ATTACHMENT
Responses to THECB Letter Dated May 2, 2008

1. Are recruitment efforts sufficiently broad to include a sustained recruitment effort for women into the program?

Our recruitment efforts target underrepresented minorities such as African Americans, Hispanic and females. We have been using the following strategies to recruit students into the doctoral program:

(i) Faculty members visit universities in Texas and outside the state of Texas to recruit students.

(ii) Faculty members use funded projects to attract students into the doctoral program.

(iii) Faculty members are recruiting National Science Foundation Bridge-to-Doctorate Program students into the doctoral program.

(iv) Faculty members have submitted and continue to submit proposals to obtain funding for prospective graduate students.

In addition, we are initiating a 5 year BS/MS program in the College of Engineering. This initiative will increase the number of students with Master of Science in Electrical Engineering who might have interest in pursing the PhD in Electrical Engineering program.

2. We also note that two students were reported as advanced to candidacy, and that the program has produced one graduate. Please send us information about the placement of that graduate, and whether any other students in the program have advanced to candidacy since 2005-2006.

The August 2007 graduate of the program, Dr. Song, is currently working as an engineer at Brocade Communications Systems, Inc. The company is an industry leader in data center networking solutions and services. It is based in Silicon Valley.

Since August 2007, three additional students have been advanced to candidacy. The students are Nana Ampah (advanced to candidacy in December 2007), Haixin Wang (advanced to candidacy in December 2007) and Olusegun Odejide (advanced to candidacy in May 2008). The two other students who were previously mentioned are Dr. Ning Song (advanced to candidacy in December 2006, and graduated in December 2006) and Mr. Cary Smith (advanced to candidacy in January 2007).
3. The report indicates that forty refereed journal papers have been published by faculty since approval of the program. We would like to see a listing by faculty member of those publications.

The publication listings are arranged by faculty name in alphabetical and reverse chronological order as requested. Some publications are duplicated from one faculty member to another due to multiple authors.

Dr. Cajetan Akujuobi


Dr. Annamalai Annamalai


Dr. John Attia


Dr. Lijun Qian


Dr. Mathew Sadiku


Dr. Dhadesugoor Vaman


Dr. Richard Wilkins


4. You indicate that nineteen grants/contracts were initiated since approval of the program or, if awarded prior to the program approval date, were continued beyond the date of the program approval. By contrast, student research and professional activities are relatively modest, although additional information could clarify the nature of the six student publications and two student awards cited.

The publications listings are arranged by students’ name in alphabetical and reserve chronological order. Some publications are duplicated between students and/or faculty members due to multiple authors.

(a) The student publications are as follows:

**Mr. N.K. Ampah (advanced to candidacy in 2007)**


**Mr. Shuza Binzaid**


Mr. Song Gao


Mr. Odejide (advanced to candidacy in 2008)


Mr. Cary Smith (advanced to candidacy in 2007)

Dr. Ning Song (graduated in 2007)


4. Lijun Qian, Ning Song, Dhadesugoor R. Vaman, and et. al, “Joint Power Control and Maximally Disjoint Routing for Reliable Data Delivery in Multihop Wireless Ad Hoc Networks”, in Proceeding of IEEE Wireless Communications and Networking Conference (WCNC 2006), Apr 2-6, Las Vegas, NV.

5. Lijun Qian, Ning Song, Dhadesugoor R. Vaman, and et. al, “Power Control and Proportional Fair Scheduling with Minimum Rate Constraints in Clustered Multihop TD/CDMA Wireless Ad Hoc Networks”, in Proceeding of IEEE Wireless Communications and Networking Conference (WCNC 2006), Apr 2-6, Las Vegas, NV.


7. Lijun Qian, Ning Song, and et. al, “Detecting and locating wormhole attacks in wireless ad hoc networks through statistical analysis of multi-path”, in Proceeding of IEEE Wireless Communications and Networking Conference (WCNC 2005), New Orleans, LA.

Mr. Haixin Wang (advanced to candidacy in 2007)


(b) The students’ awards are as follows:

Emad Awada, PhD student, won the second place award (Engineering) at the 2006 TAMUS Pathways Symposium (November 10 -11, 2006) for his paper titled Wavelet-Based ADC Mixed Signal Testing.

Cary Smith, PhD student, won the third place award (Engineering) at the 2006 TAMUS Pathways Symposium (November 10 -11, 2006) for his paper titled Novel Technique for Vibration Detection using Wavelets for the Pathfinder Plus Aircraft.

(c) Please note a correction: Total Amount of Funded Doctoral Research Projects was $5,610,214 instead of $56 Million as reported in your letter. The three-year report is attached.

5. One challenge for this program is to increase the number of students enrolled in the program to take advantage of the faculty…. Please send more information regarding current enrollments and recruitment initiatives upon receipt of this letter.

The fall 2007 enrollment was 13 and the spring 2008 was 12. It should be noted that there were 5 part time students (Willie Walters, AHM Zaman, Mahmud Mohammed, Supriya Kher, Alam Shumon), who were not enrolled. Three of the part-time students have successfully passed the preliminary examinations of the program.

In addition to the recruiting strategies mentioned earlier; we have performed the following recruitment activities during the fall 2007 and spring 2008 semesters:
- Faculty member visited TAMU-Kingsville to recruit graduate students.
- A faculty member visited Tuskegee University to recruit graduate students.
- Three Master of Science students from Tuskegee University visited Prairie View A&M University to look at our facilities and talk to graduate faculty.
- Faculty member attended the National Society of Black Engineers conference to recruit graduate students.
- Electrical and Computer Engineering faculty gave two presentations to students about going to graduate school.
- The Master of Science students who graduated during the 2007-2008 academic year were strongly recruited to continue their doctoral degrees at Prairie View A&M University.
- An ad hoc committee was formed to identify methods of increasing the graduate enrollment in the Department of Electrical and Computer Engineering.
- The College of Engineering is considering 5 year BS/MS program to increase the MS students enrollment and provide larger pipeline of students who want to pursue the terminal degree in Electrical Engineering.
- The College of Engineering at PVAMU applied and was accepted to become member of GEM (Graduate Education for Minorities) Consortium school. This will allow students nationwide to pursue graduate studies at PVAMU with fellowship from industry.
- A faculty member attended the GEM conference to recruit students.
- A faculty member attended the National Symposium for Advancing Women and Underrepresented in Academy to present paper and recruit students.
- Two faculty members attended the IEEE Region 5 conference to present paper and recruit students.
- $5 Million proposal was submitted to NSF to (i) establish NSF CREST Center at PVAMU, (ii) to perform state-of-the-art research and (iii) to obtain funding for graduate students, especially PhD students in Electrical Engineering.

6. The addition of six new faculty members since program approval in 2003, and two additional lines available, represents significant progress in faculty available to contribute to the doctoral program. One final point remains: the faculty vitae of those new faculty members who have been hired since program approval were not included with the report. Please submit them upon receipt of this letter, along with other materials requested.

Attached are the vitae of the faculty hired since program approval:
VITAE OF

Dr. Annamalai Annamalai
Dr. Franklin Nkansah
Dr. James Northern
Dr. Lijun Qian
Dr. Matthew Sadiku
Dr. Dhadesugoor Vaman
Curriculum Vitae for Annamalai Annamalai Jr.

Prairie View A&M University
Department of Electrical and Computer Engineering

I. EDUCATION
Ph.D., Electrical and Computer Engineering, University of Victoria, Canada, 01/1997 - 01/1999
Dissertation: Efficient Analysis of Wireless Digital Communication Systems in Multiuser and Multipath Fading Environments

M.A.Sc., Electrical and Computer Engineering, University of Victoria, Canada, 05/1995 - 01/1997

B.E. (1st Class Honors), Electrical and Computer Engineering, Science University of Malaysia, 09/1989 - 04/1993
Thesis: Design and Development of a 4-Channel ECG and a Computerized Patient Monitoring System

II. WORK EXPERIENCE

Associate Professor, ECE Dept., Prairie View A&M University (09/2006 - present)
Provide quality instruction at undergraduate and graduate levels, perform quality research and advising of graduate students in the area of wireless communications.

