

September 15, 2002

Dr. Andrew Rawicz  
School of Engineering Science  
Simon Fraser University  
Burnaby, British Columbia  
V5A 1S6

Re: ENSC340 Project Proposal for SmileyBaby Mobile

Dear Dr. Rawicz:

The following document, Proposal for SmileyBaby Mobile, introduces our project for ENSC340(Engineering Science Project). The team's goal is to design and prepare for marketing a babies' mobile which will be respond to baby's crying.

The intent of the following proposal is to present an overview of our product, a brief functional description, our source of information and funding, a tentative projected budget, and project scheduling and organization.

LittleFellows is comprised of four fun loving but focused energetic 4<sup>th</sup> year engineering science students: Shona Huang, Marjan Houshmand, Farnam Mohasseb, and Farhud Hashemian. If you have any questions concerning our proposal, please feel free to contact us by email at [ensc340-group@sfu.ca](mailto:ensc340-group@sfu.ca)

Sincerely,

Farnam Mohasseb  
Chief Executive Officer  
LittleFellows Inc.

Enclosure: Proposal for SmileyBaby Mobile



# LittleFellows Inc.

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## Proposal for SimleyBaby Mobile

Team Project: *Farnam Mohasseb  
Marjan Houshmand  
Shona Huang  
Farhud Hashemian*

Submitted to: *Dr. Andrew Rawicz  
Steve Whitmore  
School of engineering science*

Issued date: *September 14, 2002*

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## **Executive summary**

Business plan summary for 2003

LittleFellows Inc.

September 14, 2002

LittleFellows Inc. mission is to create a friendly and comforting atmosphere for babies and to assist their parents with ever increasing challenges of raising a child in today's busy working environment.

LittleFellows Inc. is a new and small company with unlimited potential to lead technological-base and innovative baby product of tomorrow's market. This company has been incorporated by four engineering student from Simon Fraser University at fall 2002. The key element of success of LittleFellows lies in the company's diverse background in both technical and non-technical area. LittleFellows' ambitious culture distinguishes the company from the other competitor.

Our first product, SmileyBaby Mobile, is entering the market on spring 2003. This smart gadget will distinguish babies crying pattern from all other surrounding sound, and it will play babies' favorite music to put them back to sleep. In future model, this gadget will be interfaced with other toys and mobiles to create a comforting environment for babies.

Parents like to see their child smiling, and at LittleFellows we do our best to bring comfort, warmth and happiness to both parents and their little fellows. LittleFellows Inc. highest priority is to address baby's needs, and we do realize parents are extremely concerned with their child's safety and well being. LittleFellows Inc. paves the road to success and achieving the highest level of customer satisfaction by paying close attention to customer needs.



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## 1. Introduction

As babies grow up, they seek new ways to communicate to their parents. The most primitive form of communication is crying. As researchers in the field of psychology have discovered, babies use different patterns of crying to show their feelings. Most people, especially parents, have a hard time to ignore the baby's crying and in their mind, going to attend to their baby is a must and only solution. However, not all the cries require parents to go to baby right away. A few examples of this types of crying are a cry out of boredom or the need for attention or being scared and lonely.

One of the reasons for baby's crying is boredom. Our new product, SmileyBaby Mobile, is responsible to analyze the surrounding sounds around the baby, and distinguish baby's crying. When baby cries, our device will turn on baby's favorite music or shake his/her favorite toy or rotate the baby mobile.

Babies requiring attention is no secret to parents. Sometimes, they have to stay up all night and to try to keep their babies entertained. With help of SmileyBaby Mobile, parents do not have to get up every time baby cries. If baby cries because of boredom, then our device will turns on the music and rotate the mobile. Once baby stops crying, SmileyBaby Mobile will goes off after 15 minutes, and let baby sleep peacefully.

Often babies cry when they wake up because they feel scared and lonely. Our device will comfort and ensure the child that he/she is not alone and there is nothing to be afraid of. After hearing the music and seeing the mobile, the child knows he/she has been noticed.

Parents like to see their child smiling and at LittleFellows, we do our best to bring comfort, warmth and happiness to both parents and their little fellows.



