Bruce McNair

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Career Summary

- Fifty years engineering research, design, development, systems engineering experience in communications systems (including extensive background in wireless communications and system/network security)
- Twenty four years as a well-rated member of one of world's most highly respected R&D organizations, recognized for breadth, depth and practicality of expertise
- Extensive experience teaching technical short courses for premiere educational programs over a fourteen year period
- Full time university educator for fifteen years with experience teaching a broad set of courses focusing on practical engineering approach
- On-line university educator for eighteen years teaching well-attended graduate courses in wireless and security technologies

Research interests

- High speed wireless data networking
- System/network security
- Geolocation technology
- Real-time digital signal processing
- Software-Defined Radio technology
- Broadband Powerline (BPL) technology

Present Organizations

- Stevens Institute of Technology,
- Novidesic Communications, LLC

Job Titles

- Distinguished Service Professor of Electrical and Computer Engineering
- Founder, Chief Technology Officer

Education

- M.E., E.E., Stevens Institute of Technology, 1974
- B.E. (with Honor), Stevens Institute of Technology, 1971
- Completed qualifiers and course work for PhD in Computer Science at Stevens

Relevant Experience	January 2003 – present – on-line teaching professor – Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, NJ;

January 2003 – present – on-line teaching professor – Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, NJ;
Teach several well-enrolled on-line graduate courses in wireless security, information systems security and physical design of wireless communications systems.

August 2002 – December 2017 (retired) – Distinguished Service Professor of Electrical and Computer Engineering, Program Director, Computer Engineering graduate program, Stevens Institute of Technology, Hoboken, NJ;
Design and manage the Senior Design Project, a two-semester program that forms a substantial portion of the senior year in the engineering program. This project comprises a large fraction of the seniors' efforts and serves to provide real-world engineering design experiences for the student. Teach a large number of well-enrolled graduate and undergraduate core and elective courses. Conduct research in wireless systems, geolocation services, and broadband powerline (BPL) systems, particularly security needs and solutions. Member of Stevens Intellectual Property Review Board, Stevens Honor Board Advisory Council, Stevens' Schaeffer School of Engineering and Science Promotion and Tenure Committee, and the Senior Design Coordinator Committee.

February 2002 – present – CTO, Novidesic Communications, LLC, Holmdel, NJ;
Founded a technical consulting company, providing expert witness support and testimony, telecommunications, wireless networking, security, software, computing, product evaluation, proof-of-concept prototyping, and web site design guidance to individuals and small businesses. Clients include health care facilities, patent attorneys, major telecommunications providers, venture capitalists, major component manufacturing company, start-up hardware and concept development companies. Supported technology needs of small local business leading to Phase I and Phase II SBIR funding in the area of RFID with patented technology. Provide IP portfolio evaluation. Expert witness in patent litigation with experience testifying at deposition and trial as well as preparing USPTO IPR declarations.

August 2011 – February 2012 – Part-time consultant, Lockheed-Martin, Moorestown, NJ;
Support development of advanced radar systems and interactions with other wireless systems.

2010 – 2015 (part-time, on an as-needed basis) – Senior Systems Engineer consultant, AT&T Government Solutions, Columbia, MD;
Support AT&T's projects with the US Government customers on defense and intelligence-related systems, drawing on previous knowledge and experience in signal processing, wireless systems, telephone and computer networks, and secure system design.

Relevant Experience (continued)	May 1994 to February 2002 (retired) -- Wireless Systems Research Department, AT&T Bell Labs/ AT&T Labs - Research, Holmdel/Red Bank/Middletown, NJ

Relevant Experience (continued)

May 1994 to February 2002 (retired) -- Wireless Systems Research Department, AT&T Bell Labs/ AT&T Labs - Research, Holmdel/Red Bank/Middletown, NJ

Member of Technical Staff/Research Staff Member/Principal Technical Staff Member/Technology Consultant; Investigating high-speed, high-mobility wireless data communications systems for untethered access to high speed global networks. Proposed and investigated IEEE 802.11(a & b) physical and MAC layer extensions to outdoor, high mobility environment. Efforts involved system architecture, system control, real-time DSP programming in C, high-speed hardware design, RF design, analog, RF interfacing, Matlab/SIMULINK simulation and experimental investigations. Responsible for complete design, implementation and characterization of a multiple TMS320C40-based 384 kb/s OFDM transmission system and definition/design of advanced signal processing platforms. Recent research extended results to 5-40 Mb/s with TMS320C62/FPGA-based platform and incorporated 802.11a and DVB-T technology. Previous research involved speech quality/data rate enhancements to IS-136, the North American TDMA cellular standard.

