002, Tampa, FL
- E. Hernandez, A. Helal, "Examining Mobile-IP Performance in Rapidly Mobile Environments: The Case of a Commuter Train," IEEE Conf. Local Computer Networks

2001, Tampa, FL, Nov 14-16, 2001.

- Helal, S. Shah, E. Hernandez, "Mobility Benchmarking In Ad-Hoc Networks," The IPSJ Journal, Vol.43, No.11, June 2002. Approx. 15 pp.
- S. Shah, E. Hernandez, A. Helal, "CAD-HOC: A CAD Like Tool For Generating Mobility Benchmarks In Ad-Hoc Networks," SAINT 2002, Japan, January 2002

### Thesis and Dissertation

- E. Hernandez "**An adaptive protocol for rapid mobile environments**," Ph.D Dissertation, University of Florida, August 2002
- E. Hernandez. "**Adaptive sampling for network management**," M.Sc. Thesis, University of Florida, Dec 1999
- E. Hernandez, Y. Lee. "**Monitoring system of a packet data network**," B.Sc. Thesis. ITCR, report, July 1995

### Technical Reports/Prior to publication

- E. Hernandez "Mediamplify: A Multimedia Platform for MPEG TV Systems, " Dec 2015
- E. Hernandez, A. Helal, "RAMON: A network emulation environment," CISE Department, University of Florida, 2005
- E. Hernandez, A. Helal, "Ghost Mobile IP," CISE Department, University of Florida, 2005.
- E. Hernandez, "DMTF: Authentication for Mobile Phones," Motorola, defensive Publication, 2004

### Patents and Innovations

- E. Hernandez, A. Ayyagari, et al. "Method and system for managing power consumption of a network interface module in a wireless computing device," Microsoft Corporation. **Issued US Pat. 7,564,810**
- E. Hernandez, A. Helal, RAMON, "Rapid Mobility Network Emulator Method and System," University of Florida. **Issued US Pat. 7,231,330**
- E. Hernandez, A. Helal, "System, Apparatus, and Method for Proactive Allocation of Wireless Communication Resources," University of Florida, **Issued US Pat. 7,697,508 and US Pat. 8,213,417**
- S. Poursabastian, E. Hernandez, et al, "Bluetooth PAN Driver," Microsoft Corporation, **Issued US Pat. 7,269,388**
- Krantz, E. Hernandez, et al "Rules-based Network Selection Across Multiple Media," Microsoft Corporation, **Issued US Pat 8,788,715, and 7,996,505**
- V. Bhanu, E. Hernandez, et al, "Smart Scan for Bluetooth PAN Services," Microsoft Corporation." **Issued US Pat. 8,024,487**
- E. Hernandez, K. Ardizzone. "Thumb-based User Interface for Camera Phones," Motorola, Inc, submitted 2005
- E. Hernandez, et al. "Java-based Push to Talk, " **Issued Pat 8,707,337**
- E. Hernandez, "Secure USB Drive," Motorola, Inc, submitted 2005
- E. Hernandez, J. Tracy "Magnetic Connector", Motorola, Inc, **Issued US Pat: 7,331,793**
- E. Hernandez, Mediamplify Patents being submitted Dec 2014/Jan 2015 **US20170374417 A1**
- E. Hernandez – Anemometer with Augmented Reality – April 2018 – Patent Application.

## Skills

**Platform experience:** 4G LTE Handoff and Platforms, Wearables, Bluetooth LE, Cloud Computing, Cloud Storage, Software-defined Networks, REST/JSON API, SOAP, Linux-based Systems (Expert Level): Raspberry PI, Android, LIMO, proprietary, Windows-based: Windows CE, J2ME-based: Blackberry RIM SDK, Motorola SDKs, Samsung SDK, IOS 4.0 iPad/iPhone/iPod (PhoneGap) other: BREW, AMSS/DMSS.

**Software Development languages:** Python/Django, PHP, Javascript (jQuery, NodeJS, AngularJS), Objective-C/Swift, Java, Java/Android, GNU C/C++, C#, VB.NET, Platform Builder, Java Micro Edition, J2SE, and MySQL. **Process Management:** Github/JIRA/TFS. SCRUM.

**Other programming languages:** LISP, PROLOG, FoxPro, Pascal, Embedded design, Intel assembly code (i8051, x86), and TCL/TK.

**Internet Networking:** Wide experience with 2G/3G wireless standards (GSM/GPRS, UMTS, and CDMA 2000). Extensive experience with mobility protocols such as Cellular IP, HAWAII, Mobile IP, AODV. In-depth knowledge of IPv4 and IPv6 protocols. NDIS driver design in Windows platforms, BNEP and PAN and IEEE 802.11 standards. Experience managing and securing Cisco IOS routers networks/firewalls and SNMP management.