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## 2. System overview

SmileyBaby Mobile constantly monitors the nursery room, and differentiates the baby cry from other common-household sounds and noises such as talking, music, pets, and the occasional car driving by. In a case of baby crying, our device switches on the mobile which also plays a soft classical music to comfort the baby. As shown in figure1, first a microphone receives the sound in the room and converts the sound into an analog electronics signal. Then, after using an Analog to Digital converter, the signal will be stored in a FPGA(a type of memory). From there, the signal will be fed to a DSP(Digital Signal Processor) for analyzing. Our device will decide if the existing sound contains the baby cry. Finally, the outcome from the Digital to Analog converter turns on or off the mobile depending on the decision made by DSP.

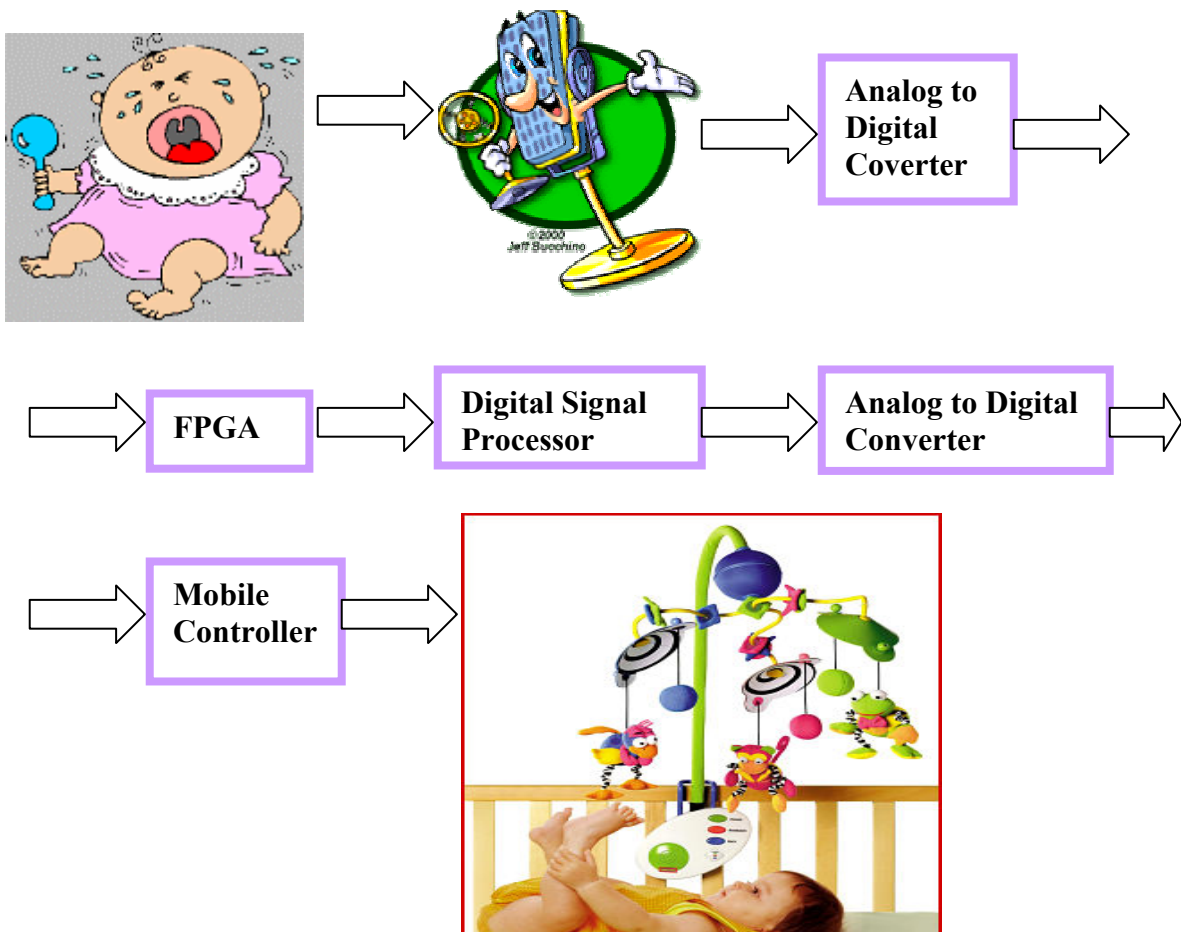


Figure 1, system overview of SmileyBaby Mobile



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## 3. Budget and funding

### 3.1 Budget

A tentative list of development cost for SmileyBaby mobile is shown in table 1. It is worth mentioning that most items have been overestimated by at least 20% enabling us to overcome any unforeseen events and costs. Moreover, one should note that this list does not include the testing equipment needed. In addition, the miscellaneous category contains costs such as breadboard, DSP board, resistors, transistors, capacitors, batteries, etc.