Taught a total of 7 courses (6 distinct courses) since Fall 2006
Currently advising one graduate student as major advisor/co-advisor and one undergraduate (senior level) design team
Conduct research in the areas of waveform design for integrated voice/data networks, link adaptation, cooperative wireless communications, and compressive sensing in collaboration with other ECE faculty members in the ARO Center for Battlefield Communications (CeBCom) and Center of Excellence for Communication Systems Technology Research (CECSTR)
Publication Accomplishments (after September 2006):
6 articles published/accepted for publication in refereed journals
10 papers published in refereed conference proceedings

Assistant Professor, Bradley Department of Electrical & Computer Engineering, Virginia Polytechnic Institute and State University (01/2000 - 08/2006). Also served as an Associate Director of Virginia Tech’s Mobile and Portable Radio Research Group between 01/2002 - 05/2006 and affiliated with the VT-Advanced Research Institute.
Teaching Accomplishments
Taught a total of 18 courses (8 distinct courses) between 01/2000 and 06/2006
Undergraduate courses taught: ECE3614: Introduction to Communication Systems
Developed a new graduate level course on Orthogonal Frequency Division Multiplexing (ECE5984) and updated ECE5544 and ECE5656 (cover the fundamentals of coded modulation, turbo coding principles, space-time processing and MIMO systems)
Directed 5 Ph.D. dissertations and 12 M.S.E.E. theses
Dean’s List of Teaching Excellence: Fall 2005

Sponsored Research Accomplishments

- Participated in 11 funded sponsored research projects totaling $1,881,752
- Principal Investigator on 4 research project totaling $186,344 with a share of $166,142 in direct support of my research efforts
- Co-Principal Investigator on 7 research projects totaling $1,695,408 with a share of $344,438 in direct support of my research efforts
- As an Associate Director of VT-MPRG, my personal share of the funding received through the MPRG industrial affiliate program ($1,232,650 from 17 companies between 2002 and 2006) is $246,530 and $15,000 in committed funding for the subsequent year.

Dissemination of Research Results & Publication Accomplishments (prior to September 2006)

- 4 book chapters
- 44 articles published in refereed journals
- 60 papers published in refereed conference proceedings
- 7 tutorial presentations at major IEEE conferences on wireless communications, software-defined radio forum, and MPRG symposium

Post-Doctoral Research Fellow, ECE Dept., University of Victoria, Canada (02/1999 - 12/1999)

- Conducted research on third-generation wireless cellular CDMA networks and the standardization of IMT-2000

Graduate Research Assistant, Canadian Institute for Telecommunications Research (a Federal Network of Centres of Excellence), University of Victoria, Canada (05/1995 - 01/1999)

- Conducted research on air interface, error control coding and diversity techniques for CDMA integrated wireless access networks
  - Studied the design of simple receiver structures for high-speed indoor wireless communications
  - Developed a novel mathematical framework for the design and analysis of digital communication receivers over generalized fading channels
  - Developed a unified framework for evaluating the outage performance of cellular mobile radio systems
  - Investigated simple techniques to implement self-reconfigurable ARQ systems for enhanced communication data rates over slowly-varying channels
- Studied robust packet combining mechanisms for improving the system throughput and delay performance of spread-spectrum packet radio networks

RF Design Engineer, R&D Department, Motorola (Land Mobile Products Sector), Malaysia (05/93 - 04/95)

- Re-design and optimization of digital cordless phone transceivers for extended bands
- Designed transmitter and power control circuitry for a 15W 800 MHz trunked mobile dispatch system and a 25W power amplifier for two-way VHF land-mobile radio
- Modeling and simulation of RF circuits using Eesof Libra ECAD tools

Associate Engineer (industrial internship), Die-Fabrication and Testing Department, Hewlett Packard Inc., Optoelectronics Division, Malaysia (01/92 - 06/92)

- Designed and installed an automatic inker for the visual die inspection area
- Developed a production tracking software using C language with HP ISQL database
- Electronic build design of beeper warning system for testing equipment
III. HONORS AND AWARDS

2008  Air Force Summer Faculty Fellowship
2001  IEEE Leon Kirchmayer Prize Paper Award
(awarded for the most outstanding paper in any publications of the IEEE by an author or authors
of less than age thirty at the time of original manuscript submission)
http://swww2.ieee.org/about/awards/pr/kirchpr.htm

2000  NSERC Doctoral Prize
(only two awards presented annually in the field of engineering by the Natural Sciences and
Engineering Research Council of Canada for outstanding originality and achievement in doctoral
research in sciences and engineering at Canadian universities)

2000  CAGS/UMI Distinguished Dissertation Award in Natural & Health Sciences and Engineering
(only a single award presented annually in Canada by the Canadian Association of Graduate
Studies and the University Microfilms International)
http://www.cags.ca/awards/winners.html

1998  IEEE Daniel E. Noble Graduate Fellowship
(only a single graduate fellowship award presented annually by the IEEE VTS and Motorola Inc.)

1998  Lieutenant Governor's Silver Medal
(awarded for top academic standing at master's degree level at the University of Victoria)
http://ring.uvic.ca/98jun03/L-Silver.html, http://ring.uvic.ca/98jun03/Winners.html

1998  IEEE ComSoc ICUPC’98 Student Paper Award

1997  Uniden Corporation Research Award (ICPWC’97 Student Paper Award)

1994  Motorola Recognition Award

1993  Best Electronics Project Award for the project entitled, “Design and Development of Computer
Aided ECG” in the Intel Technology-USM Electronics Design Competition

IV. LIST OF PUBLICATIONS

(a) Book Chapters
1. A. Annamalai, S. Muthuswamy, D. Sweeney, R. Buehrer, J. Ibrahim and Dong Ha,
“Chapter 6: Receiver Design Principles” An Introduction to Ultra Wideband Communication
2. D. Sweeney, Dong Ha, A. Annamalai and S. Muthuswamy, “Chapter 5: Transmitter
Design” An Introduction to Ultra Wideband Communication Systems, J.H. Reed Ed., Prentice-
4. A. Annamalai, C. Tellambura and V. K. Bhargava, “A Unified Approach to Performance
Evaluation of Diversity Systems on Fading Channels,” Chapter 17 in Wireless Multimedia

(b) Archival Journals (Accepted/Published Papers)
Selection Diversity Systems in Non-identical Rayleigh Fading Channels,” accepted for publication
in the Wiley Journal on Wireless Communications and Mobile Computing.

3. S. Gaur and A. Annamalai, “Moment Generating Function Based Performance Evaluation of Two Branch Equal Gain Combining Diversity Receivers over Correlated Nakagami-m Fading Channels,” accepted for publication in the IEEE Transactions on Vehicular Technology.


34. C. Tellambura and A. Annamalai, “Efficient Computation of Erfc(x) for Large Arguments,” *IEEE Transactions on Communications*, Vol. 48, No. 4, April 2000, pp. 529-532.


(c) Refereed Conference Publications


V. ACADEMIC ADVISING AND TRAINING

(a) Post-Graduate Training and Graduate Theses Directed

Postdoctoral Fellow Training

1. Raqibul Mostafa, Postdoctoral Research Fellow (co-supervision with Dr. J. H. Reed), 2004 (employed by Qualcomm as a Member of Technical Staff)

Ph.D. Dissertations

1. Jong-Han Kim, Ph.D. Dissertation: Capacity and Coverage of CDMA Cellular Networks with MIMO Implementations (co-advisor with Dr. Jeffrey H. Reed), March 2007, (employed by Samsung as a Senior Member of Technical Staff)
2. Ramesh C. Palat, Ph.D. Dissertation: Performance Analysis of Cooperative Communications in Wireless Networks (co-advisor with Dr. Jeffrey H. Reed), December 2006, (employed by Qualcomm as a Member of Technical Staff)
5. Jin-Soo Park, Ph.D. Dissertation: Adaptive Asymmetric Slot Allocation for Heterogeneous Traffic in WCDMA/TDD Systems (co-advisor with Dr. Luiz DaSilva), July 2004 (employed by Korea Telecom as a Senior Member of Technical Staff)

M.S.E.E. Theses

2. Sarfraz Ghani, M.S. Thesis: Selective Interference Cancellation of Dominant Interferers in WLAN, May 2006 (employed by Qualcomm as a Member of Technical Staff)
4. Lou Ilunga, M.S. Thesis: Adaptive Turbo-Coded OFDM, July 2005 (employed by the Center for Remote Sensing Institute a Member of Technical Staff)
6. Aduwo Akinyemi, M.S. Thesis: An Opportunistic Routing Protocol Design for Wireless Networks: A Physical Layer Perspective, April 2004 (employed by Qualcomm as a Member of Technical Staff)

7. Sudhanshu Gaur, M.S. Thesis: Advanced Diversity Techniques for Wireless Communications, December 2003 (continuing graduate studies in a Ph.D. program at Georgia Tech)