**Software Defined Radios and Networks:** GNU Radio, RF and Software-based Emulation, Wireless Emulation.

**Cloud Computing:** Cloud storage and platform development of multimedia delivery systems.

**Scientific and engineering tools:** MATLAB, pSPICE, OrCAD, Network Simulator (ns-2), wide experience in electronic circuit design, digital design, and low-level debugging tools, including PC-104 and circuit design.

## Technology Licensed

- The US patents 7231330, 7697508, and 8213417 are licensed by a major internet and wireless communications company in use to manufacture millions of cellular devices

## Honors and Awards

- Innovation Awards, City of Coral Springs, FL
- Top projects in Emerge Americas 2018 Hackathon with Video Anemometer, Miami, FL
- Fifth Place in Bitcoin Hackathon 2018 with Bitcoin Caster, Miami, FL  
[https://github.com/win2013/bitcoin\\_alex](https://github.com/win2013/bitcoin_alex)
- Winner of Kinect/Gesture-controlled Hackathon in Boca Raton, FL  
<https://github.com/win2013/airthenticate>
- Founding member of **Honduras Global** a Honduran foundation
- Finalist and presenting EGLA COMMUNICATIONS at Florida Venture Forum in Coral Gables, FL 2015
- Finalist at Emerge America's Conference with Mediamply in 2014, Miami Convention Center
- Finalist Music Sparks in LAB Miami, FL.
- **Fulbright-Scholar:** 1997-1999.
- Mention of honor in the Honduran National Science Contest, May 1997.

- Ranked 1st in undergraduate studies, Costa Rica Institute of Technology, July 1995.
- Winner Business Plan Competition in University of Florida 2002, and Runner-up 2001
- Four consecutive academic scholarships undergraduate work at Costa Rica Institute of Technology (ITCR), 1991-1995.
- High-Performance Computing and Simulation Lab student award, spring 1999.
- In March 2001, as a co-founder of E-melodies, runner-up during the *2001 UF Business Plan Competition* at the University of Florida and winner of the *2002 UF Business Plan Competition in Information Technology*.

## Entrepreneurship

**EGLA COMMUNICATIONS:** Founder and Chief Technology Officer, Startup/Boca Raton FL: Mediamply Platform (Cloud to Cable TV), Expert Witness Services, Software/Cloud hosting, Multimedia Delivery Services, HulaDrive.

**EGLAVATOR:** Founder of a Technology incubator in Boca Raton, FL

**Mobility Workx, LLC:** Principal, 3G/4G Emulation and Mobile Independent Handoffs under patents 7,231,330, and 7,697,508 also known as MobileCAD and MobileIPP.

**UBIWIRELESS, LLC:** Founder, A company dedicated to developing mobile and wireless technologies, including products as RxProfile™ (<http://rxprofile.net>), FUTMOB, and Ad2Fone, among others (Mobile Applications)

**COMPUNET S. de R. L.** Founder and CTO, Honduras pioneer Internet Service Provider founded in 1997 completed operations in November 2009.

## Personal Information

**Hobbies:** Guitar playing, running, soccer, volunteering, option and derivatives trading.

**Citizenship:** Honduran/US Citizen

**Religion:** Catholic - Salesian Alumni – Instituto Salesiano San Miguel

## Services and Memberships

- Emerge Broward and Leadership Broward Member 2014-2016
- Organizing Committee, Mobile Mondays Miami, 2009-2013
- Organizer “Startup Weekend Boca,” October 2013
- Hispanic Graduate Student Association, Finance chair, 2001-2002
- Hurricane Mitch Volunteer, Gainesville, FL. October 1998
- ACM, IEEE member, dancing, soccer, and tae kwon do black belt
- St. Andrew’s Catholic church, Life Teen, Coral Springs, FL, 2004-2005
- Member of Lovebags.org, 2007-2009
- Member of Society of Hispanic Professional Engineers, 2009-2010

## Technical Program Committees/Reviewer for International Conferences

- 2018 International Conference on Information and Communications Technology (ICOIACT)
- 2017 2nd International conferences on Information Technology, Information Systems and Electrical Engineering (ICITEE)
- 2016 Global Summit on Computer and Information Technology



- 2016 International Conference on Information Technology, Information Systems, and Electrical Engineering
- WCI 2015 – Women in Computing and Informatics
- Editorial Board Intl. Journal of Networks and Systems 2009-2016
- 2012 (2012 IEEE Symposium on Wireless Technology & Applications).
- IEEE International Consumer Networks, 2011
- IEEE Broadnets 2008
- IEEE Wireless Networks Magazine, 2002-2003
- IEEE Transactions on Mobile Computing 2007
- IEEE Wireless Local Networks 2005-2007
- IEEE Local Computer Networks 2007-2008
- IEEE GLOBECOM 2005
- IEEE SOUTHEAST CONFERENCE 2005
- IEEE Conferences in 2014-2015
- Panelist at 4G Wireless (Miami Beach, FL), several Mobile Monday events, and Mobile Commerce Latin America (2009).

