MIRZA SULMAN BAIG

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OBJECTIVE

Seeking a research assistant position in a reputed university. Also seeking MS/ MS leading to PhD/ Integrated MS scholarship positions in reputed university.

EDUCATION

Electrical Engineering, Bachelor of Science
September 2007 – June 2013
University of Lahore, Lahore, Pakistan (website)
CGPA 2.75 / 4.0.

Specialized in communication, electronics, control systems and embedded systems. Expertise are in computer programming like object-oriented programming, file handling, data structures, classes, hash-tables, binary search trees, dictionaries, sensor interfacing with hardware, serial communication for PC, GUI programming for easy interface of computer with embedded hardware, forking of application for parallel-similar operation of core on linux and multi-core programming. Actively participated in team projects to create real-world applications. Served as Teaching Assistant for Computer Programming, responsible for assignment grading, class review sessions, and one-on-one student meetings.

International English Language Testing System (IELTS)
23rd March, 2013
Band Score: 6.5 / 9.0
Listening: 7.5, Reading: 7.0, Writing: 6.0, Speaking: 6.0

Independent Course Work: Machine Learning (By Andrew Ng: Stanford University)
April 2013 – August 2013
COURSERA(Course Page)
Accomplished with Distinction of **95.9%**

Studied a broad introduction to machine learning, data-mining, and statistical pattern recognition. Topics included: (i) Supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks). (ii) Unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning). (iii) Best practices in machine learning (bias/variance theory; innovation process in machine learning and AI). Learned how to apply learning algorithms to building smart robots (perception, control), text understanding (web search, anti-spam), computer vision, medical informatics, audio, database mining, and other areas.

Independent Course Work: Heterogeneous Parallel Programming (By Wen-mei W. Hwu: The University Of Illinois At Urbana-Champaign)

Skills:

- C/C++/C#/JAVA/JAVA Script
- HTML/CSS
- Python
- CUDA
- OpenCV
- Android Programming (JAVA)
- OPENCL
- OpenACC
- MPI
- Assembly Language (x86 architecture)
- Verilog Hdl
- Ladder Language (PLC)

Software Skills:

- OpenCV 3.0
- R 3.1.2
- Microsoft Visual Studio 2013
- NI Test Stand 4.1
- Matlab R2014a
- Eclipse
- Android ADT
- Titanium studio
- Octave 3.2.4
- Multisim
- OrCAD
- Proteus 8.0
- MPLAB 8
- MPLAB XIDE
- Keil uVision 4
- IAR Workbench 6.40
- AVR studio
- Eagle
- Diptrace 2.2
- Code Blocks
- UBUNTU 14.04
- Fedora Core 17

November 2012 – February 2013
COURSERA(Course Page)
Accomplished with **Distinction of 96.0%**

Studied use of CUDA/OpenCL, OpenACC, and MPI for programming heterogeneous parallel computing systems. Covered advanced topics such as data parallel execution model, memory models for locality, parallel algorithm patterns, overlapping computation with communication, and scalable programming using joint MPI-CUDA in large scale computing clusters.

Independent Course Work: Creative, Serious and Playful Science of Android Apps(By Lawrence Angrave: University of Illinois)
December 2013 – February 2014
COURSERA(Course Page)
Accomplished with **100%** result

Studied introduction to computer science and programming Android-apps for smart-phones and tablets. We learned to create an app for modern Android devices such as the Nexus tablet. We used the programming tools that Android software developers use and built a complete and useful app during this course.

Independent Course Work: Introduction to Statistics (By Sebastian Thrun: Stanford University)
August 2013 – November 2013
UDACITY(Course Page)
Accomplished with **Proficiency**

Studied techniques for visualizing relationships in data and systematic techniques for understanding the relationships using mathematics. We covered visualization, probability, regression and other topics that helped us to learn the basic methods of understanding data with statistics.

Independent Course Work: Introduction to Computer Sciences: Building a search engine (By David Evans: University of Virginia)
April 2012 – August 2012
UDACITY(Course Page)
Accomplished with **Highest Distinction**

Studied rock solid information about PYTHON programming language. Learned how to develop web crawler to have good search engine.

Pre- Engineering , Higher Secondary School
September 2004 – August 2007
Punjab College, Multan, Pakistan
Obtained Percentage 75.18 %

Studies focused in engineering subjects such as Mathematics, Algebra, Physics and Chemistry. Learned basic concepts and applications.