9. Vikash Srivastava, M.S. Thesis: Smart Antennas and Power Management in Wireless Networks, January 2003 (employed by Computer Networks & Software Inc. as a Member of Technical Staff)

10. Gautam Deora, M.S. Thesis: Simulation and Mathematical Tools for Performance Analysis of Low-Complexity Receivers, January 2003 (employed by CFRSI as a Member of Technical Staff)

11. Qiang Zhao, M.S. Thesis: New Results on Selection Diversity over Fading Channels, January 2003 (continuing graduate studies in a Ph.D. program at Stevens Institute of Technology)


13. Yu Lei, M.S. Thesis: Resource Management with Smart Antenna in CDMA, December 2001 (employed by Cadence as a Member of Technical Staff)

(b) Current Academic Advising Responsibilities

Ph.D. Student

1. Olusegun Odejide, Ph.D. Student (co-advisor with Dr. C. Akujoubi), Research Interests: Compression Sensing for Wideband Signal Classifications (expected completion date: December 2008)

VI. SPONSORED RESEARCH & GRANTS

Since joining the Prairie View A&M University in September 2006, I have participated in a funded research project by the U.S. Army Research Office to the Center for Battlefield Communications (CeBCom) under the Cooperative Agreement W911NF-04-2-0054. As a faculty researcher of CeBCom, I currently responsible for the sub-tasks of “designing modulation-assisted unequal error protection schemes to optimize the performance of embedded Koay-Vaman transform coding” and “investigate the efficacy of cooperative communication strategies for improved inter-cluster long-haul wireless communications” within the overall task of “design and implementation of embedded transform coding for transport of multi-service information in a noisy battlefield mobile ad-hoc networks”.

   Sponsor: U.S. Army Research Office / Army Research Laboratory
   Principal Investigator: Dr. Dhadesugoor R. Vaman
   Additional Co-PIs: Dr. Siew T. Koay, Dr. Lijun Qian
Period of Performance: 2004 - 2009
Total Funding: $2.42M

   Sponsor: L3 Communications
   Period of Performance: 2007-2008
   Total Funding: $150,000

3. Advisor/Principal-Investigator, “Initial Mars Exploration Village” (Space Ramen Team)
   Sponsor: Texas Space Grant Consortium
   Total Funding: $1,000

Prior joining the Prairie View A&M University, I had participated in 11 funded external research programs
and the MPRG industrial affiliate program worth more than $3 million to Virginia Tech. I was
responsible for direct supervision of $757,110 in funded research activities:

1. Principal Investigator, “Handset Diversity for UMTS WCDMA”
   Sponsor: Magnolia Broadband Inc.
   Period of Performance: July 2005 - December 2005
   Total Funding: $10,000
   Personal Share of Funding: $10,000

2. Principal Investigator, “Software GPS Radio Enabled Synthetic Space-Time Coding”
   Sponsor: Office of Naval Research
   Period of Performance: August 2004 - May 2005
   Co-PI: Dr. Jeffrey H. Reed
   Total Funding: $65,000
   Personal Share of Funding: $48,750

   Sponsor: Magnolia Broadband Inc.
   Period of Performance: December 2003 - December 2004
   Total Funding: $85,000
   Personal Share of Funding: $85,000

4. Co-Principal Investigator, “Modeling and Simulation for the FCS Development Environment”
   Sponsor: Boeing/DARPA FCS
   Period of Performance: July 2002 - April 2003
   Principal Investigator: Dr. William H. Tranter
   Additional Co-PI: R. M. Buehrer
   Total Funding: $128,022
   Personal Share of Funding: $42,674

5. Co-Principal Investigator, “Ultra-Wideband Communication System”
Sponsor: ASPIRES Program 2002/2003  
Period of Performance: January 2003 - December 2004  
Principal Investigator: Dr. Richard M. Buehrer  
Additional Co-PIs: Dr. Dong Ha, Dr. J. Reed, Dr. W. Tranter, Dr. B. Woerner  
Total Funding: $118,360  
Personal Share of Funding: $19,727

Sponsor: US Customs  
Period of Performance: September 2001 - August 2002  
Principal Investigator: Dr. Luiz DaSilva  
Additional Co-PIs: Dr. C. Bostian, Dr. J. Reed, Dr. B. Woerner, Dr. S. Midkiff, Dr. G. Morgan, Dr. M. Baker  
Total Funding: $402,000  
Personal Share of Funding: $50,250

Sponsor: General Motors  
Period of Performance: April 2001 - December 2002  
Principal Investigator: Dr. Jeffrey H. Reed  
Additional Co-PIs: Dr. W. Stutzman, Dr. W. Davis, Dr. Luiz DaSilva  
Total Funding: $583,527  
Personal Share of Funding: $116,705

Sponsor: Raytheon FCS  
Period of Performance: March 2001 - January 2002  
Principal Investigator: Dr. Luiz DaSilva  
Total Funding: $80,199  
Personal Share of Funding: $40,099

9. Principal Investigator, “Investigation into CDMA Capacity Improvements using High Performance Superconductor Filters”  
Sponsor: Illinois Superconductor  
Duration: July 2000 - April 2001  
Co-PI: Dr. Brian D. Woerner  
Total Funding: $26,344  
Personal Share of Funding: $22,392

Sponsor: LG Information and Communications Ltd.  
Period of Performance: May 2000-August 2001  
Principal Investigator: Dr. William H. Tranter  
Additional Co-PIs: Dr. W. Stutzman, Dr. J. Reed, Dr. B. Woerner, Dr. Luiz DaSilva
Total Funding: $350,000
Personal Share of Funding: $58,333

11. Co-Principal Investigator, “Intelligent Coding and Spatial Diversity for Wireless Communications”
    Sponsor: Australian Research Council
    Period of Performance: January 2001 - December 2002
    Principal Investigator: Dr. C. Tellambura
    Total Funding: $33,300
    Personal Share of Funding: $16,650

In addition to the sponsored research funding or grants, in my role as an Associate Director of the Mobile and Portable Radio Research Group (MPRG) between January 2002 and August 2006, I have helped develop and support our Industrial Affiliate Program. Through that program, 17 companies have given $1,232,650 in support to Virginia Tech between 2002 and 2006, and have committed another $75,000 in support for subsequent years. As one of five core faculty with the MPRG, my personal share of this funding is $246,530 in funding received and $15,000 in committed funding.

VII. PROFESSIONAL ACTIVITIES AND UNIVERSITY SERVICE

Editorialship
Associate Editor, IEEE Communications Letters, 2000 - 2005
Editor, Wiley Journal on Wireless Communications and Mobile Computing, 2001 - 2005
Associate Editor, IEEE Transactions on Vehicular Technology, 2002 - 2005
Editor, IEEE Transactions on Wireless Communications (previously known as IEEE Journal on Selected Areas in Communications: Wireless Series), 2001 - 2004

Short Courses/Tutorials
1. Full-day tutorial on ‘Space-Time Processing’ (with Dr. R. M. Buehrer) was offered at the MPRG’s Annual Symposium and Wireless Summer School, June 2005 (37 participants)
2. Full-day tutorial on ‘Smart Antennas’ (with Drs. J. H. Reed, B. D. Woerner and R. M. Buehrer) was offered at the Software-Defined Radio Forum, June 2003 (65 participants)
3. Full-day and half-day tutorials entitled ‘Mathematical Modeling and Analysis of Wireless Communication Systems’ or ‘Analytical Tools for Wireless Communications Systems Design’ (with Dr. Tellambura) was offered at the following major international conferences on wireless systems and technologies:
   - IEEE Vehicular Technology Conference, May 2000, Tokyo, Japan
   - IEEE International Conference on Communications, June 2000, New Orleans, United States
   - IEEE Wireless Communications and Networking Conference, September 2000, Chicago, United States
   - IEEE Global Communications, November 2001, San Francisco, United States
   - IEEE Vehicular Technology Conference, May 2002, Birmingham, United States

   These tutorials were well attended with approximately 30 registrants (engineers and researchers) each time it was offered.

