FARGHAM SANDHU

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Objectives

To work efficiently and effectively as well as grow with a prestigious organization in the field of Embedded Systems to learn new tools, apply them to achieve the desired goals in an effective manner.

Qualifications

Electronic engineer with 17 years of experience including 10 years teaching experience and 7 years industrial experience in the field of embedded systems. He has masters in computer engineering and PhD in electrical engineering and PhD in control systems engineering.

PhD Thesis Proposal: State and Parameter Estimator Design for Stability and Control of Vehicle Suspension System

Education

PhD: Electrical Engineering	**From 2013 To 2017**
University: Universiti Technology Malaysia UTM, Johor Bahru Malaysia	
Masters: Computer Engineering	**From 2006 To 2008**
University: Center for Advanced Studies UET Taxila, Islamabad Pakistan	
Bachelors: Electronics Engineering	**From 1995 To 2000**
University: Ghulam Ishaq Khan Institute of Engineering (GIKI), Topi Swabi, Pakistan	

Experience

Designation: Assistant Professor.   **Since 01/2012**

Responsibilities:

- Teach EE courses, Supervise final year project, Carryout Lab work
- Helped students in making line tracking robot for participating in various national and international competitions. Taught students how to use ROC routines for robots.
- Taught students how to program Beaglebone, Arduino and raspberry pi and use various interfaces to control robots.
- Taught students and carried out training for programming FPGA's including Xilinx Zynq-SOC, using Microblios based SOC.
- Assisted students in designing 3D printer.
- Assisted students in making CNC milling machine.

Company/University: Federal Urdu University for Applied Sciences, Islamabad Pakistan

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Designation: Lecturer   **10/2008 To 10/2011**

Responsibilities:

- Counselled Final Year Students in their final project on Desiging a CNC Router for PCB milling, Robot welding machine.
- Assisted in Starting up a robotic society and helped the students in participating in Line Traking Robot competition. I was also a refreed in a fighting robots competition.
- Helping students in competing international and national events like international SHELL ECHO automobile competition held in Malaysia in 2009-10

Company/University: Air University, Near Shaheen Choke, Islamabad Pakistan

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Designation: Assistant Manager (Technical)   **02/2003 To 31/2008**

Responsibilities:

- In charge of the electrical department and work under the guidance of the electrical department managers
- To provide training and hands on workshops to young engineers
- Assist the software development team with compatible hardware interfaces.
- To assist the mechanical department by providing tools and other electrical hardware like computer numeric control machines under the guidance of the requirements by mechanical department managers.
- To create hardware support electrical teams for field work. To lead the team and assist them.

Company/University: Ministry of Science and technology, Govt of Pakistan.

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Designation: RF design Engineer   **03/2001 To 2002**
Responsibilities:
- Microcontroller based digital phase locked loop to tune radio DPLL for a wide band radio
- Integration of FLIR camera in an embedded system and to design multiport interfaces for connecting I2C, Serial, Ethernet and Wireless links.
- Integrated Inertial measurement unit (IMU), air pressure sensors and GPS to make a small autopilot for amateur fixed wing aircraft as modular designed subsystems each using PIC16F877. The main computer was designed using xilinx Spartan-III FPGA with multiport serial interfaces and parallel algorithms for running the control algorithms.

Company/University: Zeeshan Electronics (PVT) Ltd, Islamabad Pakistan

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Designation: Electronics Engineer   **03/2000 To 03/2001**

Responsibilities:
- Build a serial robotic arm for assistance in manufacturing using Arduino Mega, Arduino UNO.
- Designed a 3D serial robotic test bench to assimilate the aircraft motion for testing purposes using beaglebone to control the test bench.

Company/University: East West Infinity Ltd, Islamabad Pakistan

Achievements

I am an expert embedded systems designer using MATLAB for Design and Analysis, code deployment and PIL, SIL, HIL testing, OVM Testing. I Managed the R&D department and promoted to Manager in 5 years and Assistant Professor in 4 years. Obtained two letters of appreciation from the employers. Published some conference and general papers.

