

Charith Fernando

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Objective

To apply for the position of Research Engineer in robotics and embedded systems area at the Mixed Reality lab, National University of Singapore

Education

2007-Present: University of Moratuwa, Sri Lanka (April 2002 to October 2007)

B.Sc Engineering: Will be Graduating in the field of Electronic and Telecommunication Engineering on 2007 November

- Current GPA 3.60 (out of 4.20)
- Expected a **2nd Upper Honors pass**

GCE A levels, under Index No: 7023880, Sri Lanka (equivalent to Singapore Cambridge GCE A levels) – 2000 to 2002

- Ananda College Colombo - 10, Sri Lanka).
- **Z-Score** of **2.0017** Island

GCE O levels, under Index No: 90062426, Sri Lanka (equivalent to Singapore Cambridge GCE O levels) – 1999

- Ananda College Colombo - 10, Sri Lanka.
- 9 Distinctions and 1 Credit (Eng Literature)

Achievements / Awards

International (Industrial Attachment – Project)

Invited & participated to showcase the **"AGE INVADER"** a social & physical inter-generational family entertainment game at **Interactive Tokyo 2006** conference 15-17th September 2006, Tokyo, Japan.

Undergraduate - University of Moratuwa, Sri Lanka

AY 2003/2004 Level 2 - Semester I B.Sc (Eng) Electronics & Telecommunication **Dean's List**
AY 2002/2003 Level 1 - Semester II B.Sc (Eng) Electronics & Telecommunication **Dean's List**
AY 2002/2003 Level 1 - Semester I B.Sc (Eng) Electronics & Telecommunication **Dean's List**

Other

Higher Diploma in English, London Business School, Sri Lanka, 2002
1998 International Competition for schools (Mathematics) University of New South Wales – Distinction
Project Prize for Amplifier Circuits in 1998 (Ananda Innovations)

School, Ananda College Colombo 10, Sri Lanka

1999 Radio Electronics Subject Prize (Grade 11)
1998 Radio Electronics Subject Prize (Grade 10)
1997 Radio Electronics Subject Prize (Grade 9)

Interests

Embedded System design using Microcontrollers & Microprocessors
Digital Signal Processing, Intelligent Robotics, Mechatronics, Fuzzy logic
Digital System Design using VHDL & Verilog
RFIDs, Personal area networking (PAN, Bluetooth and ZigBee), USB, Ethernet embedded systems

Professional Qualifications

Industrial Attachment & special training [overseas] (Electronic and Telecommunication) – February 2nd 2006 to September 1st 2006, under the supervision of **Prof. Adrian David Cheok**

- Interaction and Entertainment Research Center - Schools of Computer Engineering and Art, Design, and Media, **Nanyang Technological University, Singapore**
- Mixed reality Lab – Department of Electrical and Computer Engineering, **National University of Singapore**

Temporary Instructor for Academic year 2007/08 at Department of Electronic and Telecommunication, University of Moratuwa

Visiting Instructor for Academic year 2006/07 at Department of Electronic and Telecommunication, University of Moratuwa

Technical Experience

1. Successfully completed my Final Year Project “Sensor based motion tracking system for human computer interaction”
(Undergraduate Student, Group 15 - Level 4, University of Moratuwa, Sri Lanka. November 2006-October 2007)

- An accelerometer and magnetic field sensor based motion tracking system that maps a user's 6 degrees of freedom hand movements to planer movements on a computer screen and control signals such as “Click”, “Right Click”.
- The developed system is capable of detecting the three angles roll, pitch and yaw 1 degrees accuracy and mapping the accelerations into two dimensional displacements and driving the cursor pointer.
- In the 3-D space it's possible to draw 3-D lines and visualize it.

2. Robotics: Mini Project “Autonomous map building robot”
(Undergraduate Student, Level 4, University of Moratuwa, Sri Lanka. July 2007)

- An autonomous robot that can be used for terrain mapping by exploring an area according to a pre defined algorithm
- Uses ultra sonic and infrared ranging to detect obstacles in front of the robot and on its' sides
- Algorithm controlling the robot movement is optimized to keep the robot movement minimal as well as ensure that it does not have to travel over the same area twice.
- Robot builds the terrain map and transmits map information to a PC using a wireless link for a real time display of the map building process.

3. Human power harvesting project “Power Harvesting Shoe” for NIKE shoe company
(Undergraduate Research Student, Sri Lanka MXRTeam, University of Moratuwa with NIKE USA, January 2007)

- **Circuit design, prototyping and PCB design** of the new power harvesting shoe circuit using Thunder Piezo & electro-magnetic actuators, used to generate a continuous electrical energy when the person walks.
- The feasibility study was successfully completed & waiting for the approval from NIKE-USA to develop the rest as a research.

4. Digital system design: FPGA based 3-bit, 3-digit digital code lock with user programmable pin code, using Memec 3SMB development KIT & Xilinx Spartan-3 Starter Kit.

(Mini project as Undergraduate Student - Level 4, University of Moratuwa, Sri Lanka, October 2006)

- Covered and requirement in 2 programming styles in Verilog (**behavioral, structural**)
- The final design **tested real-time on an FPGA** and outputs were simulated in **LCD module**

5. **Developed a Bluetooth controllable precise mechanical actuator system for an augmented reality gaming system "Metazoa Ludens"**
(Research Student, Mixed Reality Lab, National University of Singapore, May 2006)
 - **Circuit design, firmware development and PCB design** of a **Bluetooth controllable precise mechanical actuator system** used to control a mechanical actuator system using PC.
 - Wrote the PC side **Visual Basic 6.0** program for controlling the actuator platform via Bluetooth dongle.