Technical & Conference Organizing Committees
Technical Program Chair, 15th Annual MPRG Symposium & 1st Annual Wireless Summer School, Blacksburg, June 2005
Publications Chair, 2nd IEEE Ultra-Wideband Systems and Technology (UWBST’03), Reston, 2003
Technical Program Chair, 56th IEEE Vehicular Technology Conference, Vancouver, Fall 2002
Session Organizer, IEEE International Conference on Communications (ICC’01), Helsinki, June 2001
Technology Panel Member, DARPA Tactical Targeting Network Technology, 2001
Conference Organizer, IEEE International Symposium on Wireless Communications, June 1999
Secretary, Technical Program Committee of the IEEE ICC’99, Vancouver, June 1999
Local Arrangements Committee Member, IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, Victoria, August 1999
Member, Communications Theory Committee (IEEE Communications Society), 1999 - 2005
Local Arrangements Committee Member, IEEE Pacific Rim Conference on Communications, Computers and Signal Processing, August 1997

University Service
College of Engineering ABET Assessment Committee, 2007-2008
Spring 2007 Board of Examiners for the Ph.D. Preliminary Examination (Communications and Signal Processing)
Fall 2007 Board of Examiners for the Ph.D. Preliminary Examination (Computer Networks)
Center for Excellence in Undergraduate Teaching: Stochastic Study Group, 2004 - 2005
ECE Communications & Signal Processing Area Committee, 2001 - 2005
ECE Graduate Administration Committee, 2002 - 2004
Associate Director of Mobile and Portable Radio Research Group, 2002 - 2005

Patent Disclosure

Journal, Proposal and Conference Reviewing Activities
National Science Foundation Panel Reviewer: CISE-CCF & ECS-CNCI
External Reviewer, Kentucky Science and Engineering Foundation, 2005
External Reviewer, Research Grant Council of Hong Kong, 2001-2004
External Reviewer, Natural Sciences and Engineering Research Council of Canada
External Reviewer, Alberta Ingenuity Fund, 2001/2002
DARPA Panel: Tactical Targeting Network Technology Initiative, 2001
Regular reviewer for the following transactions/journals:
Regular reviewer for the following international conferences on wireless technology:
IEEE International Conference on Communications (ICC), IEEE Vehicular Technology Conference (VTC), IEEE Wireless Communications and Networking Conference (WCNC) and IEEE Global Communications Conference (GLOBECOM)

VIII. LIST OF UNDERGRADUATE AND GRADUATE LEVEL COURSES TAUGHT
(a) Undergraduate Level Courses
1. ELEG 3013: Network Theory II
2. ELEG 3023: Signals and Systems
3. ECE 3614: Introduction to Communication Systems

(b) Graduate Level Courses
1. ELEG 6303: Signal Detection and Estimation Theory
2. ELEG 6233: Coding Theory
3. ELEG 6353: Advanced Digital Signal Processing
4. ECE 5655: Communications Systems Design II
5. ECE 5656: Communications Systems Design II
6. ECE 5544: Coding Theory
7. ECE 5664: Cellular Radio and Personal Communications
8. ECE 5634: Information Theory
9. ECE 5984: Special Topics in Communications: Orthogonal Frequency Division Multiplexing
10. ECE 5654: Digital Communications

IX. LIST OF CURRENT CONTRACT OR GRANT ACTIVITIES
I joined Prairie View A&M University in September 2006 and have recently applied for research funding from several state agencies and companies. Nevertheless, I have actively participated in two funded research projects at CeBCom and CECSTR research centers during the last 18 months:

1. Project Title: Design of Efficient Communication Networks for the Development of Automatic/Aided Target Recognition Systems” (Cooperative Agreement W911NF-04-2-0054)
   Funding Source: U.S. Army Research Office / Army Research Laboratory
   Principal Investigator: Dr. Dhadesugoor R. Vaman
   Additional Co-PIs: Dr. Siew T. Koay, Dr. Lijun Qian
   Period of Performance: 2004 - 2009
   Total Funding: $2.42M
   Percentage of time charged to the grant in the last year: 0%
   (Graduate student researcher, Jing Lu, is fully supported from this grant.)

2. Project Title: Compressive Sensing for Classification of Wideband Communication Signals
   Funding Source: L3 Communications
   Principal Investigator: Dr. Cajetan Akujoubi
   Period of Performance: March 2008 - December 2008
   Total Funding $50,000
Percentage of time charged to the grant in the last year: 0%
(Graduate student researcher, Olusegun Odejide, is fully supported from this grant.)
PROFESSIONAL HIGHLIGHTS

18 years Industry experience in Silicon Technology Management, Development, Transfers, Process Integration, Reliability and Device engineering for leading edge manufacturers in the Semiconductor Industry (AT&T Bell Laboratories, Motorola and AMD).

- Management experience, leading technology development and product transfer groups.
- Experienced in technology / product transfers to manufacturing Fabs in US, Europe, Japan, China and Taiwan.
- Experienced leader with good technology knowledge and product definition skills.
- Multi-varied experience with device integration of 1.25,0.9,0.5,0.35 and 0.13µm LOGIC and SRAM technologies including dual inlaid Copper Metallization.
- International Foundry management experience the areas of technology, product transfers, Contract negotiations and wafer/die pricing.
- Expertise in the development and integration of TFTs and Self-aligned contacts in SRAM.
- Experienced in Design and characterization of device PC’s for use in manufacturing transfers.
- Experienced in development and integration of SALICIDE/POLYCIDETransistors.
- Experienced in development/integration of advanced Metallization with CMP and Low-K.
- Experience in teaching graduate-level material in Semiconductor Technology.
- Ph.D. Degree in Electrical Engineering.

PROFESSIONAL EXPERIENCE

Associate Professor of Electrical Engineering 2006- Present
Prairie View A&M University, Prairie View, Texas

Responsibilities:
- Developed course work for with in depth instructions in the areas of MOS Capacitors and Advanced Transistors and Process Integration of advanced manufacturing processes
- Teaching Graduate and Undergraduate courses ( ELEG6413, 6523,3033,3043)
- Mentor students during the active Semesters
• Member of the EE Department’s Industry Advisory Board and search committees
• Developing the departments Microelectronics Infrastructure for graduate-level research

Product Reliability Engineering Manager 2000- 2006
*Advanced Micro Devices, Austin, TX*

**Responsibilities:**
* Managing extensive product development qualifications for AMD Athlons and, Hammer.
* Recruit and manage a product qualification/reliability team of 10 engineers (PhD,MS,BS), focused on Product and technology qualifications and reliability.
* Managing an in-direct team of 10 people who are in support roles (i.e. product test, FA, maskprep, yield enhancement and reliability) working together to achieve product goals.
* Managing chipset product transfers to Foundries in Taiwan.
* Interfaces with AMD customers on reliability issues and develop reliability testing to resolve product issues.
* Developing product quality systems for the microprocessor organization in preparation for the entry into the enterprise server space.
* Managed a dedicated reliability testing lab from 2000-2002 with annual budget of ~$1M.
* Provided leadership direction for subordinates and serving as a coach to enhance their professional career development and ensure meaningful contribution to the program.
* Teaching internal AMD reliability courses with strong emphasis on Semiconductor Devices, Process Integration and Specialized Technologies such as Flash, SRAM etc. The course titled “Understanding Failure Mechanism” is offered 4 time/year and once every two years in off-shore locations in Singapore, Malaysia and Thailand.

Device Section Manager 1997- 2000
*Motorola, Wireless Digital DNA Laboratories, Austin, TX*

**Responsibilities:**
* Recruited and Managed a technology development team of 4 Ph.D. engineers and 4 technicians focused on 0.13µm (HiP6W) low power CMOS technology development with copper metallization for wireless DSP products in APRDL and transfer to MOS13.
* My team drove the yield of the Baseband DSP product and 1MB SRAM cache yields from 0-60% and successfully transferred and qualified the Wireless technology to MOS13 wafer fab. The technology today has generated significant revenue for SPS in Motorola.
• Also managed an in-direct team of 20 people who are in support roles (i.e. product, FA, maskprep, process engineering, yield enhancement and reliability).
• Defined the wireless technology features for the sub 1.8V low power DSP required for next generation (2.5G and 3G) Wireless CDMA, TDMA and GSM cellular phone applications in collaboration with Israel design center and Wireless Product teams.
• Managed HiP6W technology transfers to Chatered Semiconductor Ltd. in Singapore.
• Defined the technology specifications, design rules and models files for wireless products.
• Directed the design and integration of Transistors, STI, CoSi2, Nitrided gate oxide and Back-end Copper Mettalization, including Low-K materials for the HiP6W technology and products.
• Defined, designed and characterized SRAM and ROM memory bitcells, which were implemented in the GSM Baseband processor and integrated with Onyx DSP Core and ARM MCU for complete functionality.
• Provided leadership direction for subordinates and serving as a coach to enhance their professional career development and ensuring meaningful contribution to the program and the company.