Table 1: Tentative Budget

Equipment	Estimated Cost (in USD)
<b>Two Digital to Analog converters</b>	<b>\$80</b>
<b>Two Analog to digital converters</b>	<b>\$80</b>
<b>Two Bus Controllers</b>	<b>\$140</b>
<b>Three Digital signal processing chips (DSP)</b>	<b>\$240</b>
<b>Two Microphones</b>	<b>\$10</b>
<b>Two Speakers</b>	<b>\$10</b>
<b>Two Mobiles</b>	<b>\$120</b>
<b>Cables/Wires</b>	<b>\$30</b>
<b>Miscellaneous</b>	<b>\$100</b>
<b>Total cost</b>	<b>\$810</b>



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## ***3.2 Funding***

SmileyBaby mobile is an innovative idea, and most innovative engineering products require more capital during the research and development cycle than the production cycle. Due to the fact just mentioned, we expect to face higher expenses at the start of our design process than the production of our finalized SmileyBaby Mobile.

In view of the fact that we are facing a high expense for this product, we are considering many sources for funding. LittleFellows will apply for the Engineering Science Student Endowment Fund and the Wighton Development Fund. Each member of the team will also try to obtain useful parts from old toys, upper year students who have done similar projects, and other engineering friends. Furthermore, we will also try to raise both financial and technical support from electronics component vendors and toy manufactures.

Due to the turbulence of the hi-tech companies and today's sluggish economy, LittleFellows understands the fact that it may not be able to raise enough funds through the mentioned sources. However, all members of the LittleFellows Inc. are willing to contribute financially in order to compensate for the remaining of the financial costs. LittleFellows will accurately keep track of its financial transactions, and will reimburse its members accordingly in the near future. Moreover, LittleFellows intends to enter its product to many engineering competitions in the future in hopes of some reimbursements for the company.





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## 4. Time schedule

The following tables show the Gantt and Milestone charts. Gantt table represents the expected time to be spent on accomplishing each task, and Milestone chart shows the expected dues dates for each assignment. Please note that our research has started since the beginning of last summer.

Table 2: Grannt chart

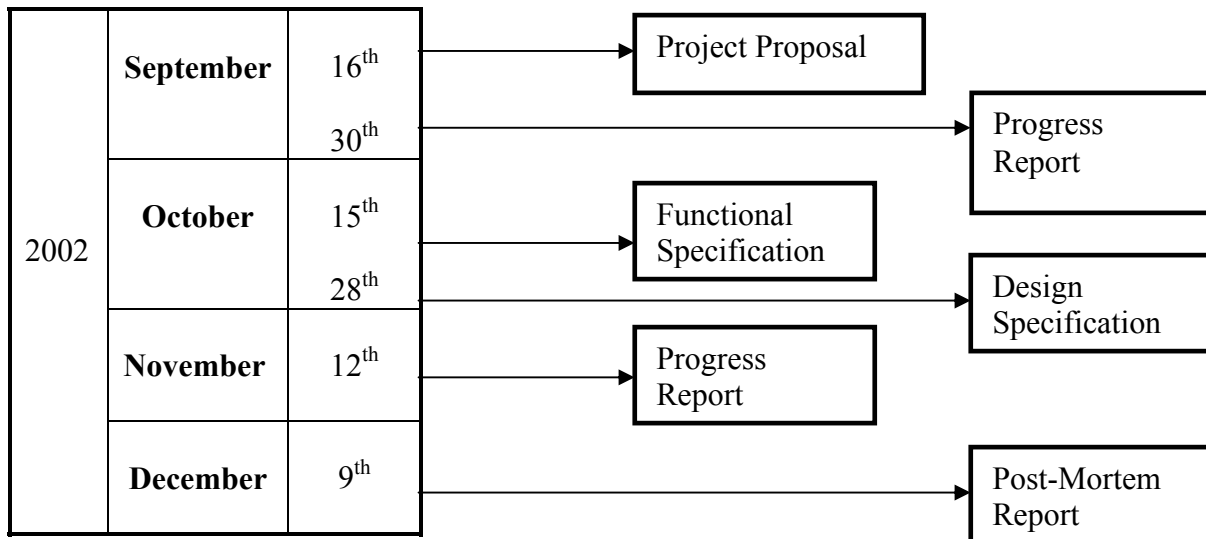
ID	Task name	Weeks of September				Weeks of October				Weeks of November				Weeks of December			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Research	■	■	■	■	■	■										
2	Proposal		■	■													
3	Functional Specification			■	■	■	■										
4	Design Specification				■	■	■	■	■								
5	Implementation/Integration					■	■	■	■	■	■						
6	Debugging Modification						■	■	■	■	■						
7	Documentation/Website	■	■	■	■	■	■	■	■	■	■	■					
8	Process Report												■	■			