6. **Worked in as an electronic designer in an augmented reality gaming system "Age Invaders"**
(Research Student, Interaction and Entertainment Research Center, Nanyang Technological University, Singapore February 2006)
 - **Power supply** design for powering up a LED platform having (256×45) LEDs.
 - **Bluetooth** communication firmware using CCS C for embedded module **PROMI ESD02, Initium**
 - **RFID reader** system firmware using CCS C for **Series 2000 micro reader**, New antenna design, **Texas Instruments**.
 - Troubleshooting & fine-tuning the **embedded Ethernet** module firmware codes for **EDTP Packet Whacker**, EDTP Electronics USA.

7. **Designed a fully computer operated lighting system**
(Mini project as part of Bachelor of Science (Electronic and Telecommunication) degree course, University of Moratuwa, Sri Lanka, 2004)
 - Circuit design & simulation using Orcad.
 - Use parallel port to communicate between PC and the Circuit.
 - Using **High power TRIAC** to control 230V/16A heavy loads. (each output)
 - Isolation between mains power and PC connectivity using Opto-couplers
 - Controlling 12 output ports with the help of data lines in parallel port and controlling the targeted circuit using Visual Basic program coded by me.

Skills

Languages/programming (software):

C (intermediate), **Visual Basic 6.0** (Expert), **Visual C++** (Intermediate), **Java** (Intermediate), **Unix** Bash scripting (Intermediate)

Languages/programming (device level):

8085/8086/8051/PIC assembly language programming, **CCS C PIC** Programming, **VHDL** (advanced coding)

Softwares/Databases:

MATLAB™ (Expert), **ModelSim™** (intermediate), **Xilinx ISE™** (advanced), **Altium Designer 6.0** (expert) **Mathematica** (intermediate), **Adobe Photoshop** (intermediate), **Adobe Premiere Pro** (Expert), **Ulead Cool 3D** (intermediate), **Macromedia Dreamweaver** (Expert), **Macromedia Freehand** (intermediate)

Mysql 4.5 (intermediate), **Sql Server** (intermediate), **Microsoft Access 2003** (Expert)

Operating systems:

Windows (98/NT/2000/XP), **UNIX**, **Linux**, **Free BSD**, **Mac OS X** (Server)

Server Operating systems:

UNIX, **Free BSD**, **Mac OS X Server Pathner (10.3.9)**, **Mac OS X Server Tiger (10.4)**, **Windows 2000 Advanced Server**, **Windows Server 2003**

Publication List

S.K.C.L. Fernando, H.A. Fonseka, I.S. Godage, J.G.M. Prabath
"Virtual Mouse: An accelerometer based motion tracking system"
IET-YMS, University of Peradeniya, Sri Lanka (IEE)

Adrian David Cheok, Roshan Peiris, Eng Tat Khoo, Owen Newton Fernando,
Joyce Su Yue, Vaibhav Narayan, Charith Fernando, Gamini Jayasinghe,
Kosala Jayasundara, Salinda Tennakoon
"High Efficiency, Low Cost, Miniature Circuit for Power Harvesting Shoe"
Mixed Reality Lab, National University of Singapore and University of Moratuwa, Sri Lanka
[Pending]

Extra Curricular Activities

- Worked as a **Network administrator** at Interaction and entertainment research center, Nanyang Technological University, Singapore. (Mar 1st 2006 – June 1st 2006)
- Worked as a **Network administrator** at Mixed Reality Lab & Interactive Digital Media Networks (IDM), National University of Singapore. (June 1st 2006– September 1st 2006)
- Worked as a **Student Network Administrator** at University of Moratuwa.
- **Student Representative** for Electronic & Telecommunication Batch 2002/2003(A) at University of Moratuwa, Sri Lanka.
- Organized an exhibition for Industries in Sri Lanka with the help of June Term Projects.
- Active member of **E-Club** at University of Moratuwa, Sri Lanka.
- Active member of the **Electronics Club** at Ananda College Colombo 10, Sri Lanka, 99 – 02
- Active member of the School **Mathematics, Physics** Club 2000 to 2002
- Active member of the School **Swimming** Club, 2000 to 2002
- Active member of the School **Badminton** Club, 1997 to 1999
- Video Cameraman/Editor & Still Photographer.

Personal Information

Date of Birth: 04th March 1983.
Marital status: Single.
Driving License: Class C/ C1 (Sri Lanka).
Availability date: 01st November 2007.
Citizenship/Visa status: Sri Lankan citizen

Strengths: I exhibit a good level of interpersonal skills. I consider myself a hard working person who can focus on the job given. My other positive traits include good verbal and written communication skills, ability to think out of the box, dedication, self-motivation, working in teams, quick grasp of new technologies, designing and implementing new-ideas.

I am confident that I will be able to do an excellent job for your laboratory.

References

1. **Dr. Adrian David Cheok** (Assistant Professor)
Address: Mixed Reality Lab, Department of Electrical and Computer Engineering,
National University of Singapore
Email: adriancheok@mixedrealitylab.org
Tel: 65-81214781
2. **Dr. Ajith Pasqual** (Senior Lecturer)
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University Of Moratuwa, Sri Lanka
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