Foundry Products/Technology Transfer Manager
Motorola, MCTG External Fabs and Acquisitions Group, Austin, TX
1995-1997

Responsibilities:
• Managed a team of 5 direct reports in Austin and numerous in-direct reports at the Foundry.
• Coordinated and implemented technology/product transfers to Foundries around the world in support of Motorola SBU’s in Europe, Asia and the U.S.
• Managed mask prep and sizing to ensure that a transferred product will work in a given Foundry’s process technology by implementing careful parametric matching methodologies.
• Defined and managed the evaluation of matrix experiments to quantify product sensitivity to a Foundry process, and implement necessary tweaks to ensure robustness.
• Defined and negotiated contracts to guarantee wafer allocation and yields needed for an SBU to stay competitive in its market place.
• Initiated product shrinks to advanced small geometry technologies with acceptable yields in an effort to reduce die and wafer cost.
• Developed plans for manufacturing capital investments and provided decisive options for implementation to the MCTG manufacturing Vice President.
• Managed an operational expense budget of $1.2M annually for Foundry Faulire Analysis lab.
• Defined inter-Fab technology transfer plans and methodology for MCTG.

Senior Staff Engineer

Motorola, Advanced Products Research & Development Lab, Austin, TX

1993- 1995

Responsibilities:
Provided leadership in advancing Motorola/Semiconductor Products Sector technology

• Developed and integrated “Quintuple Poly” module into the 0.35µm BiCMOS process.
• Developed Self-Aligned contacts used for Bitline and Vss contacts in the SRAM cell.
• Developed and integrated an Overgated TFT with Stacked Capacitor structure which is used as a load in the SRAM cell.
• Developed and integrated all the necessary isolation schemes required to ensure inter-poly oxide integrity.
• Pursued patents and publications to protect Motorola’s intellectual property.
• Collaborated with Photo/Etch engineering to define, optimize and implement a manufacturable DUV and I-line lithography required for 0.35µm technology.
• Worked with the back-end team on a series of optimizations and CMP integration into the 0.35µm process flow.

Member of Technical Staff

AT&T Bell Laboratories, Allentown, PA.

1988- 1993

• Teamed with manufacturing engineers to improve 0.9µm SALICIDE process stability and margins. This led to a more robust process with minimal scraps and a direct impact on yields.
• Project leader for the development of a manufacturing capability chip which was used in manufacturing to define manufacturable margins for the critical modules in 0.5µm Technology.
• Was instrumental in the successful transfer of 0.9µm and 0.5µm technologies to AT&T Orlando and Spain manufacturing facilities.
• Developed Ti/TiN diffusion barrier for Tungsten and Aluminum based metallizations for ASICs and microprocessor Technologies. This was integrated with advanced back-end planarization techniques, which led to improved step coverage.
• Worked on MOSFET device engineering using process and device simulators and split lots to meet the product requirements of 3.3V, minimum feature of 0.5µm with low leakage and acceptable device drive current performance.
• Designed parametrics testers for use in manufacturing to monitor the health of 0.5µm
• Technology. This included structures for PBL isolation, transistors, intra/inter-well isolation, stringers, contact and via structures and inter-layer isolation and oxide integrity.

EDUCATION
Ph.D., Electrical Engineering
Lehigh University, Bethlehem, Pennsylvania.
M.S., Electrical Engineering
Lehigh University, Bethlehem, Pennsylvania.
B.S., Physics
Kutztown University of Pennsylvania, Kutztown, Pennsylvania.

PUBLICATIONS / PATENTS / PRESENTATIONS
10 publications, 4 patents filed, 4 issued with over 20 internal and external presentations.
REFERENCES: References available upon request.

Publications


• G. Yeap, F. Nkansah, J. Chen, “Plasma Induced Damage in a 0.18um Low Power CMOS technology with Dual Gate Oxide and Dual inlaid Low-K Copper Interconnect”, IEEE VLSI Symposium, May 2000.


---

**U.S. Semiconductor Patents**

<table>
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<tr>
<th>PAT. NO.</th>
<th>TITLE</th>
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<tbody>
<tr>
<td>1. 6,617,214</td>
<td>Integrated circuit structure and method therefore</td>
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<tr>
<td>2. 6,503,814</td>
<td>Method for forming trench isolation</td>
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</table>
3. 5,985,748 chemical Method of making a semiconductor device using mechanical polishing having a combination-step process

4. 5,268,332 planarized Method of integrated circuit fabrication having dielectrics

5. SR# 839663 Integrated circuit structure and method (Pending)

6. SR# 765740 Integrated circuit structure and method (Pending)
Curriculum Vitæ

James Northern, III

Assistant Professor of Electrical and Computer Engineering

Prairie View A&M University
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**Principal Fields of Interest**

Modeling and Optimization of Embedded Computer Architectures  
Superscalar Computer Architectures  
Low Power In-Order Execution Architectures  
Genetic Algorithms and Evolutionary Computation  
Field-Programmable Gate Arrays (FPGA) and Image Detection Analysis  
High-Performance Computing  
Engineering Education

**Education**


**Professional Experience**

(2005 – Present) Assistant Professor of Electrical and Computer Engineering, Prairie View A&M University.


**Awards and Honors**

- Michigan State University Competitive Doctoral Fellowship (September 1999 – August 2003).
- GEM National Consortium for Minority Engineers Ph.D. Fellowship, Michigan State University (September 1999 – August 2000).
- University of Wisconsin Advanced Opportunities Fellowship (September 1992 – May 1994).
- Prairie View A&M University President’s Academic Scholarship (September 1988 – August 1992).


Industry Experience and Consulting

Consultant, Freescale Semiconductor, Inc., Austin, TX, May-August 2004

- **IC Creation CAD Engineer, 8/16-bit Microprocessor Division**
  - Developed common physical design methodology for HC08, S08, and S12 using Cadence Encounter Platform
  - Integrated power analysis tools (Elixir, VoltageStorm, Nanosim, XTC, Fire, Thunder, and Lightning) within physical design methodology
  - Created tcl scripts to automate chip floorplanning process

Technical Leader, Motorola Semiconductor Products Sector, Inc., Austin, TX, July 1994 - 2000

- **Chip Integration Engineer, Power PC Design Division**
  - Team leader for chip floorplanning and integration projects
  - Tools used: IBM internal tools for timing, floorplanning, and chip integration; Cadence: Silicon Ensemble and Layout tools; DAPHNE, Design Planner, Perl, C, UNIX

- **Device Characterization and Testing, Fast Static RAM Division**
  - Developed analysis tool for SRAM bitcell characterization
  - Extracted model parameters for 0.5um and 0.35um technology design

- **Failure Analysis Engineer, Fast Static RAM Division**
  - Prepared samples for microprobing failing bits within memory array
  - Implemented and designed various tests on probe station to analyze bit failures

- **Test Engineer, Fast Static RAM Division**
  - Created test programs for characterizing FSRAM memory products

- **Product Engineer, Fast Static RAM Division**
  - Correlated tests from final test to probe to reduce design cycle time

Student Employment

- **Teaching Assistant, Detroit Area Pre-College Engineering Program, Inc., Michigan State University, East Lansing, MI, June – July 2002**
- **Teaching Assistant, Michigan State University, Electrical and Computer Engineering, East Lansing, MI, September 2001 – May 2002**
- **Teaching Assistant, Engineering Pre-College Program, Prairie View A&M University, Prairie View, TX, June – August 1992**
University Activities

Prairie View A&M University

- Faculty Senate (2006 to present).
- Faculty Senator-at-Large (May 2007 to present)
- Faculty Handbook Chairperson (Spring 2006 to present).
- Member, Service Learning Committee (Spring 2005 to present).
- Panther’s At Work Bayou Community Cleanup (Fall 2006).
- H.T. Jones Elementary School, 1st Grade Mentorship Program (Spring 2006).
- Invited Program Moderator, Faculty and Staff Conference (2006).
- Member, Men’s Leadership Council (Fall 2006).

College of Engineering

- Dwight D. Eisenhower Transportation Fellowship Program Selection Committee (2006).
- Sandia National Laboratories Campus Representative (2006).