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Table 3: Milestone chart





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## 5. Description of team

The LittleFellows' team may have been assembled only recently for this particular project but have considered working together four months ago. There are four third year engineering students in the team: Shona Huang, Marjan Houshmand, Farhood Hashmi, and Farnam Mohasseb. Each one of us has worked with the other members in a group on other engineering science courses. We all have some technical background with hands on experience, and are business minded. After a long time of casting about ideas and discussing their strength and weaknesses, we all agreed on the challenging SmileyBaby Mobile, which is a marketable and potentially expandable product. Despite the differences amongst the group members, there are sufficient similarities and a variety of experiences that will help us finish our project.

Since we have similar class schedules, we can arrange at least two thirty-minute meetings each week to check if we are up to date with the schedule and to report any possible problems. We believe that it is easier to work in a group of two for each part of the project rather than to let each member work alone on a part. The two individuals making up the sub group have a better opportunity to find solutions and can also help each other overcome problems. Two people per team is easier to manage both in terms of organization and should disagreements require settling. In order to maximize the abilities of each member, we will choose a different pair for each sub-project. At every meeting, team members will take notes in turns, and minutes will be send to all team members as soon as possible. We will ensure that careful technical notes should be taken for each part of the project.

Even though the group is small in number, we still need to delegate each member to be in charge of a certain aspect of our company. Depending on each member's capabilities and interests we have assigned the tasks as follows. Farnam Mohasseb is the company's CEO and will be in charge of the over all progress of the project and promoting the company to potential investors and product purchasers. Marjan Houshmand is our COO who will divide tasks, assign them to members, and help to maintain healthy team dynamics. Farhood Hashmi is responsible for providing "blood" to LittleFellows Inc. His primary task will be to locate funding from various resources and keep the company's expenditure within budget. Shona Huang is the company's technical manager and will be making decisions regarding which hardware/software will be used for the product. Detailed resumes of each member of the company are attached in the appendix



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## ***5.1 Chief Executive Officer (CEO)***

Farnam Mohasseb is the CEO of LittleFellows Inc. The failure and success of a company rely on CEO's shoulders. The CEO's responsibilities include: deciding which markets the company should enter; managing the operation of the company; designing effective marketing plans; financing company's funds; creating a strong and smart management team; and developing an appropriate culture and working environment for the company.

The intelligence and the managing ability of a CEO is most useful when the company is facing a complex situation in the market or when the company is going through unfortunate stages in its developing progress. The CEO should promote the company's values to the highest extend possible and should be the focal point of the company's communication spectrum. Similar to a computer, the more information a CEO receives about various departments of their company, the more effective they will make decisions and design marketing strategies. Hence, a reliable CEO seeks as much information as he/ can about the operation of their company in order to make a superior decision.

## ***5.2 Chief Operational Officer (COO)***

The president has chosen Marjan Houshmand to be the COO due to her past experience, management skills, and enthusiastic personality. As a project manager at a high tech company, Marjan became familiar with the company's operation and functionality . Not only, she worked with various engineers on the product, but also she dealt with other departments such as marketing, fabrication and assembly group and even sales people from other companies. Her involvement in Engineering Undergraduate Student Society as VP Academic has given her the ability to communicate smoothly and well amongst staff and students as she proved it during the crucial time of changing the academic curriculum for engineers. In addition, Marjan has attended various conferences in the US, Easten and Western Canada involving women and management. Finally, her hobbies which includes several sport teams indicate she is a team player.

## ***5.3 Chief Financial Officer (CFO)***

As the Chief Financial Officer, Farhud Hashemian, carries the responsibilities of annual planning, budget formulation, analysis and accountability processes as well as provide financial management services for LittleFellows. Farhud, as the CFO of LittleFellows, will take a proactive role in designing LittleFellows finance functions and building internal finance capabilities. Farhud Hashemian is not only a business and functional competence, but also demonstrates a strong ability to lead / orchestrate negotiations in major transactions. With his significant professional management experience, Farhud will take the responsibility of assessing LittleFellows financial management needs, develop/oversee implementation plan for LittleFellows new finance structure, interview,



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hire, and develop staff (controller, budget manager, etc.), represent finance in presentations/ discussions with potential customers and other external concerns, etc.