PROJECTS

BALANCEBOT(Two wheel self-balancing Robot)
My Bachelor Degree final year project is BALANCE BOT; it is a robot that

- Linux Mint 17
- Windows XP/7/8/8.1

Micro-controllers:

- PIC32MX795F512L
- STM32F103RBT6
- STM32F100RBvl-discoverey
- PIC18F452
- PIC16F877A
- ATMEGA168V
- AT89S52
- Altera Cyclone II FPGA

balances itself at two wheels. It comprises of PD PWM controller design for controlling speed of motors depending upon the tilt measured by IMU sensor. We used STM32F103RB. Government of Pakistan National ICT R&D has funded this project completely. (National ICT R&D)

Android App Development
I made apps for android and home, industrial and poultry automation using sms. The apps receive sms and sends sms of codes from automation devices and put them in friendly display. Also makes a database of that sms also make log file of sms. I also uploaded apps on play store. (Google Play Store)

Position Control of single phase AC induction motor
In electric machines course, I designed a position control for single phase AC induction motor for precise controlling of motor to stop at some point. This project has vast applications in PLC and digital control systems for controlling motors on conveyer belts.

CUBLAS implementation using CUDA C in GPU
In Programming Massively Parallel Processors we designed a project of implementing CUBLAS in GPU using CUDA C for faster computation of linear algebra computations.

Building a search engine like Google or DuckDuckGo
In my Independent course work I studied how to build my own search engine as Google or DuckduckGo. How to design web crawler and preventing from spams, also how to rank the best page as Google or other search engines do.

RFID based home security system with pre-emptive RTOS
My embedded system design project was RFID tag based home security system over STM32 with ChibiOS RTOS of characteristic pre-emption was used to design the project. It also includes the secured encoded data transfer to computer for more easy access to door. (YouTube Video 1) (YouTube Video 2)

Digital electromagnetic flow meter
In my instrumentation subject I designed flow meter to measure flow of water through a pipe which had two coils outside to make electric field. The faster the water flows the more electric field is disturbed and less voltage are measured in the electrodes. I used PIC18F452 to make the meter digital and show flow rate on LCD.

Wireless DC motor speed control
This was my communication systems project of simplex mode of wireless communication. It communicates at 433MHz frequency with OOK modulation. One controller sends encoded message for key pressed and other controller controls motor speed accordingly.

Simulation of Doppler effect in RADAR
In Digital signal processing I designed MATLAB routine to determine the doppler shift in RADAR for moving object. The signals of RADAR are given as input from DSP kit to microphone of computer and that sound signals delay are calculated as doppler shift.

Home automation using SMS

In Embedded systems, I designed project for controlling lights and fans of home using SMS. I used Sony Ericsson T290i mobile using AT commands. The controller reads the SMS received by mobile and the operation in SMS is taken and then controller sends SMS to party for confirmation. (YouTube Video)

Infrared Tracking Robot
In signal processing I designed a robot that tracks the 38kHz infrared transmitter in range of 3 feet. A controller send infrared and other controls robot to follow that transmitter.

PROFESSIONAL EXPERIENCE

Ricerca (Researcher)
May 2014 - Continued
ISIP40 lab, University of Genoa(Website), Italy

Automatic tracking of multiple persons in crowded scenes using the video sensors and detecting the emotions of each person in the crowd by gaze estimation and trajectory probabilities. Also work with First Person Vision to estimate the emotion and probability of travelling of person. Work on Matlab and OpenCV 3.0 to implement algorithms.

Embedded System Developer
September 2013 - April 2014
PowerSoft19 Pvt, Ltd (Company Website), Pakistan.

Testing of Embedded firmware and embedded system designing. Designing embedded data acquisition bench for testing embedded firmware on PIC32MX795F512L. Also designing various drivers for PIC32 like SPI, WIFI, USART and I2C using MPLAB.

Design & Development Engineer
June 2013 – November 2013
Engineering Connections Pvt Ltd., Pakistan.

Designing, configuring home and industrial automation devices. SMS facility in automation with android, windows 8 and iOS application development.

Automation Engineering, Summer Internship
June 2011 – September 2011
Fauji Fertilizers Company (F.F.C.) Limited, Pakistan.

Worked on Power Plant of FFC, Understood the generation, transmission and distribution of electrical energy. Understood the systems of motor control centers, auxiliary control panels and protection relays. Worked on installation of Siprotec Relays in Motor Control Centers. Understood the PLC installed in UREA Handling Plant and DCS & ESD.

REFERENCES

References will be furnished upon request