Software Skills

Programming Languages: C/C++, Verilog/VHDL, Ladder Logic, Visual Basic, Python, Linux-Embedded, MATLAB.
Embedded Systems Tools: Vivado, Xilinx Programming Tools, Quartus-II, Taxis Instruments Code Composer Studio, PIC basic, PIC development tools.
Operating Systems: Windows XP, Windows2000, Win10, Android, Armstrong, Ubuntu
Documentation Tools: Office, Excel, PowerPoint, MS Project, Latex
PLC Programming Software: Rxlogix500, Omron PLC software, Step7 MicroWin

Hardware Skills

Test-Tools: Spectrum Analyzer, Oscilloscopes, Function generator, Digital multimeter (DMM), Analog multimeter (AMM). High voltage Probe. Digital Storage Oscilloscope.
Hardware Tools: LPKF Milling machine, soldering Iron, Glue Gun, digital spot welding machine, Automatic Pick and Place Machine, CNC Milling and Lathe Machine.
PLC Used: Siemens SIMATIC S7, Omron CP1E, CPM2A, Allen Bradley SLC500

Certifications

- Resident Engineer (Pakistan Engineering Council and Engineers Australia)

References

Name: Ir. Dr Hazlina Selamat
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PUBLICATIONS

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ISI JOURNALS

[1] Fargham Sandhu, Hazlina Selamat, S.E Alavi, Vahid Behtaji Siahkal Mahalleh, "*FPGA-Based Implementation of Kalman Filter for Real-Time Estimation of Tire Velocity and Acceleration*," In Press, Sensors Journal 2017 (Impact Factor 2.51)

[2] Fargham Sandhu, H. Selamat, V. B. S. Mahalleh, "*Direct Yaw Control of Vehicle using State Dependent Riccati Equation with Integral Terms*," Advances in Electrical and Computer Engineering, vol.16, no.2, pp.101-110, 2016, doi:10.4316/AECE.2016.02014 (Impact Factor 0.529)

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[3] Fargham Sandhu, Hazlina Selamat, Yahaya MD Sam, "*Antilock Braking System using Dynamic Speed Estimation,*" *Journal Teknologi,* vol. 72, No. 2, 2014. DOI: http://dx.doi.org/10.11113/jt .v72.3882

[4] Mohammad Kashif Ishaq, Fargham Sandhu, Asim Shahzad, Muhammad Riaz Mughal, "*Design of Ku band High Power Solid State Cryosat Transponder*", International Journal of Computer Science Issues", vol 9, issue 4, No.3, 2012.

[5] Nasir Salem, Fargham Sandhu, "*Evaluation of Spatial Application Accuracy of SensingSpraying system for variable rate application of Oil Palm Trees*," *Advances in Environmental Biology,* vol. 8, No. 10, 2014.

[6] Mahalleh, V. B. S., Selamat, H., Sandhu, F., & Khamis, N. "*IMPROVED CROWD PSYCHOLOGICAL MODEL AND CONTROL*". Jurnal Teknologi, 78(6-13).

[7] F. Sandhu, H. Selamat, V.B.S. Mahalleh, "*Review of Modern Vehicle Modelling*", ICACR, 2017.

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[8] Fargham Sandhu, Hazlina Selamat, Yahaya MD Sam, "*Linear Quadratic Regulator and Skyhook Application in Semiactive MR Damper Full Car Model*," IEEE Control Conference (ASCC), 2015 10th Asian, DOI: 10.1109/ASCC.2015.7244406

[9] Fargham Sandhu, Hazlina Selamat and Yahaya M. Sam, "*Nonlinear Complementary SO (3) filters for Parameter Estimation and Navigation of ground Vehicles*," Applied Mechanics and Materials Vol. 663 (2014) pp 254-258, (2014 Trans Tech Publications, Switzerland, DOI: 10.4028 /www.scientific.net/AMM. 663.254

[10] Vahid Behtaji Siahkal Mahalleh, Hazlina Selamat, Fargham Sandhu." *The effects of distance in dynamic psychological factors of one-dimensional queue.*" 10th Asian Control Conference (ASCC), 2015, DOI: 10.1109/ASCC.2015.7244455.