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# KARIM UPAL

**4B Honors Computer Engineering**  
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## CAREER GOAL

My career ambition is to be working for a firm that allows me to deal with both the hardware and software aspects of cutting edge computer technology. My high aptitude for quickly absorbing and applying new information allows me to work on any platform, under any environment.

## EDUCATION

Sep. 1997 – **University of Waterloo**, Waterloo, Ontario  
Present

- Candidate for Honors Bachelor of Applied Science in **Computer Engineering** (2002)

## COMPUTER PROFICIENCY

**Programming**

- System level development using **C (ARM ADS)**, debugging using **Lauterbach JTAG**
- Familiar with OOP concepts in **C++** using **Visual C++** and **gcc** in unix
- Mathematical analysis using **Matlab** (system response, frequency analysis, etc)
- Proficient with advanced data structures and algorithms

**Hardware**

- Development experience with Qualcomm **MSM51xx**, **MSM6050** and **MSP1000**, **MPC860 (C)**, 56311 DSP's, **Motorola 68000** (assembly), **Intel 8096** (using C)
- Usage of a **CMD 80** for CDMA phone calls
- Academic experience in **VHDL** using **Xilinx** Synthesis tools
- Network setup using **BNC/RJ-45** ethernet network running windows 9x and Linux

**Unix**

- Experience with Unix IPC and Shared Memory
- Completely fluent in the use and setup of **Linux** (Mandrake and Redhat), X windows, KDE and Gnome
- Worked under Solaris, FreeBSD, AIX and HPUNIX
- Shell script programming using **sh**, **awk**, **sed**, **latex** and **expect**
- Knowledge of GNU Debugger (**GDB**), **makefiles**, **gcc**, and **g++**

## WORK EXPERIENCE

Aug. 2001 – **Qualcomm Incorporated, San Diego**  
Dec. 2001 **Embedded Software Engineer**

- Responsible for upgrading an existing firmware compiler (ARM ADS) for internal and customer builds. This included addressing issues with memory alignment, assembly code analysis and reporting compiler bugs to ARM for the new compiler.
- Wrote software to control and test all the features of an I2C controller onboard a Qualcomm MSP1000/MSM6050 using hardware level debugging with an oscilloscope and a logic analyzer.

Jan. 2001 – **Motorola, Semiconductor Products Sector, Toronto**  
Apr. 2001 **Firmware Developer**

- Implementation of new diagnostics modules in C for the MSRM product that used the MPC860 processor and had a 56311 DSP core
- Received introductory training for the MPC8260 processor at the end of the term

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## WORK EXPERIENCE (cont'd)

May 2000 –  
Aug. 2000

**Motorola, Networking Group, Toronto**  
**System Test Engineer**

- Implementation of Frame Relay network using Motorola Vanguard nodes
- Coding Unix expect scripts to automate testing of Frame Relay network in a lab environment
- Developed GUI frontend using Tcl/Tk
- Hardware and software configuration of Vanguard 6260 routers for voice capability using FXS/FXO, E&M and CCS protocols

Sep. 1999 –  
Dec. 1999

**Certicom Corporation, Toronto**  
**Software Developer**

- Debugged the SSL Server and SSL Client applications using **Visual C++**, **Purify** and **Bounds Checker**, along with **GDB** for the Unix ports of SSL
- Coded API tests in **C** for the SSL Plus library
- Learnt aspects of **multi-threaded programming** through debugging

Jan. 1999 –  
Apr. 1999

**Certicom Corporation, Toronto**  
**Software Developer**

- Developed a 'Dailybuild' application composed of shell scripts to run securitybuilder tests in parallel on several Unix systems, resulting in a 50% speed improvement over previous running times
- Build intelligent scripts to dynamically update configuration files as developers modify the modules in securitybuilder

May. 1998 –  
Aug. 1998

**FlightSafety De Havilland, Downsview**  
**Engineering Illustrator**

- Responsible for the production of Technical Illustrations for the company's external and internal customers
- Enhanced organizational skills through creating standards and processes for Technical Illustration production
- Gained effective communication skills through teamwork

## RELEVANT COURSES

*E&CE 427 – Digital Systems Engineering*: Design and modeling of digital systems using VHDL.

## AWARDS AND ACHIEVEMENTS

- Received a Certificate of Distinction from the University of Waterloo for the Descartes Mathematics Competition
- Achieved the Ontario Student Scholar Award
- Accomplished Grades 12 & 13 honors in High school

## INTERESTS / EXTRACURRICULAR

- **Spare Time**: Basketball, Pool, Badminton, Swimming, Unreal Tournament, Quake 3 Arena, Starcraft Broodwar
  - **My Range of Interest**: NASA, NBA, Raptors, Exotic cars, Linux Mandrake
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