## ***5.4 Technical Manager***

Shona Huang will be directing the LittleFellows Inc. software and hardware development. Shona comes with a very strong technical background academically and practically. Having completed a work term at a local start-up company, SentryTelecom, Shona has a working understanding of the challenges of taking a design concept through to production. Working with SentryTelecom provided Shona with the opportunity to learn to overcome some of the problems start-up companies experience in integrating software with the hardware. Shona will be thoroughly familiar with the integration of the software and hardware throughout every step of the project's development and will communicate with all other members of the R&D team, in order to meet the production deadlines with the highest quality control possible.



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## 6. Conclusion

With the company's mission and vision in mind, the proposed project leaves us space for expansion. We will be able to extend our technology to be incorporated in other toys and appliances. For example, it will be possible to rock gently the cradle or to vibrate the crib mattress so that the child will stop crying. For future marketing, we believe we can also implement a wireless feature so that the cry recognition feature can be combined with the existing baby monitor technology to give the parents more control and flexibility.

Every member of the LittleFellows Inc. has the confidence that our team will be able to complete the proposed project with a quality that is satisfactory to both our future customers and ourselves. The SmileyBaby Mobile will provide parents with the peace of mind that their child will be stimulated instead of crying needlessly for the parents' constant attention.



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## 7. References

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## Appendix

### *Glossary*

<b>A/D converter</b>	Converts analog signal to digital signals
<b>Bus</b>	A set of signal lines through which the processor of a computer (or a microprocessor) communicates with memory and I/O devices.
<b>CPU</b>	central processing unit (CPU) The combination of the register file, the control unit, and the ALU.
<b>Control unit</b>	The part of the processor that decodes and monitors the execution of instructions. It arbitrates the use of computer resources and makes sure that all computer operations are performed in a proper order.
<b>D/A converter</b>	Converts digital signals to analog signals
<b>DSP</b>	digital signal processing unit (DSP) A circuit that improves the accuracy and reliability of digital communications. A DSP chip is able to differentiate between human-made signals, which are orderly, and noise, which is inherently chaotic.
<b>Memory</b>	Storage for software and information
<b>Microcontroller</b>	A computer system implemented on a single, very large-scale
<b>integrated circuit</b>	A microcontroller contains everything that is in a microprocessor and may contain memories, an I/O device interface, a timer circuit, and A/D converter, and so on.
<b>Microprocessor</b>	A CPU packaged in a single integrated circuit
<b>Program</b>	A set of instructions that the computer hardware can execute.
<b>RAM</b>	random-access memory (RAM) allows read and write access to every location inside the memory chip.





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## *Employees resume*

LittleFellows Inc. employees business card have been shown below. Each employees resume have been shown in the following pages.

**LittleFellows Inc.**

Farnam Mohasseb  
CEO  
Tel: (604) 825-2482  
Email: fmohasse@sfu.ca



**LittleFellows Inc.**

Farhud Hashemian  
CFO  
Tel: (604) 719-3827  
Email: fhashemi@sfu.ca



**LittleFellows Inc.**

Marjan Houshmand  
COO  
Tel: (604) 726-0644  
Email: mhoushma@sfu.ca



**LittleFellows Inc.**

Shona Huang  
Technical manager  
Tel: (604) 862-1980  
Email: shonah@sfu.ca



# Farnam Mohasseb

#540 Foster Avenue  
Coquitlam, BC V3J 2L4  
(604) 825-2482  
fmohasse@sfu.ca

## Education

- 1999 – present    **Simon Fraser University, Burnaby, BC**  
Third year, School of Engineering Science computer option
- 1997 – 1999      **Abbotsford Senior Secondary School, Abbotsford, BC**  
International Baccalaureate Certificate

## Work Experience

- Jan – Apr 2001    **Sensor System Engineer at Spectrum Signal Processing Inc.**  
Designed and implemented a real-time C program, which concurrently activates five DMA engines on two DSPs to confirm some hardware limitations. Modified and tested an existing program to run under VxWorks. Programmed different bus bridge registers to properly transfer data between VME, SHARC, and PCI bus.
- Jun – Jul 2000    **Web Designer at E-View Studio**  
Designed and updated web pages. (<http://www.eviewstudio.com>)
- Jun – Aug 1999    Gas Station Attendance at Husky Gas Station
- Jan – Apr 1999    Mathematics Tutor at Abbotsford Senior Secondary High School