## Tutorials

- WEBCONF Latino 2010, Tegucigalpa, Honduras.
- Mobile Computing Platforms, Tegucigalpa, Honduras.
- IEEE SOUTHEAST CONF 2005. Windows Cryptographic API, A Session Keys Paradigm.
- *Keynote speaker* at "First Tuesday" Tegucigalpa, Honduras, and San Salvador, El Salvador

## Training

- **Tucks Schools of Business – Dartmouth University**, Digital Strategies for Entrepreneurs, Google Campus, Seattle, WA, and December 2016.
- **Management Skills and Business Strategies**, FAU Campus, Boca Raton, FL, January 2014

## Languages

Fluent in Spanish and English. Basic knowledge of German and French

## Teaching Experience

**Teaching Assistant for Mobile Computing, University of Florida**, Spring/Fall 2001

**Experience:** Mobile Computing is level-6000 graduate class. The class involves the discussion of research papers and a practical section where different wireless technologies are covered. In addition to my job duties, an automated examination tool was developed as additional class aid for grading. The class required J2ME/JSEE knowledge and the ability to support the class with Motorola smart phone development, plus all additional aid required to run the killer application competition sponsored by Motorola.

**Teaching Assistant for Software Engineering, University of Florida**, Fall 2000

**Experience:** The class was targeted to computer engineering seniors as an introduction to the software development cycle. Students carry-on a web-based project and deliver specific

documents and specifications (architectural, design, UI), develop a prototype, schedule different tasks, and manage the project to be delivered on time. The TA assists technically and supervises their work, grades quizzes and exams

**Teaching Assistant for Introduction to CIS/Java, University of Florida, Summer 2000**

**Experience:** I taught an introductory lab session, graded quizzes, exams, and assignments. As an assistant I held different tutorial sessions on object oriented concepts and problem-solving skills.

**Teaching Assistant for C++, University of Florida, Spring 2000**

**Experience:** Grading and preparing assignments for the class.

**Instructor at the Central American Internetworking Conference, Sep'98**

**Experience:** During the conference, I taught a 3-day intensive hands-on class on network security. I covered topics from: network intrusion detection, privacy, and authentication mechanisms

**Instructor, Central American Telecommunication Videoconferencing, Summer 1996**

**Experience:** Teaching Linux (Operating Systems), C++, and Networking seminars to engineers all over Central America (Remote teaching)

**Central American Telecommunication Commission, Network Engineer, Tegucigalpa, Honduras, August'95-May '97**

**Experience:** Network Engineer, Videoconference systems (VTEL and H.323), software development for telecommunications and traffic management

**United Nations Development Program (UNDP), IT Consultant, Tegucigalpa, Honduras, November'96-May '97**

**Experience:** Network security and consultant for the United Nations program in Honduras. Software auditing and network configuration

## Research Experience

**Research Assistant, University of Florida, Gainesville, FL, Jan'00 – Aug '02**

**Experience:** I investigated the effects of handoff and network mobility at different vehicular speeds. I used Mobile network simulation and emulation were important tools to study Mobile-IP and Layer-2/3 mobility protocols. I developed RAMON, Rapid Mobile Network Emulator, a device that emulates network layer mobility and programmatically replicates mobility conditions varying from signal strength, packet delay, BER, and speeds. RAMON uses real 802.11b Access Points, Omni-directional antennas, embedded computers (e.g. PC-104) and custom-build control circuitry. RAMON also used a .NET interface to automatically create network topologies to be emulated. In depth routing protocols explored, IP tunnels, and low-level network device driver adjustments. I conducted extensive simulation work on ns-2

**Research Assistant, University of Florida, Gainesville, FL Sep.'97 - Dec. '99**

**Experience:** I joined the High-performance Computing and Simulation Research Lab. During my thesis work, I applied Fuzzy Logic in Network Management, focusing on how adaptive sampling could reduce captured statistics without losing important network behavior. Additionally, I researched ATM networks, SNMP (Simple Network Management Protocol), Virtual Interface Architecture (VIA) over Myrinet, CORBA, and High-performance Cluster Computing topics.

**Program Manager Intern, Microsoft Corporation, Redmond, WA, May - September'01**



*Experience:* As an intern, I investigated self-similarity and power management algorithms for Wireless Networks. I modeled the method how service time per packet could be estimated and used for QoS in ad-hoc and infrastructure networks.

**Network Engineer, Radiografica Costarricense, R&D, Costa Rica. January-July'95**

*Experience:* I developed a microcontroller-based (x8051 and RUP1-51 micro-controllers) system to measure X.25 and PBX data traffic, Windows-based GUI, and X.25 frame captures

## References

### **Dr. Sumi Helal, Full Professor**

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