RANDY K. AVENT, Ph.D.
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EXECUTIVE SUMMARY

- **Demonstrated leader with extensive experience in research administration and leadership.**
- **Broad technical expertise in engineering, mathematical and physical sciences. National reputation in radar, microwave imaging and signal processing.**
- **Accomplished track record in:**
  - **Developing and implementing strategic plans,**
  - **Working with industry on university technology transition,**
  - **Developing key relationships within government, academic and National Laboratories,**
  - **Generating external funding,**
  - **Funding, building and managing strategic infrastructure investments.**
- **Committed work ethic with strong interpersonal, communication, and sensemaking skills.**

PROFESSIONAL EXPERIENCE

Associate Chief Technology Officer **2006-present**
Massachusetts Institute of Technology
Lincoln Laboratory

- Recruited by Laboratory Director to help build a new Chief Technology Office for a $650M MIT laboratory focused on advanced technology in support of National Security.

- Responsible for identifying, funding and managing internal research and infrastructure investments of approximately $53.3M.

- Recently completed a government-funded technology globalization study that examined research advances in leading international countries and identified critical areas where US technical advances were deteriorating. Developed a strategic plan for national research investment; currently working with the Office of Basic Research in the Office of Secretary of Defense (OSD) to help understand and define future research directions.

- Developed a 10-year strategic plan that identified important future technology areas for MIT and Lincoln Laboratory and then realigned internal investments to stimulate innovation in these science and technology areas. Plan developed requirements for student core competencies and developed an implementation roadmap.

- Collaborating with MIT Washington Office on a national defense R&D policy white paper to stimulate national investments in STEM. Served as a primary representative on an MIT core advisory group formed by President Hockfield to address defense R&D issues on campus and at Lincoln Laboratory. Also appointed by President Hockfield to serve on a campus-Lincoln Laboratory interaction committee to promote interdisciplinary collaborations across MIT. Built key relationships with other campus research laboratories (e.g., CSAIL, RLE, LIDS) that resulted in several joint proposals.

- Developed new program to increase publications and patent applications at the Laboratory; instituting a Best Paper and Best Patent award funded with revenue raised from IP licenses. Identified new technology transition opportunities and built closer interactions with local high-tech small businesses.

Vice President **2005-2006**
BBN Technologies, Inc.

- Recruited by BBN's VC and CEO to develop a corporate strategic growth plan for BBN that expanded their core technologies (acoustics, speech and signal processing) into new funding organizations: launched this expansion by generating four significant proposals in vital areas.

Department Leader **1999-2005**
Associate Department Leader **1994-1999**
Principal Investigator **1986-1994**
Massachusetts Institute of Technology
Lincoln Laboratory

- Routinely tasked by Director to lead new centers in crucial technology areas deemed important to the Laboratory. Built three research centers (Array Signal Processing, Radar Data Processing, Communications and Networking) in nine years, growing each to over 70 staff.

- Created and managed program budgets and spending profiles for each center that approached $20M per year; raised funds, oversaw proposals, developed sponsor relationships and administered all programs and personnel to comply with federal research guidelines.

- Attracted twenty new researchers from top engineering universities. Inspired, motivated, developed and mentored junior researchers and staff.

- Served as thesis advisor for MIT students. Taught radar signal processing classes. Helped develop a nationally known outreach program for educating military officers in important technology areas. Developed and led leadership training and oversight committees.

- Created extensive models of bistatic radar scattering for analyzing volumetric clutter rejection performance of high-resolution waveforms.

- Developed multi-rate signal processing architectures for high-resolution radars that enabled the DoD to move towards open architectures.

- Derived fundamental theory for Automatic Target Recognition (ATR) performance bounds as a function of added domains, developed fundamental contrast ratio measurements. Pioneered several improvements in ATR including vector quantization, scatterer basis function expansion, context exploitation, spatial and spectral fusion.

- Developed new forensic techniques for exploiting ultra-wideband radar phase data in vibration detection, material identification, discrimination and cavity characterization: analyzed performances as a function of resolution, aspect, spectral and polarization added domains.

- Developed trend detection and prediction techniques for biomedical monitoring systems; developed models of directionally selective neurons; created Markov population models for endangered plant species.

Visiting Professor **1987-1988**
University of New Hampshire
Department of Electrical & Computer Engineering

- Taught graduate course in Signal Processing.

Self Employed, Pharmaceutical Consultant **1980-1982**

- Validation of facility systems, process equipment qualification and process validation of manufacturing and packaging operations

EDUCATION

MIT, Sloan School of Management, Cambridge, MA
Greater Boston Executive Program, *2005*

University of North Carolina, Chapel Hill, NC
M.S., Ph.D., Biomedical Mathematics and Engineering, *1984, 1986*
B.S., Zoology, *1980*

North Carolina State University, Raleigh, NC
M.S., Electrical and Computer Engineering, *1986*

Extension courses at Harvard and MIT:
Negotiation for Senior Executives
Dealing with Difficult People and Difficult Situations
Project Management
Developing a Successful Product and Technology Strategy
Fundamentals of Finance for Technical Executives

AWARDS, AFFILIATIONS AND COMMITTEES

UNC Distinguished Graduate
NCSU Graduate Teaching Award
NC Governor's Fellowship Award
IEEE Senior Member
Served on the Defense Science Board
Served on the Air Force Scientific Advisory Board
Served on the Army Science Board
Chair, Joint Advisory Committee on Surveillance
Chair, MIT Management Effectiveness Committee
Co-chair, DARPA Cognitive Technology panel
Co-chair, Integrated Sensing and Decision Support Conference
Member, BMD External Sensor Review
Member, NGA Exploitation Peer Review
Member, AFRL Oversight Committee
Member, Lincoln Laboratory, Campus Advisory Committee

PUBLICATIONS

Full list of over 140 publications, reports and technical briefings available upon request.