## Skills

### Software

- Experience in Java, C/C++, VHDL, and Assembly Language
- Familiar with software engineering process and Unified Modeling Language (UML)
- Familiar with embedded programming for microprocessor such as Motorola 68HC12
- Familiar with VxWorks and QNX real-time operating systems
- Experienced with Visual DSP++, SPICE, MATLAB, V-Metro bus analyzer, Maple, Tornado II, Altera's Max Plus II, Rational Rose, Logic Works, and MS Office.
- Familiar with Windows (9x, NT, 2000), DOS, Unix, and MAC OS environments

### Hardware

- Familiar with simple integrated circuit design
- Familiar with digital design for FPGA, PLA and GAL
- Familiar with basic Microelectronic concepts such as differential amplifier, frequency response, feedback and cascode configuration
- Competent with various electronic components such as transistors, diodes and operational amplifiers

- Competent with various lab equipment such as Signal Generator, Oscilloscope, Logic Analyzer, chase and PCI bus analyzer.

#### Other

- Extensive experience working in a team or individually
- Fluent in Persian
- Strong sense of responsibility

## Relevant Projects

Average Moving Filter	Designed and implemented a digital average moving filter for 68HC11 microprocessor using assembly language.
Easy Retail	Designed and implemented a retail system, which was managing a local store inventory. Program was written in java in a team of five. Rational Rose Unified Modeling Language (UML) has been used to document the software.
Band Gap Voltage Reference	Designed a band gap voltage reference, which was producing a constant voltage reference independent of changes in temperature or power supply. Circuit used a cascode multistage differential amplifier. The project covered the following steps: drawing the schematic, simulating circuit through SPICE, drawing the layout for fabrication and testing the final integrated circuit.
FPGA Programming	Programmed Altera FPGA chips in VHDL as bus controller, logic analyzer, MP3 low pass filter, and robotic arm controller.
Automated Wiper	Designed an automated windshield wiper using assembly language and VHDL to program the Motorola HC12 Microprocessor and Altera MAX 7000 series FPGA. (See <a href="http://www.sfu.ca/~fmohasse/">http://www.sfu.ca/~fmohasse/</a> for more detail)
Car Rental	Implemented a car rental system using several data structures such as binary tree and hash tables in java.
Reversi	Implemented Reversi in Borland C++ in a team of three persons.

## Activities

- Reading about business and computer related books
- SFU Intramural Soccer Team, Captain
- Cooking
- Music

## Awards

- Simon Fraser University Open Scholarship Winner
- Indo-Canadian Association Scholarship Winner
- Abbotsford Senior Secondary Alumni Association Scholarship Winner

## FARUD HASHEMIAN

### EDUCATION

---

- Sep 1999 - Present **Simon Fraser University** North Burnaby  
Third year Engineering Science Electronics Engineering option &  
minor in Computing Science.
- Jan 1998 – May 1999 **Douglas Collage** New Westminster  
Undergraduate student Finishing 35 University Transferable Courses

### LATEST WORK EXPERIENCE

---

- Jan 2001 - May 2001 **Glenayre** Vancouver  
Team Member of the Location Tag S/W Development Group,
  - earned ReFLEX Protocol and basic RF concepts
  - Learned Python, AWK and SED
  - Designed programs in Python & AWK for various tasks
  - Ran tests on Glenayre's Location Tag device
- May 1999 - Oct 2000 **Safeway Superstore** Coquitlam  
Cashier
- Mar 1998 – Oct 2000 **Herbalife Corp.** Burnaby  
Customer Representative
- Sep 1998 – Sep 1999 **Subway** New Westminister  
Sandwich Artist

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### TECHNICAL SKILLS

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- Competent in Languages C/C++, SQL, VHDL, Assembly, Python, AWK and SED
- Knowledgeable of (Ethernet) LAN/WAN networking, TCP/IP and OSI Model, Bridges and Routers
- 8 months of experience working with 68HC11 & 68HC12 and (ALTERA) FPGA chips
- 12 months of experience with assembly language
- Familiar with basic RF concepts

- Competent with basic lab equipment such as oscilloscopes, DMMS, and power supplies
- Comfortable using WINDOWS 9x/NT/2000/XP, UNIX(Solaris) and DOS operating systems
- Knowledgeable of SERV-U, FTP Applications (Cute FTP, FTP Voyager)
- Spoken/Written Languages: English and Persian (Farsi)