Electrical and Computer Engineering Department:

- Computer Engineering Faculty Search Committee (Spring 2007).
- Computer Engineering Program Coordinator (2006 to present).
- Program Director, Electrical and Computer Engineering Leadership (ExCEL) Summer Camp (June 2007)
- National Society of Black Engineers Graduate and Undergraduate Recruiter for Prairie View A&M University, College of Engineering, Columbus, OH (March 2007).
- Chair, Ph.D. Qualifying Exam for Digital Systems Committee (Spring 2007).
- Pantherland Day Recruiter for Department of ECE (Spring 2007).
- College of Engineering Engineers Week Design Competition Program Coordinator (Spring 2007).
- Recruitment Presentation at Eisenhower High School, Future Careers in Electrical and Computer Engineering, (Spring 2007).
- Recruitment Presentation at Forrest Brook High School, Introduction to Electrical and Computer Engineering, (Fall 2006).
- National Society of Black Engineers Graduate and Undergraduate Recruiter for Prairie View A&M University, College of Engineering, Pittsburgh, PA (March 2006).
- Chairperson, Computer Engineering Curriculum Committee (Fall 2006).
- Major’s Fair Recruiter, Prairie View A&M University, Electrical and Computer Engineering (Fall 2005 and Fall 2006)

Xavier University

Computer Sciences and Computer Engineering Department:

Teaching

Prairie View A&M University

In addition to 50% time in research and development, I have carried a teaching load over 62.5% per semester. The courses are numbered (roughly) by level, e.g., 1xxx = freshman, 2xxx = sophomore, etc.

Undergraduate Courses

- “Computer Organization and Design” ELEG 4393 (Junior/Senior level design course using Xilinx Spartan3 FPGA).
  - Spring 2007. Taught using Xilinx ISE Software and implemented in VHDL.
- “Advanced Logic Design” ELEG 4353 (Senior level programming course for Xilinx Spartan3 FPGA).
  - Spring 2006. Taught using Xilinx ISE Software and implemented in VHDL.
- “Computer Interface and Communications” ELEG 4253 (Junior/Senior programming course for Freescale 6812 microcontroller).
- “Microprocessor Systems Design” ELEG 3073 (Junior/Senior level programming course based on Introduction to Microcontrollers).
- “Microprocessor Systems Design Lab” ELEG 3071 (Junior/Senior programming course based on Introduction to Microcontrollers).
  - Fall 2006. Taught using MetroWerks CodeWarrior implemented in Assembly and C. Labs contributed by Freescale Semiconductor Inc.
Graduate Courses

- “Advanced Computer Systems Design” ELEG 6103 (Graduate level programming course for Xilinx Spartan3 FPGA).
  - Fall 2005. Taught using Xilinx ISE Software and implemented in VHDL.
- “Computer Architecture” ELEG 6113 (Graduate level programming course for DLX processor).
  - Spring 2006. Taught using Xilinx ISE Software and implemented in VHDL. Digilent Spartan 3 FPGA evaluation board was used for rapid prototyping of design.

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<td>62.5%</td>
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Xavier University

Undergraduate Courses

- “Digital Electronics” CPEN 3220 (Junior/Senior course).
- “Electronics and Electronics Lab” CPEN 3210/3210L (Junior/Senior course using SPICE on UNIX operating system).
  - Fall 2003 and 2004. Introduction to the physical characteristics of electronic devices such as diodes and transistors. Development of circuit models of these devices. Design and analysis of circuits using these devices.
- “Hardware Systems Implementation” CPEN 4110 (Junior/Senior programming course using VHDL).
- “Logic Design and Logic Design Lab” CPEN 2110/2110L (Freshman course).
  - Fall 2003. Taught using Mano text and material.
  - Fall 2004. Taught using Roth text and material.
  - Spring 2005. Taught using Roth text and material.
- “Introduction to Computer Engineering” CPEN 1000 (Freshman course based on Lego Robotics Programming).
Spring 2005. Designed and developed a freshman level course titled “Introduction to Computer Engineering.” The primary focus of this course was for retention and student development.

<table>
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**Selected Lectures, Colloquia, and Panels**

**Lectures, Colloquia, and Panels**
- Invited Panel, National Science Foundation CCLI proposal panel (July 12-13, 2007).
- Invited Speaker, Engineering Summer Concepts Institute Program for Freshmen Students, Prairie View A&M University, Prairie View, TX (Summer 2006 & 2007).
- Invited Speaker, Minority Introduction To Engineering and Sciences Summer Program for 9th - 12th Grade students, Prairie View A&M University, Prairie View, TX (June 2006 & June 2007).
- Invited Speaker, Michigan State University Sloan Program Graduate Recruitment Program, East Lansing, MI (March 2007).
- Invited Speaker, Sciences, Technology, Engineering, and Math Prep Summer Program for 9th - 12th Grade students, Prairie View A&M University, Prairie View, TX (June 2006).

**Students Supervised**

**Thesis Advisor (Ph.D.)**
New Program.

**Advisor, M.S. of Electrical Engineering**
None.

**Current Ph.D. Students**
Miguel Ribiero, 1st year

**Current M.S. Students**
Richard Tate, 2nd year
Marcus Goldston, 2nd year

**Past Senior Projects Supervised**


*(Spring 2007)* Christopher James, Yusuff Folahan, Ann Sadiku, Sarmad Khan, “Lighting System with Zigbee Technology”

*(Fall 2006)* Habibah Baffour-Awuah, Sesan Bolufemi, Jonathon Miller, Omari Traylor, “Dual-Tone Modular Frequency Project”

**Current Senior Projects Supervised**


*(Spring 2007)* Marcus Lockhart, LaTatiana Clabon, Christopher Lott, Miktosha James, “Automated Battery Tester Data Acquisition System”, Sponsored Project: DynaTech Power Manufacturing, Ltd., Houston, TX. Amount: $10,000.

**Research Grants and Contracts**


**List of Publications**

**List of Accepted/Published Peer-Reviewed Journal Publications**


**List of Accepted Peer-Reviewed Conference Publications**

- James Northern, John H. Fuller, John O. Attia, “Recruitment and Retention Programs For Minorities In Engineering Programs,” American Society for Engineering Education Annual Conference, Honolulu, HI, June 2007.
James Northern, John H. Fuller, “Project-Based Learning For a Digital Circuits Design Sequence at HBCUs,” American Society for Engineering Education Annual Conference, Honolulu, HI, June 2007.


Internal Reports

Prairie View A&M University

(2006) Developed Logic Circuits Labs for ELEG3021, where high-level description languages where used and rapid prototyping of design was implemented.
(2006) Developed tutorial for VHDL using Xilinx ISE Software Package to be used in lecture, lab, or Senior Design courses.

Xavier University

(August 2004) Designed and developed a freshman level course titled “Introduction to Computer Engineering.” The primary focus of this course is for retention and student development.

(January 2004) Developed course titled “Hardware Systems Implementation” for upper level computer engineering students. The course involved the design and implementation of microcontrollers using field-programmable gate-array logic. The design process included identifying a problem, defining specifications, developing alternative solutions, choosing a solution, and creating a model, circuit testing, and optimization. A project proposal, presentation, and report were required.

Theses


55
Lijun Qian

Department of Electrical and Computer Engineering
Prairie View A&M University, Texas A&M University System
Prairie View, TX 77446

Education

1997--2001: Ph.D. in Dept. of Electrical & Computer Engineering /WINLAB, Rutgers University, Piscataway, NJ.

- Committee: Prof. Zoran Gajic, Prof. Roy Yates, Prof. Christopher Rose, Prof. Narayan Mandayam, Dr. Debasis Mitra


1988--1993: B.Engr., Tsinghua University, Beijing, P.R. China.

Professional Experience

Aug. 2003--present Assistant Professor in the Dept. of Electrical & Computer Engineering at Prairie View A&M University, Prairie View, TX.

Jan. 2001--Aug. 2003 Research Scientist at Networks and Systems Research Department, Bell-Labs, Murray Hill, NJ.


Consultant and Internship Positions

- Summer, 2000 Consultant at Bell-Labs, Murray Hill, NJ.
- Summer, 1999 Intern at Bell-Labs, Murray Hill, NJ.
- Summer, 1998 Intern at Corning Inc. Corning OCA East, MA.

Patents


IETF Contributions

Awards
-- Senior Member of IEEE (Communications and Control Societies).
-- 2008 Outstanding Teacher of the Year, College of Engineering, PVAMU.
-- Central Bell-Labs Teamwork Award, June 2003.
-- Electrical Engineering Graduate Fellowship, Technion, Israel, 1994-1996.
-- Scholarship for Excellent Student of Tsinghua University, China, 1990-1991.

