

## APPENDIX

### Exemplary University Telecommunications and Informatics Programs

#### Name of Programs

Three academic programs in Informatics are offered by the Department of Information and Operations Management. These are: Doctor of Philosophy (Ph.D.), Master of Science in Management Information Systems (MS/MIS), and Bachelor of Business Administration (BBA) with specialization in MIS. Additionally, the Department offers concentration in MIS for the Master of Business Administration (MBA) degree. Approximately 680 upper-division undergraduates, 112 MS (not including MBAs with concentration on MIS) and 15 Ph.D. students are enrolled in these programs.

#### Key Contact

The key contact is Dr. Evan Anderson (Cornell, 1970), E.D. Brockett, Professor and Head of the department

#### Other Faculty/Staff

Ted F. Anthony (Colorado, 1971), Associate Professor

Antonio Arreola-Risa (Stanford, 1989), Associate Professor

Frank P. Buffa (L.S.U., 1971), Professor

Judith Carlisle (Arizona 1995), Assistant Professor

Joobin Choobineh (Arizona, 1985), Associate Professor

James F. Courtney (Texas, 1974), Tenneco Professor of Business Administration

Robert A. Davis (South Carolina, 1982), Associate Professor

John J. Dinkel (Northwestern, 1971), Professor and Associate Dean

Maha El-Shinnawy (UCLA, 1993), Associate Professor

Benito E. Flores (Houston, 1970), Professor

George C. Fowler (Texas A&M, 1976), Professor

William L. Fuerst (Texas Tech, 1979), Professor and Associate Dean

David L. Olson (Nebraska, 1981), Professor

David B. Paradice (Texas Tech, 1986), Associate Professor

E. Powell Robinson, Jr. (Texas, 1985), Associate Professor

Anthony Ross (Indiana, 1995), Assistant Professor

Arun Sen (Penn State, 1979), Professor

Ahmed Shabana (UCLA, 1995), Assistant Professor

Bala Shetty (Southern Methodist, 1985), Associate Professor

William E. Stein (North Carolina, 1975), Associate Professor

Marietta J. Tretter (Wisconsin, 1973), Professor

Dean W. Wichern (Wisconsin, 1969), John E. Pearson Professor

#### Funding Sources

Mostly from various corporations.

#### Facilities

Two computer labs. several workstations in each. One specifically designed for Telecommunications teaching. The other is focused on general and multimedia applications for teaching and research.

### **Overview of Telecommunications Electrical Engineering Department Texas A&M University**

#### Summary Statement

The basic philosophy of the telecommunications group in the Electrical Engineering Department at Texas A&M University is best described by the phrase *from theory to application*. The group is committed to educating students and pursuing research on fundamental problems in telecommunications that are intended to impact the long-term future of the field, but also on focusing on current applications of commercial interest through close cooperation with industry. The group's interests cover all major aspects of telecommunications in general, and wireless communications in particular, with specific emphasis on the crucial interface between the physical and network layers, and the interface between algorithm design and implementation. General areas of expertise include source coding (data compression), channel coding, modulation, detection and estimation, synchronization and equalization, multiple-access techniques, spread-spectrum systems, and wireless ad-hoc networks.

#### Faculty

Pierce Cantrell, Ph.D., Georgia Tech, 1981, Assoc. Prof./Assoc. Provost: Computer communications and networking, multimedia networking, video conferencing over LANs and WANs

Andrew K. Chan, Ph.D., Univ. of Washington, 1971, Professor: Wavelets for communications, data compression, nonlinear wave propagation

Kai Chang, Ph.D., 1976, University of Michigan, Professor: Microwave/millimeter-wave circuits and devices, microwave integrated circuits, antennas and phased arrays, active antennas and power combining, microwave power transmission, wireless communications, microwave systems, microwave-optical interactions, electromagnetic field theory, solid-state oscillators, amplifiers, transmitters, and receivers

Costas N. Georghiades, D.Sc., Washington University, 1985, Professor: Communication theory, receiver design, mobile radio, synchronization, equalization, spread-spectrum techniques, multicarrier modulation, interference rejection, wireless ad-hoc networks, multicarrier modulation, space-time coding

Norman C. Griswold, D. Eng., Univ. of Kansas, 1975, Professor: Image transmission, stereo vision for robotic control, image compression, pattern recognition, morphological signal processing

