

Shahzad Mustafa, MS EE

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OBJECTIVE

Seeking the position of a faculty member and researcher in an institution that will provide an opportunity to pass my knowledge to students in an innovative manner and become a high-quality researcher in the field of Electrical Engineering (Automation & Control).

EDUCATION

Electrical Engineering, Master of Science

Spring, 2012 – Fall, 2014

COMSATS Institute of Information Technology, Islamabad, Pakistan (www.comsats.edu.pk)

Specialized in the field of Automation and Control. The studies provided a broad view of both linear and nonlinear robust control techniques. MS thesis work included implementation of robust and adaptive control strategies on twin rotor MIMO system (TRMS), completed under the supervision of Dr. Qudrat Khan.

M.Sc. Electronics (Gold Medalist)

Fall, 2009 – Spring 2011

SARHAD University of Information and Science Technology, Peshawar, Pakistan (www.suit.edu.pk)

This degree provided me the basic knowledge and broad view of different courses like Signal and Systems, Digital Signal Processing, Digital Filter Design, Digital Image Processing and Control Systems, etc. Thesis research work was related to Digital Image Processing where I developed and designed MATLAB based algorithms for secret communication of information over internet using ordinary images and sound clips (steganography).

Technical Skills

▪ Languages

C++, Assembly Language

▪ Engineering Tools/ Software

P-spice, Electronic Workbench, MATLAB, MS Project Professional, Micro wind (VLSI Design), Proteus ISIS Professional, Keil, Trilogy (PLC),

▪ Computer Networking

MS Office, MCSE, CCNA

PROFESSIONAL EXPERIENCE

Teaching Assistant/ Research Associate

Jan 2013 – to date

Department of Physics/Electronics, COMSATS Institute of Information Technology, Islamabad, Pakistan.

- Digital Signal Processing
- Signal and Systems
- Control Systems

- VLSI Design
- Digital Signal Processing

I have conducted labs of these BS Electronics courses too. Besides this, I have also guided some BS Electronics students in final year projects related to Control Systems and DSP.

IT/MIS Officer

Oct 2011-Dec 2012

SME Bank, Head Office, Blue Area, Islamabad, Pakistan.

My basic responsibility here was to assist my seniors in different activities like keeping the internet link up from head office to its various branches, monitoring the ATM link, resolving the issues related to computers and the local domain through which these were interlinked, consolidating and maintaining the records of different types of data etc. It was really a challenging job and I had to complete certification in MCSE and CCNA before joining the organization.

Technician

Nov 2009-Oct 2011

Air Weapons Complex, Wah Cantt, Taxila, Pakistan.

I had to take care of the local domain network of computers and facilitate the officers of my department in IT related issues with the coordination of IT department. Besides this I had to assist engineers in technical work related to Research and Development Projects.

RESEARCH ACTIVITIES

My research activities are focused on control systems, particularly sliding mode control based nonlinear control techniques and I am a part of DSP and Control Group at COMSATS. I have used MATLAB based algorithms for efficient control of lab models using Simulink. I have also used MATLAB based algorithms for encryption and decryption of secret information in sounds and images using modern steganographic techniques.

PROJECTS

Implementation of Robust Control Strategies on Twin Rotor MIMO System

Twin Rotor MIMO System(TRMS) is a highly nonlinear system for cross-coupling between pitch and yaw rotors. Sliding mode based controllers are considered best for the nonlinear systems having parametric variations, system uncertainties and external disturbances. I developed and designed various controllers for desired control of TRMS like Adaptive SMC, Integral SMC, Adaptive ISMC, Higher Order SMC, Adaptive Gain Super Twisting HOSMC, Terminal SMC and Adaptive Gain TSMC. The simulation results of these controllers were excellent in desired control of the system and a comparison of the results was made to explain the effectiveness and advantages of the controllers over one and other.

Implementation of Advance Encryption in Images and Sounds

Steganography is an excellent technique used in developed countries for secret communication over insecure electronic media, i.e., internet. I have used JPEG images as carrier files to carry payload (secret information). The colored image is first converted to a gray-scale image and the secret message is converted to ASCII code, binary arrays and then zero padded. The zero-padded binary data is then inserted in the gray-scaled image by placing corresponding values of zeros and ones in the pixels of the image. The image is then converted to colored image and sent to the intended recipient. The recipient then proceeds the above steps in reverse order to retrieve the information from the image he receives. The encryption and decryption

processes have been performed with the help of MATLAB based algorithms. The steganography technique also has been used for sound clips to carry secret information securely over the internet.

CONFERENCES ATTENDED

- FEIIC 1st International Young Engineers Convention, UET Lahore, Pakistan, 2014
New Energy Technologies Conference
- Pak-China Business Forum Pak-China Friendship centre, Islamabad, 2015.

WORKSHOPS ATTENDED

- MATLAB (Control & DSP)
- Technical Writing & LATEX
- Functional English
- Communication Skills
- English for Class-room and Efficient Lecture Strategies

PERSONAL INFORMATION

Date of Birth: January 05, 1975
CNIC No: 37405-5791316-7
Nationality: Pakistani
Sex: Male
Religion: Islam
Marital Status: Married
Languages: English, Urdu
Domicile: Punjab
Postal Address: House # K-538, Millat Colony, Rawalpindi

REFERENCES

Dr. Shahid Manzoor,
Chief Scientific Officer, Radiation Physics Labs,
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Dr. Qudrat Khan,
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