## **TECHNICAL PROJECTS**

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- Designed a multistage amplifier  
It consisted of four stages that made use of 25 BJT transistors
- Built a remote controller car  
Used HC12 and (ALTERA) FPGA chips for constructing it
- Designed Car Rental Software  
The software was to book cars for rent, send cars for repair, and do a query on the status of all cars. In other words, it enabled a car rental company to perform interactive operation on the software program.
- Designed BC Telephone Directory Software  
The software was to include all provinces in BC. For each province, each customer's information such as full name, address, and phone number was to be recorded. More importantly, users (telephone company employees) could perform several tasks such as: retrieve names, addresses, phone numbers, change names, change addresses, and etc.
- Designed Turtle Game  
Turtle game was a game similar to Logo program. It had a very friendly user interface, and was intended for children use. Children could address the turtle to make various shapes, such as lines, circles, triangles, and etc, for them.

## **INTERESTS AND ACTIVITIES**

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- Computer graphics using Corel Draw and Photo Paint
- Surfing the net and finding useful applications and programs
- Playing tennis, table tennis chess, camping and skiing

References available upon request

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# MARJAN HOUSHMAND

541-Linton St.  
Coquitlam, BC V3J 6J3  
E-mail: mhoushma@sfu.ca  
(604) 939-5692

## Education

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- Sept 1999- present     **Simon Fraser University**, Burnaby, BC  
Third-year Engineering Science, Electronics Option  
BC Hydro Scholarship
- May 1997 - June 1999     **West Vancouver Secondary School**, West Vancouver, BC  
Graduated with Honours with Distinction

## Work Experience

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- 2000-2001     **Fiber Optics Project Manager (Co-op), Silent Witness Ltd.**, Surrey, BC  
Supervised the development-production cycle which included designing test strategies and procedures, verifying and modifying circuits and communicating with different departments in weekly meetings.
- 2000-2001     **Teacher Assistant, Digital and Computer Design Laboratory/ Engineering Technology and Society Courses**, SFU, BC  
Led classroom tutorials in ENSC 100- *Engineering Technology and Society*.  
Researched on hardware-software interfaces for ENSC 150, *Digital and Computer Design Laboratory*. Received a perfect evaluation from students.
- Summer 1999     **Lab Assistant, Navard Pooshesh**, Esfahan, Iran  
Controlled the accuracy of machines and tested formulas for artificial leathers.

## Design Projects

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- Fall 2001     **Project Leader, IC Design**, SFU, BC  
Designed a 741 Op-Amp, simulated in HSPICE, using GA911 model which led to layout design using XKIC Layout Editor.  
Tested and verified the expected specifications using the fabricated ICs.
- Spring 1999     **Project Member, Smart Vacuum Cleaner**, SFU, BC  
Wrote Motorola Assembly Language code on 68HC12 microprocessor to interface with our designed relay which allowed the user to vacuum any desired area by receiving signals from our stepper motor's sensor.

## Skills

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Hardware	<ul style="list-style-type: none"> <li>• Familiar with <b>Embedded Control Systems Design</b></li> <li>• Experienced with <b>Altera</b> FPGA's, <b>Motorola</b> HC11/12 and <b>Atmel</b> AVR RISC ATtiny 12 architectures and implementations</li> <li>• Competent in digital design, <b>VHDL</b> using Synopsis environment and Altera Maxplus II</li> <li>• Familiar with <b>circuit schematic design</b> such as Cadence PSPICE, Tina, Logiworks, Visio</li> <li>• Experienced with GA911 <b>IC design</b> using HSPICE and XKIC</li> <li>• Electronics: <b>strong hands on lab equipment</b> such as oscilloscopes, DMMs, function generators, programmable AC sources, spectrum and digital analyzers</li> <li>• Soldering: surface mount and through hole</li> </ul>
Software	<ul style="list-style-type: none"> <li>• Experienced with <b>C/C++</b>, <b>Assembly language</b> (Motorola 68HC11/12, Atmel AVR RISC ATtiny12) and <b>Pascal</b></li> <li>• Familiar with programming for real time and embedded control systems</li> <li>• Operating systems: <b>Win NT</b> Server/Workstation, <b>Win 95/98</b>, <b>DOS</b> and <b>UNIX</b></li> <li>• Packages: MATLAB, MS- Office, Agile and Expandable</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Experienced with <b>fiber optics</b> circuits</li> <li>• Familiar with <b>video signals and standards</b> (experience working with VM700, Advanced Video Measurement Set)</li> <li>• Experienced with clean room procedures for <b>silicon wafer fabrication</b></li> <li>• Familiar with <b>temperature, surge and EMC</b> tests</li> <li>• Fluent in Persian</li> </ul>