Don R. Halverson, Ph.D., Univ. of Texas, 1979, Associate Prof.: Statistical communication theory, robust detection and estimation, stochastic processes

Garnng Huang, D.Sc., Washington Univ., 1980, Professor: Large system theory, parallel and distributed computing and control, data networks, wireless ad-hoc networks, distributed power control in CDMA systems

Nasser Kehtarnavaz, Ph.D., Rice, 1987, Professor: Signal and image processing, pattern recognition, real-time DSP algorithm implementation

Scott Miller, Ph.D., 1988, Univ. of California San Diego, Associate Prof.: Receiver design in CDMA networks, modulation and coding for wireless channels, modulation and coding techniques for CDMA networks, coherent optical communication, maximum likelihood decoding of block codes, interference rejection techniques, multi-user detection

Krishna Narayanan, Ph.D., Georgia Tech, 1998, Assistant Prof. : Turbo coding/decoding techniques, trellis-coded modulation, space-time coding, interference rejection techniques, packet communications, equalization

Cam Nguyen, Ph.D., 1990, University of Central Florida, Associate Prof.: RF, microwave and millimeter-wave electronics, RF, microwave and millimeter-wave integrated circuits, antennas, receivers, transmitters, and sensors for wireless communications

John Painter, Ph.D., 1972, Southern Methodist University, Professor : Global Positioning Systems, artificial intelligence, flight-management computing, fuzzy logic for decision & control

A. L. Narasimha Reddy, Ph.D., 1990, University of Illinois, Associate Prof.: Multimedia systems, topology-independent, multiprocessor communication switches, disk arrays, hierarchical storage management and video servers

Erchin Serpedin, Ph.D., University of Virginia, 1999, Assistant Prof signal processing for wireless communications/networking (equalization, synchronization, and compression), statistical signal processing, sensor array processing, spectral analysis, estimation theory

Xiaodong Wang\*, Ph.D., Princeton University, 1998, Assistant Prof.: Communication Theory, wireless communications, adaptive signal processing, detection and estimation theory, source and channel coding, multiuser communication theory, parallel and distributed computing, quantum computing, computational models for nano-electronics

Zixiang Xiong \*, Ph.D., University of Illinois, 1996, Assistant Prof.: Data, audio, image and video compression, multimedia communications, digital watermarking and content-based retrieval, joint source and channel coding, multirate filter banks and fast algorithms, image recovery, image printing and display

#### Facilities

The Wireless Communications Laboratory (WCL) (<http://wcl3.tamu.edu/>): A telecommunications research laboratory with emphasis on wireless communications. The WCL consists of a hardware and a software component. The software part consists of a number of high-end PC's and Sun Workstations, loaded with a number of simulation tools, including SPW, and data acquisition and DSP hardware. The hardware laboratory consists of a number of telecommunication-specific hardware, including a real-time RF channel simulator for real-time simulation of mobile radio channels.

The Digital Signal Processing Laboratory (<http://ee.tamu.edu/~dsplab/>): A teaching and research laboratory with emphasis on real-time DSP implementations. The laboratory is equipped with a number of high-end PC's with DSP boards, as well as other hardware that allow the implementation and analysis of real-time algorithms on the DSP's.

The VLSI-Telecommunications Research Center (VTRC) (<http://amsc.tamu.edu/>): This center was formed in cooperation with the faculty in the microelectronics and circuits group in the department and its goal is to produce efficient telecommunication system designs, from algorithm to silicon.

#### Recent Industrial and Government Support

Texas Instruments, NORTEL Networks, Alcatel, Motorola, Final Analysis Communication Systems, BNSF, SK Telecom, American Association of Railroads

---

\* NSF Career Award Recipient 1999

National Science Foundation, NASA CSP, Texas Advanced Technology

Program, Naval Research Lab, Air Force Office of Scientific Research

Contacts

Chanan Singh, Department Head Electrical Engineering Department, Texas A&M University,  
College Station, Texas 77843-3128, Tel/Fax: (409)-845-7441/6259, e-mail: [singh@ee.tamu.edu](mailto:singh@ee.tamu.edu)

Costas N. Georgiades, Professor and Director of the Telecommunications and Signal Processing  
Group, Electrical Engineering Department, Texas A&M  
University, College Station, Texas 77843-3128, Tel/Fax: (409)-845-7408/6259, e-mail:  
[georghia@ee.tamu.edu](mailto:georghia@ee.tamu.edu)