M. Yasir Haroon Awan

Telecommunications Engineer

CONTACT INFORMATION »
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CAREER OBJECTIVE

To pursue a career in Telecommunications Engineering, acquire the latest knowledge, excel in my area of specialization and be on the cutting edge of technology so as to prove an asset to an organization

NATIONALITY:	PAKISTANI
RESIDENCE:	ALKHOBAR, SAUDI ARABIA
DATE OF BIRTH:	31 DECEMBER 1977
MARITAL STATUS:	SINGLE
DEPENDENTS:	NONE
DRIVING LICENSE:	VALID SAUDI DRIVING LICENSE
IQAMA STATUS:	TRANSFERABLE

WORK EXPERIENCE

RESEARCH ASSISTANT, ELECTRICAL ENGINEERING DEPARTMENT, KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS (KFUPM), DHAHRAN, SAUDI ARABIA	FEB 2003 – MAY 2006

Key Responsibilities:

- To engage in research and development in the area of wireless communications
- Teach undergraduate courses
- To provide counseling to students

EDUCATION

MASTER OF SCIENCE: TELECOMMUNICATIONS ENGINEERING

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS (KFUPM) DHAHRAN, SAUDI ARABIA	2003-2006

Major Area: Wireless Systems and Networks **Minor Area:** Digital Signal Processing

M.S. Coursework:

-Digital Communications-I -Digital Communications-II -Wireless and Personal Communications
-Stochastic Processes -Digital Signal Processing -Telecommunication Networks
-Satellite Communications -Management Information Systems

M.S. THESIS: QUALITY-OF-SERVICE (QOS) IN A MULTIHOP CDMA NETWORK

Summary: Multihop networks have gained immense popularity due to their easy scalability and the promise of coverage expansion. While there is quite an amount of research literature on the network layer and MAC layer, very little research has been done on the physical layer. My research focuses on the reliability of physical layer and involved investigation of Quality-of-Service parameters at the physical layer of CDMA networks employing the multiple-hopping scheme. The channel simulated was a multipath Rayleigh-fading channel in a multiuser environment. A RAKE Receiver was used to combat the effects of fading. The parameters investigated were end-to-end average probability of error, outage probability and SINR. Simulation software used was MATLAB.

M.S. TERM PROJECTS:

- **Time-Frequency Analysis of Digital Signals using Wavelets**

Traditional signal analysis techniques like Fourier have a tradeoff between time and frequency analysis and are useful only for stationary signals. As we increase time resolution, frequency resolution is poor and vice versa. The solution proposed in the project was multi-resolution analysis using wavelet transform. Wavelet transform analysis uses a limited time signal, a 'wavelet', to break data signals into different frequency components. This is especially useful for non-stationary signals, whose frequency content changes with time. Wavelet analysis attains both time and frequency analysis simultaneously.

- **Error-Performance of 8-QAM over Multipath Rayleigh-fading Channels**

Average bit-error rate of 8-QAM modulation scheme was studied under Additive White Gaussian Noise (AWGN) channel and over a flat-fading and frequency-selective Rayleigh fading channel. We noticed that the error rate is increased in the case of Rayleigh fading channels due to burst errors and unless suitable techniques are employed at the receiver, the error-rate doesn't decrease with the increase in the Signal-to-Noise Ratio (SNR).

- **Analysis of RAKE Reception using Maximal Ratio Combining and Imperfect Weight Estimation for Binary Coherent Orthogonal Signaling**

A RAKE receiver uses the principle of diversity reception and is mainly used to combat fading and shadowing effects. The efficiency of this receiver depends on the estimation of weights of each branch. The weights are obtained using an adaptive iterative procedure. In practice, perfect estimation of weights can take long time as rapid fading causes the algorithm to take time to converge to a steady-state value. In this project, a closed-form expression for the error-probability was evaluated when the estimation of the weights was not perfect.

- **Wavelet Transform Domain Adaptive FIR Filtering**

Adaptive filtering is the process that adjusts itself according to the changing behaviour of the information that is extracted. In adaptive filtering applications, the normal Least Mean Squares (LMS) algorithm is implemented in the time domain. In case of large eigen value spread some form of orthogonalization of signals that are inputs to the adaptive weights can result in faster adaptation than is possible with LMS alone. In a scheme using wavelet transform, the projections of the input signal onto the orthogonal subspaces are used as inputs to the filter. Instead of diagonalizing the input correlation matrix in the transform domain, wavelet analysis exploits the

special sparse structure of input correlation matrix. The tap-weights of the filter are then adjusted by the wavelet domain LMS algorithm. This results in faster convergence and very less number of iterations.

- **Performance Evaluation of IEEE 802.11 WLAN Protocol**

This project involved the study of IEEE 802.11 WLAN protocol and the simulation of its MAC DCF operation. The MAC operation of IEEE 802.11 was studied in detail including all of its access mechanisms, the services it provides and some physical layer technologies employed. Simulation was done in MATLAB for the DCF function. Parameters for the efficiency of the protocol were determined under heavy load and increased transmission ranges.

BACHELOR OF SCIENCE: ELECTRICAL ENGINEERING

N.W.F.P. UNIVERSITY OF ENGINEERING AND TECHNOLOGY 1997-2001

PESHAWAR, PAKISTAN

Major Courses:

- Computer & Data Networks
- Communication Systems
- Wireless Communications
- RF & Microwave Engineering
- Signal Processing
- TV & Radio Systems
- Microprocessors & System Design
- Power Generation & Utilization
- Project Planning & Engineering Economics

Major Project: Spectral Analysis and Digital Filter Implementation on Texas Instruments TMS320C31 Digital Signal Processor

Summary: The project involved the estimation of the spectral components of the input signal by Fast Fourier Transform (FFT) and Discrete Fourier Transform (DFT). Finite Impulse Response (FIR) filters were also implemented. The Texas Instruments TMS320C31 Digital Signal Processor is specially designed to efficiently perform DFT operations in very less number of iterations. Unlike traditional processors which employ Von Neumann architecture, the TI DSP employs SHARC architecture which enables it to perform many processes simultaneously requiring less operation cycles. The result is a very fast processor able to cope with computationally dense analog-to-digital conversions. The algorithm was written in MATLAB and assembly language.

HIGHER SECONDARY SCHOOL CERTIFICATE:	PRE-ENGINEERING GROUP
SAUDI ARABIAN INTERNATIONAL SCHOOL ALKHOBAR, SAUDI ARABIA	1994-1996

Languages

Language	Level
English	Expert
Arabic	Intermediate
Urdu	Expert

Computer Skills

Operating Systems:	Windows XP, Windows 2000, Windows ME.
Software Skills:	MATLAB, C & C++, Assembly Language, MS Office, LATEX

Professional Memberships

Organization	Role	Member since
Pakistan Engineering Council (PEC)	Professional Electrical Engineer	January 2002
Institute of Electrical and Electronics Engineers (IEEE)	Member	April 2002

Target Job

Job Status:	Full Time
Category:	Radio Network Planning and Optimization, Technical/ Maintenance, Telecommunications.

References

Dr. Asrar-ul-Haq Sheikh

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