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CAPABILITIES

Capabilities include: teaching courses in engineering and physics from freshman to graduate levels; supervising large scale research and administrative projects with multiple faculty, staff, sub-contractor and student involvement; designing and developing novel computer simulation codes and programs for specialized applications; reliable and timely delivery of technical and fiscal reports; writing successful large scale proposals - research, education and infrastructure building, and community economic development; mentoring small businesses; serving effectively on various steering committees, and advisory and review panels.

EDUCATION: Ph.D. Physics (1978), Indian Institute of Science; Bangalore

PROFESSIONAL EXPERIENCE: Department Head, Physics; Professor, Electrical & Computer Engineering (present); Visiting Assistant Professor - Texas A&M University (9/83-8/85); Professional Associate, University of Manitoba (Canada, 9/81-8/83); Research Associate, Simon Fraser University (Canada, 10/79-8/81); Visiting Research Fellow, ESIS Program, University de Liege, Belgium (5/79-10/79); Research Fellow, University of Warwick, England (2/78-5/79).

BRIEF SUMMARY OF RESEARCH FUNDING: I am currently involved in a high school redesign program funded by the Thurgood Marshall College Fund, with support from the Bill and Melinda Gates Foundation. Most recent efforts include: Mentor-Protégé Program and small business mentoring activities, funded by SBA, EPA and DARPA through the Science & Engineering Alliance (1999-2006); and Title III funding for Enhancing the Physics Department Programs (2002-2007). Previous efforts include: Received and managed, as a single principal investigator, \$1M worth of research during '93-'99 from agencies including: the Army, NASA, DOE, Motorola and Texas. Most recent technical work has been in the area of signal and image processing, and scientific database development for potential applications in digitized battlefield scenarios and communication network security. Also contributed extensively to College level and University level research by authoring proposals in a variety of disciplines including: education, manufacturing, radiation, and community economic development.

ACTIVITIES RELEVANT TO EDUCATION: Heavily involved in educational development of students at all levels. College experience spans teaching, mentoring and advising from freshman to doctoral level students. As the Department Head of Physics, affected major changes in physics curriculum making it more relevant to today's world. As a member of the Academy for Educator Development (Texas A&M University System's Regents' Initiative for Excellence in Education), worked with several high schools on curricular alignment, teacher training and collaborative proposal development. Established two laboratories in the Physics Department for middle and high school teachers and students.

ACTIVITIES RELEVANT TO US MILITARY: • Served on several Performance Review Boards for NROTC, PVAMU • Working closely with Capt. Larry Watson and Lt. Co. Cerrillo on enhancing the physics program to serve the NROTC students better • Went on several trips - MCRD, San Diego, June 2002, JFK Aircraft Carrier, March 2004, USS Ronald Regan, March 2005 • Designing new experiments based on visits to MCRD, San Diego (June 2002) and USS JFK Aircraft Carrier (March 2004) to demonstrate relevance of physics to real world applications.

ACTIVITIES RELEVANT TO WORKFORCE DEVELOPMENT: Have been working on models of community economic development, with specific emphasis on workforce development - education, training and retraining. Received a grant from the US DOL on a feasibility study of technology and business incubators in rural areas. Organized a national conference on this subject in September 2000. Also conducted a symposium on faculty role and empowerment as change agents of the global economy in November 2000. Currently working with Waller County and Economic Development Corporations on establishing business and technology incubators.

i2i INCUBATOR:

Designed and developed a novel type business and technology incubator - **i2i-Invention to Innovation** - hosted on the web site www.pvamu.edu/i2i. This is a first of its kind among the HBCUs.