November 1987 to April 1994 -- Security and System Reliability Architecture Group, AT&T Bell Labs, Holmdel, NJ

Technical Manager; Created, staffed, and led a group of security, systems reliability and fraud control experts to assess security/quality of products, services, operations systems, communications networks, operating systems, and work centers and to recommend, specify, and prototype cost effective improvements. Created corporate process to build security into the development process. Transformed small (2 person) corporate-funded activity into well-staffed (multi million dollar), successful business unit supported program. Served as security technologies subject matter expert for AT&T Corporate Security and other (AT&T and outside) organizations

May 1982 to October 1987 -- various AT&T Bell Labs organizations, MTS - Supervisor; System Design, Exploratory Development, Applied Research, and Final Product Development of secure voice terminals, modems, speech recognition and speaker verification systems, security chips, encryption devices, and network management systems

June 1978 to April 1982 -- various AT&T Bell Labs organizations, Member of Technical Staff, System design, digital hardware design and simulation of wide area (X.25) data communications networks and high-speed data transmission techniques for voiceband modems. Led $1M IR&D secure voice terminal initiative, ultimately resulting in promotion to MTS-Supervisor and laying groundwork for AT&T's breakthrough success in NSA's STU-3 program.

Relevant Experience (**continued**)	June 1971 to February 1973, January 1974 to June 1978 -- U.S Army Communications R&D Command, Fort Monmouth, NJ. GS-7, 9, 11 & 12 Electronic Engineer (GS-0855)
	Development of tactical military radio communications equipment, specializing in modulation, data transmission, communications security and electronic warfare (frequency hopping and direct sequence spread spectrum) for the SINCGARS VHF-FM radio system.
	March 1973 to December 1973 -- ITT Defense Communications Division, Nutley, NJ.
	Junior Member of Technical Staff; Designed, developed and tested software and digital hardware for portable satellite terminals for use by White House and the world's first hardware implementation of a 2400 bps Linear Predictive Coder (LPC) secure speech transmission system.
Patents, Presentations and Publications	Twenty six U.S. patents and nineteen international patents granted (several pending) in areas such as data transmission, cryptographic techniques, speech processing, video processing, security systems, user authentication, fraud control, synchronization, dynamic channel assignment, localization techniques, hazardous voltage detection, RFID, biomedical applications, vibration energy harvesting, solar energy harvesting for portable devices, etc.
	Presented numerous well-rated short courses in Digital Communications, Digital Telephony, Digital Signal Processing, and Wireless Communications, & Security. Course sponsors included: Bell Labs In-hours Continuing Education Program, George Washington University, University of Maryland, UCLA Extension, Johns Hopkins University – Organizational Effectiveness Institute, Berlin (Germany) Continuing Engineering Education Program, Monmouth University, and the Fort Monmouth Education Center.
	Several papers presented at IEEE Vehicular Technology and other Conferences and published in AT&T Technical Journal, IEEE Transactions on Wireless Communications, and IEEE Communications Magazine on various topics in wireless systems and security.
Skills	System/network architecture, communications system design, digital hardware design, RF design, signal processing, real-time DSP programming, software design and coding, proof-of-concept prototyping, designing and conducting laboratory research experiments, OFDM, TDMA/IS-136, FPGA, encryption, computer network security, threat assessment, data communications protocols, computer architecture, digital and analog video systems, system & link-level simulation, UNIX/Linux, Windows, C/C++, Matlab/Simulink, MathCad, PASCAL, Algol, SNOBOL, Verilog, VHDL, FORTRAN. Recruitment, development and management of highly effective technical staff. Highly effective technical presentations and training sessions to any level audience. Well-developed technical writing skills. Preparation, deposition, and testifying regarding expert report for patent infringement/non-infringement/validity/invalidity and other litigation matters. Assist in claim

Other information	U.S Citizen. Held Top Secret - Sensitive Compartmented Information (TS/SCI) clearance with full scope polygraph until October 2015.
	Selected as one of twenty-six finalists among 490 entrants in the 2014 Bell Labs Prize competition for proposal "High-precision, low-cost, low-power indoor geolocation techniques."
	Stevens Institute of Technology, Henry Morton Distinguished Teaching Professor, 2013-2014.
	Named to New Jersey Inventors Hall of Fame, Inventor of the Year (2012) for "Patented/Innovative Research and Entrepreneurial Leadership Related to: Groundbreaking modem development and next generation wireless data communications systems"
	Mentored two AT&T Labs Fellowship Program (ALFP) participants, three students in the MentorNet program, 5 Bell Labs Early Career Advisory Program (ECAP) participants, numerous summer students (graduate and undergraduate), several new employees, and all of the staff in groups I have managed.
	Advised a significant fraction of ECE Senior Design groups, numerous graduate students; participation in thesis committees of several Stevens PhD students in various departments, including Physics, Computer Science, Mechanical Engineering, and ECE. Consult with non-ECE students on ECE aspects of their Senior Design projects
	Mentor summer students at Stevens in NSF-funded Research Experience for Undergraduates (co-PI).
	Stevens Institute of Technology, Schaefer School of Engineering, Undergraduate Teaching Award, December 2006.
	Life Senior Member, Institute of Electrical and Electronic Engineers - Member of Communications, Signal Processing, Computer and Education Societies
	Member, American Society for Engineering Education
	Secretary, IEEE Communications Society Communications Security Committee
	Identified by Rutberg & Co. Investment Bankers (San Francisco) as member of a group of 213 "Top Wireless Influencers: 2002"
	Member of the Council of Communications Advisors
	Amateur radio operator licensed since 1963, Amateur Extra Class since 1970

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