Research Interests
General areas: communications, control, and signal processing.
-- Multi-Layer optimization in multihop wireless networks
  • Estimation based power control
  • QoS scheduling
  • Congestion aware routing
  • Joint power control, scheduling and routing
  • RLP/TCP interactions
-- Wireless sensor networks
  • Energy efficient protocol design
  • Non-cooperative event detection
  • Sensor fusion
-- Cognitive radio
  • Intelligent spectrum management
  • Joint cognitive MAC and routing
  • Game theoretic framework for cognitive wireless networks
-- Wireless network security and intrusion detection
  • Secure anonymous routing
  • Analysis of various attacks and counter-measure
-- Genomic signal processing

- Genetic regulatory network modeling and inference

**Funding and Grants**


- $1 million (Sep.2005 - Sep.2008): Modeling and Testing of Advanced Mixed Signal Systems, funded by the National Science Foundation (NSF) under NSF HRD-0531507 (together with Dr. Attia (PI), Dr. Akujuobi, and Dr. Sadiku).

**Refereed Journal Papers**


**Book Chapters**


**Refereed Conference Papers**


Technical Report


**Work in Progress and under Review**


**Invited Talks**


- “Achieving Robust end-to-end QoS in MANET: An Integrated Multi-layer Design”, Texas A&M University, College Station, TX, Apr 2007.

-- “Performance evaluation and optimization of embedded mixed signal networks”, IAB meeting, Sep 2006.


Conference Presentations (since 2003)


-- "Joint Power Control and Maximally Disjoint Routing for Reliable Data Delivery in Multihop CDMA Wireless Ad Hoc Networks", *IEEE WCNC 2006*, Las Vegas, NV.

-- "Power Control and Proportional Fair Scheduling with Minimum Rate Constraints in Clustered Multihop TD/CDMA Wireless Ad Hoc Networks", *IEEE WCNC 2006*, Las Vegas, NV.


Teaching

Teaching at PVAMU

-- Spring, 2008
  - ELEG 4003: Communication Theory
  - ELEG 6203: Wireless Networks

-- Fall, 2007
  - ELEG 4003: Communication Theory
  - ELEG 6213: Digital Communications

-- Spring, 2007
  - ELEG 4003: Communication Theory
  - ELEG 6253: Telecommunication Network Security

-- Fall, 2006
  - ELEG 4003: Communication Theory
  - ELEG 6213: Digital Communications

-- Spring, 2006
  - ELEG 4003: Communication Theory
  - ELEG 6203: Wireless Networks

-- Fall, 2005
  - ELEG 4003: Communication Theory
  - ELEG 6253: Telecommunication Network Security

-- Spring, 2005
  - ELEG 4003: Communication Theory
  - ELEG 6233: Coding Theory

-- Fall, 2004
  - ELEG 4003: Communication Theory
  - ELEG 6213: Digital Communications

-- Spring, 2004
  - ELEG 2053: Introduction to Electrical Engineering
• ELEG 6253: Telecommunication Network Security
  -- Fall, 2003
• ELEG 6313: Stochastic Processes
• ELEG 6203: Wireless Networks

Course Modernized at PVAMU
• ELEG 4003: Communication Theory

The updated course materials provide modern treatment of communication systems at a level suitable for one-semester senior undergraduate course. Fundamentals of digital modulations and transmissions are included besides the analog counterparts.

Wireless Communications Lab
• Founder and Director
• 3 test beds: wireless sensor network test bed; VoIP test bed; WLAN test bed.
• Demonstrated to many visitors, including visitors from US Army Research Office, National Science Foundation, US Navy, Texas Coordinating Board of Higher Education (THECB), etc.

Teaching at Rutgers University
• Communication Networks
• Linear Systems and Signals
• Control Systems Design

Students Supervised

-- Alumni

1. Ning Song (the first Ph.D. graduate from the Department of ECE at PVAMU)
   o started spring 2004

-- Current Doctoral Students
1. Haixin Wang (2008 “Outstanding PhD Student” award, College of Engineering, PVAMU)
   - started spring 2005
   - Ph.D. dissertation proposal was defended successfully in Dec 2007.

2. Song Gao
   - started fall 2005
   - dissertation topic: TBD.

-- Current Master Students

1. Ebal Onyiego
   - started spring 2007

2. Joseph Kamto
   - started fall 2006
   - M.S. thesis was defended successfully in May 2008.

-- Undergraduate Students (senior design projects)

   Participating students:
   - Adebowale Adejumo
   - Mary-Jane Agetue
   - Kwadwo Agyepong
   - Alberto Bellina
   - Olubusayo M. Oluwagbemi II

   Participating students:
Participating students:
- Glenn Addo
- Kierra Ball
- Jon-Paul Dixon
- Remlshian Perkins

Participating students:
- Tiara Anthony
- Rashanae Sinegaure
- Jason Breckenridge
- Harris Sabah

Participating students:
- Patrick Onwumere
- Michaela Roberts
- Yussuf Hussein
- Robert Douglas

Participating students:
- Joel Williams
- Christopher Love
Donald Spencer II
Aaron R. Griffin

Professional Activities

-- Program Committee
- Member of the Technical Program Committee, IEEE GENSIPS 2008.
- Member of the Technical Program Committee, IEEE BROADNETS 2006.
- Member of the Technical Program Committee, ISMW 2006.
- Member of the Technical Program Committee, IEEE VTC F2005.

-- Session Chairs
- Session Chairs, NET 33: MANET Routing 2; NET 41: MANET cross-layer design; IEEE WCNC, New Orleans, LA, 2005.
- Judge, the 4th TAMUS Pathways Research Symposium, TX, 2006.

-- Training
- NSF CAREER Workshop, Feb 2006.
- Discrete Model for Genetic Regulatory Networks, Workshop at TAMU-college station, Nov.6-8, 2005.
- Short course on Engineering Applications in Genomics, Jan 10-12, 2005.
- OPNET training, OPNET headquarter, Bethesda, MD. Apr 2002.
-- Others
Reviewer for numerous journals and conferences including *IEEE Transactions on Communications*, *IEEE Transactions on Wireless Communications*, *IEEE Communications Magazine*, *ACM Wireless Networks*, *IEEE Journal on Selected Areas of Communications*, *International Journal on Network Security*, *EURASIP Wireless Communications and Networking*, *IEEE INFOCOM*, *IEEE WCNC*, *IEEE ICC*, *IEEE GlobeCom*, *IEEE VTC*.

Affiliations
-- Institute of Electrical and Electronics Engineers (IEEE): Senior Member
  • IEEE Control Systems Society
  • IEEE Communications Society

-- Center of Excellence in Digital Battlefield Communications Research (CeBCom)

-- Founder and Director of Wireless Communications Laboratory (WiComLab)

University Activities
-- Member – PVAMU Electrical Engineering Department Scholarship Evaluation Committee 2006-2007

-- Member – PVAMU Electrical Engineering Department Graduate Handbook and Thesis Requirements Committee 2006-2007

-- Member – PVAMU College of Engineering Scholarship Evaluation Committee 2005-2006

-- Member – PVAMU Electrical Engineering Department Scholarship Evaluation Committee 2004-2005

-- Member – PVAMU Electrical Engineering Department Ph.D. Preliminary Exam Committee 2004-2007

-- PVAMU Undergraduate Student Advising in Electrical Engineering since 2004
OBJECTIVE

To obtain a teaching and/or research position as a full professor or endowed professor.

SUMMARY OF EXPERIENCE

- Expert in data computer communications and numerical modeling of electromagnetic problems
- Significant industrial and consulting experience
- Taught several graduate-level Electrical and Computer Engineering courses
- Major professor of 15 M.Sc and Ph.D graduates
- Over 55 Presentations at conferences, seminars, radio, and TV
- Authored over 20 books and over 160 technical papers
- Outstanding Analytical and Communication skills

CURRENT RESEARCH INTERESTS

- Computer communication networks
- Numerical techniques in electromagnetics
- Engineering Education

EDUCATION

- Ph.D. in Electrical Engineering, Tennessee Technological University, 1984.
- M.Sc. in Computer Science, Florida Atlantic University, 1988.
- M.Sc. in Electrical Engineering, Tennessee Technological University, June 1982
- B.Engr. in Electrical Engineering, Ahmadu Bello University, Zaria, Nigeria, 1978

WORK EXPERIENCE

- Sept. 2002 – Present: Professor, Department of Electrical Engineering, Prairie View A&M University, Prairie View, TX
- July 2001 – Present: Senior Scientist, Boeing Satellite Systems, Los Angeles, CA
  Working on broadband SMA connectors and power dividers for a Microwave Switch Matrix used in a satellite
Developed channel decomposition technique
Developed reference links and test cords

**Evaluated field testers for Microtest, Fluke, and Agilent**
- 1988-Aug. 2000:  Professor, Department of Electrical and Computer Engineering Temple University, Philadelphia
- 1984-1988:  Assistant Professor, Department of Electrical and Computer Engineering, Florida Atlantic University
- Taught several courses such as Data Communications Networks, Performance Evaluation, Stochastic Processes, Electric Circuits, Control Systems, Electromagnetics, Advanced Electromagnetics, and Partial Differential Equations
- Supervised more than 12 M.S. and Ph.D. graduate students on FDDI, Wireless networks, interconnected LAN, ATM, and modeling of electromagnetic problems.