## Volunteer Experience and Extra-Curricular Activities

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2001- present	<p><b>Vice President Academic, Engineering Department</b> SFU, BC</p> <ul style="list-style-type: none"> <li>• Student Rep. for High School Lesion, Lab, and Undergraduate Curricular Calendar Committees.</li> <li>• SFU engineering Rep for various conferences such as <b>APEGBC</b> Annual Conference and AGM in BC, Conference for Women In Engineering (<b>CWIE</b>) in Ontario, Advanced Networks Conference “Expanding Optical Networks in BC”, Women In Science and Engineering Conference (<b>WISE</b>) in Seattle.</li> </ul>
2000-2001	<p><b>Host Committee Organizer, Western Engineering Competition and Congress (WECC)</b>, SFU, BC</p> <p>Responsible for collecting data for organizing events and designing competitions for contestant engineers.</p>
1998-present	<p>Played on Soccer, Rugby, and Basketball teams.</p>

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## Skills

- Technical Skills
- **IC design:** analog IC design, netlist, HSPICE, GA911 technology, KIC layout on Unix
  - **IC fabrication:** theoretical background, hands on experience with each process, clean room technology
  - **Telecommunication:** ISDN Physical, Data Link, and Network layer protocol; basic knowledge of T1 and E1
  - **Lasers:** theory and practice in laser application
  - **Linear Systems:** MatLab, convolution, modeling and analysis of discrete/continuous linear systems, Laplace and Z transform
  - **Real-Time Embedded Systems:** HC11/12, software/hardware interface
  - **Digital Circuit Design:** VHDL, Maxplus II, familiar with PAL & FPGA, LogicWorks
  - **Software Programming:** competent in C, C++, Visual C++, HTML
  - **Electrical Circuits:** RLC circuits in DC and AC, Laplace transform, Pspice
  - **Microprocessors:** HC11/12 architecture, I/O, interrupts, assembly programming, MiniIDE, WinIDE
  - **Lab Skills:** breadboarding, PCB layout and fabrication, soldering, using oscilloscopes, DMMs, power supplies, function generators, and spectrum analyzers
  - **Manufacturing Processes:** welding, machining, wood processes, drafting and design
- Personal Skills
- Fluent in **English & Mandarin**
  - Fast learner and team player
  - Proactive and energetic

## Work Experience

- Sep 2001 -  
Dec 2001
- Teaching Assistant, Simon Fraser University
- Teaching Assistant for ENSC 150, Introduction to Computer Design
  - Taught two two-hour tutorials every week
- Jan 2001-  
Apr 2001
- Sentry Telecom, Burnaby, BC
- Learned the basic structure and protocols of ISDN, T1, and E1
  - Programmed an ISDN analyzer using Visual C++.



- May 2000-  
Aug 2000
- Faculty of Computing Science, University of British Columbia
- Worked a four months co-op term at SWIFT ( Supporting Women in InFormation Technology)
  - Participated in the programming of Virtual Family, a game designed to help initiate teenager's interests in math, sciences and information technology
  - Presented the Virtual Family game to students in the public school system and adults at several workshops and conferences

## Education & Awards

- Sep 1999-  
present
- Simon Fraser University, Burnaby, BC  
Third year Engineering Science
- Winner of both SFU and UBC entrance scholarships
  - Invitation to the Golden Key Honorary Club
- Nov 1996-  
Jun 1999
- Vancouver Technical Secondary School, Vancouver, BC
- In the provincial exams, scored 100% in Math 12, 99% in Chemistry 12, and 95% in Physics 12
  - Winner of BC Provincial Scholarship
  - Received Dr. H.K. Wong Scholarship upon graduation

## Volunteer Experience

- Sep 1999-  
Dec 2001
- Tutor, Vancouver Technical Secondary
- Tutor a class of fifteen students in electronics

## Interests

- Designing &  
Building  
projects
- Four major projects:** Smart Vacuum, ISDN Analyzer, Standard Op-Amp IC, and Electrical Car.
- Reading
- Enjoy reading a variety of books, such as Classics and mysteries
- Dancing
- Take Salsa classes