SOFTWARE/HARDWARE SYSTEMS UNDER DEVELOPMENT (UNDER CONSIDERATION FOR TECHNOLOGY TRANSFER):

1. **CSPIFF** - Circuit Simulation Program In the Presence of Fatal Faults for reliability and fault-tolerance of large scale electronic systems
2. **CSIM** - Communication Systems Simulator for simulation of arbitrary communication systems
3. **BCHS** - Bone Conduction Headset - a novel communication system designed for NASA-JSC and demonstrated at Inspection'99

THESIS ADVISEMENT:

Advised nine M.S. theses since 1992: Cletus Udoe (Applied Materials, Inc.), Ming Fang Zhang (AT&T), Million Woldeesenbet (Lucent Technologies), Mayra Caceres (AT&T), Adriana Caceres, Anowarul Huq (Cisco), Gerardo Novelo (Hempstead High School), Singhquaverton Madden (Toshiba), and Nadine Hobson-Bonamy (Boeing).

BOOKS IN PREPARATION:

Communications Engineering - A Modern Text

Component Devices for Computing for the Third Millennium - Physics and Applications

RELEVANT TECHNICAL/ADMINISTRATIVE/MANAGEMENT EXPERIENCE:

University Level:

Member, College of Engineering Dean's search Committee (2007) • Chair, College of Arts & Sciences Promotion and Tenure Committee (2002-2005) • Co-Director, SACS Executive Leadership Team, Southern Association of Colleges and Schools Self-Study (1999-2001) • Director of Research and Special Assistant to the President for Science and Technology (1998-2001) • Developer/Manager of successful large scale (multi-million dollar) research, education and training proposals for NASA, ARMY, DOD, Texas, Housing and Urban Development, and others in the areas of radiation, manufacturing, materials, infrastructure development, education, etc. • Organizer/Technical Chairperson of the Engineering & Architecture Symposia ('93 - '96) and the Radiation Symposium ('93), PVAMU • Member of TQM Group on Research & Graduate Programs. • Director of Research and Assistant to the Dean for Research Development, Engineering & Architecture (1992-1995) • Member, University Reorganization Committee • Assistant to the Director of Research and Dean of Graduate School (1996-1997) • Associate Dean for Research & Graduate Programs (1997-1998) • Member, Legislative Affairs Team (1997-present) • Chair/Member, several committees on ABET accreditation in Electrical Engineering

State and National Levels:

Member, IEEE National EMI/EMC Education Committee • Member, National Steering Committee, Science & Engineering Alliance (SEA) • Member, Technical Advisory Panel, Texas Department of Transportation • Member, NSF Review Panels (1997-2007) • Member, DOD-ARL Review Panel (1998) • Member, Technology Incubator Committee, Cy-Fair Chamber of Commerce (1997-1998) • Chair, several specialized technical committees of various alliances, e.g., Science & Engineering Alliance (SEA) and HBCU/MI Research Alliance (HMIRA) • Panel Member, National Security Education Program (2000)

Student Education and Mentorship:

All my research projects have substantial student involvement at the graduate and undergraduate levels. During 1992-2003, nine graduate students have completed their Master's theses and numerous undergraduates have been involved in research in my group. I have also worked with and mentored eight NASA Sharp Plus Program students for three consecutive summers (1995-1997).

PUBLICATIONS:

Author/Co-Author of more than twenty-five technical papers.

AWARDS AND RECOGNITIONS:

- General Dynamics Award for Excellence in Teaching, 1988
- IEEE Regional Branch Award for Outstanding Service to a Student Organization, 1992
- General Dynamics Award for Excellence in Teaching, 1992
- Dean's Award for Outstanding Faculty Member, 1993
- Banneker Pin for Outstanding Service, 1993
- PVAMU-IEEE Student Branch Award for Outstanding Counselor, 1994
- PVAMU Award for Outstanding Research Productivity - "Torch Bearer," 1995
- PVAMU Award for Outstanding Mentor, NASA Sharp Plus Program, 1995
- PVAMU Award for Outstanding Mentor, NASA Sharp Plus Program, 1996
- PVAMU Award for Outstanding Mentor, NASA Sharp Plus Program, 1997
- PVAMU Award for Outstanding Proposal Development, 1996
- Special Service Awards from PVAMU Summer Transportation Institute, 2004-2006
- Distinguished Achievement Award from the Texas A&M University System's Board of Regents, 2004