**COMPUTER SKILLS**
- Platforms:  Macintosh, IBM mainframe, IBM PC, VAX, and Unix Workstation
- Network Protocols:  Token ring, Token bus, CSMA/CD, TCP/IP, FDDI, DQDB, ISDN, BISDN, ATM, Frame Relay, SMDS.  Have taught these protocols several times.
  Have also performed simulation using self-developed codes in Fortran and MATLAB.
- Programming Languages:  Fortran, Basic, C++, HTML
- Wordprocessors:  WordPerfect, Word, and Tex
- Selected Software Packages:  PSpice, MacWrite, MacDraw, Claris Works, and DrawPerfect, MATLAB, and Maple

**PROFESSIONAL SERVICES/MEMBERSHIPS**
Editorial Board, IEEE Potentials
Associate Editor of IEEE Transactions of Education
IEEE Region 2 Student Activities Committee Chairman
IEEE Student Faculty Advisor for Temple Branch
Reviewer for IEEE Transactions on Education
Reviewer for IEEE Transactions on Circuits and Systems
Reviewer for IEEE Transactions on Microwave Theory and Techniques
Reviewer for IEEE Antenna and Propagation
Reviewer for IEEE Microwave and Wireless Components Letters
Reviewer for International Journal for Engineering Education (IJEE)
Reviewer for Journal of Electromagnetic Waves and Applications
Reviewer for Journal of Electrostatics
Reviewer for Journal of Sound and Vibration
Reviewer for John Wiley & Sons
Reviewer for CRC Press
Reviewer for Saunders College Publishing
Instructor on "Transmission Lines" for PE Exam Refresher Courses
Judge for Pathfinders of Palm Beach and Martin Counties Scholarship
Engineering Faculty Consultant for Southeastern Consortium for Minorities in Engineering (SECME)
Chair of sessions in several conferences
Member of IEEE
Member of American Society for Engineering Education (ASEE)
Professional Engineer -- Registered in the State of Florida

AWARDS AND RECOGNITION:

- 2000 McGraw-Hill/Jacob Millman Award
- Scholarship Award by Japan Petroleum Company for being the best student in Part 2, 1977
- Dedication of FAU 1985/86 Student Handbook for outstanding service.
- Award for excellent leadership in FAU's implementation of SECME program.
- IEEE Student Branch Awards for Outstanding Teaching.


LIST OF DOCTORAL DISSERTATIONS SUPERVISED


PUBLICATIONS

A. BOOKS:


B. CHAPTERS IN BOOKS:


C. NON-EDUCATIONAL JOURNAL PAPERS:


10. S. O. Ajose, M. N. O. Sadiku, and U. Goni, "Computation of Attenuation, phase rotation, and cross-polarization of radio waves due to rainfall in


D. EDUCATIONAL JOURNAL PAPERS:


E. CONFERENCE PAPERS:


method for mixed signal systems using discrete wavelet transform,”
GSPX and International Signal Processing Conference (ISPC), Dallas, TX,
April/March 2003.


63. M. N. O. Sadiku and C. M. Akujuobi, “S-Parameters for three and four

64. S. M. Musa and M. N. O. Sadiku, “S-parameters for three and four two-
port networks connected in parallel and series,” Proceedings of

65. C. M. Akujuobi, S. Alam, and M. Sadiku, “Development, training, and
implementation of test automation for ADSL Interoperability and reliability

shadowing functions for random rough surfaces,” IEEE Southeast

67. M. N. O. Sadiku, C. M. Akujuobi, and S. M. Musa, “Monte Carlo analysis of

68. C. M. Akujuobi, M. Sadiku, S. Alam, and V. Rajaravivarma, System
design, development, training, and implementation of a mixed signal
broadband chip-to-chip digital communication system,” Proc. of ASEE

69. S. M. Musa and M. N. O. Sadiku, “Quasi-static analysis of shielded

70. M. N. O. Sadiku, C. M. Akujuobi, S. M. Musa, and S. R. Nelatury, “Monte
Carlo analysis of time-dependent cylindrical problems,” IEEE Southeast
Conference 2007, pp.778-782.

71. M. N. O. Sadiku, S. M. Musa, and S. R. Nelatury, “Comparison of
approximate formulas for the capacitance of microstrip line,” IEEE

differential nonlinearity testing of mixed signal system ADCs,” IEEE
Southeast Conference 2007, pp. 76-81.


F. PAPERS SUBMITTED FOR PUBLICATION:


Funded Research


7. John Attia, Cajetan Akujuobi, Lijun Qian, and Matthew Sadiku, “Modeling and testing of advanced mixed signal systems,” National Science Foundation, Sept. 1, 2005 to Aug. 31, 2008 ( $1,000,000)

SHORT BIOGRAPH

Matthew N. O. Sadiku was born at Shagamu, Nigeria on May 17, 1955. He received his B. Sc. degree in 1978 from Ahmadu Bello University, Zaria, Nigeria and his M.Sc. and Ph.D. degrees from Tennessee Technological University, Cookeville, TN in 1982 and 1984 respectively. From 1984 to 1988, he was an assistant professor at Florida Atlantic University, where he did graduate work in computer science. From 1988 to 2000, he was at Temple University, Philadelphia, PA, where he became a full professor. From 2000 to 2002, he was with Lucent/Avaya, Holmdel, NJ as a system engineer and with Boeing Satellite Systems as a senior scientist. He is presently a professor at Prairie View A&M University.

Techniques in Electromagnetics” (CRC, 2nd ed., 2001), and "Metropolitan Area Networks" (CRC Press, 1995). Some of his books have been translated into Korean, Chinese (and Chinese Long Form in Taiwan), Italian, Portuguese, and Spanish. He was the recipient of the 2000 McGraw-Hill/Jacob Millman Award for outstanding contributions in the field of electrical engineering.

His current research interests are in the areas of numerical modeling of electromagnetic systems and computer communication networks. He is a registered professional engineer and a senior member of the Institute of Electrical and Electronics Engineers (IEEE). He was the IEEE Region 2 Student Activities Committee Chairman. He was an associate editor for IEEE Transactions on Education.
ADDITIONAL INFORMATION

US citizen, Open to relocation
Brief Vitae of Dhadesugoor R. Vaman

Texas Instrument Endowed Chair Professor of

Electrical Engineering

Prairie View A&M University
Prairie View, TX 77446

A. Professional Preparation:
The City University of New York, New York Electrical Engg., Ph.D. 1979
The City College of New York, New York Electrical Engg., M.E. 1975
Regional Engineering College, Warangal, India Electronic Instrumentation, M.Tech. 1972
Regional Engineering College, Warangal, India Electrical Engg., B.E. 1970

B. Appointments:
2002 – Present Texas Instrument Endowed Chair Professor, EE Department, Prairie View A&M University, Prairie View, Texas.
1998 – 2002 Chairman and CEO of Megaxess Corporation (restructured as MXC Inc.), Bethesda, Maryland.
1984 – 1998 Professor of EECS and Founding Director of Advanced Telecommunications Institute, a US Navy Center of Excellence in Telecommunications, Stevens Institute of Technology, Hoboken, NJ.
1981 – 1984 Member, Technical Staff; COMSAT Laboratories, Clarksburg, MD.
1979 – 1981 Member, Technical Staff; Network Analysis Corporation (CONTEL), Vienna, VA.
1979 – 1983 Adjunct Professor in EECS, George Washington University, Washington DC.
1974 – 1979 Research Associate, Communications Laboratory, the City College of New York, NY.
1985 – 1989: Faculty Advisor Advanced Communications Division, National Institute of Standards and Technology.

C. Patents and Publications: (Published over 200 journal and conference papers. In addition, I have written over 26 patents including 11 issued).

Recent Publications:


**D. Synergistic Activities:**

**Invited Presentations, Lectures and Short Courses:**


**Creation of a Center of Excellence:**


2. Established Advanced Telecommunications Institute, a US Navy Center of Excellence, Stevens Institute of Technology, Hoboken, NJ 1994 as the Founding Director.

**Organizational and Standards Experience:**


**Honors & awards:**