# eMotion Project Plan

## I. Mission

eMotion creates and offers devices that connect those that are physically apart but mentally together in a manner that is safe and simple.

## II. Background

### a. Project History

As social creatures, human beings are inclined to express thoughts and feelings to those whom we care for. Over the years communication has become more advanced, changing both the level of interaction and emotion attached to the communication. From writing letters to hearing someone's voice over the phone to watching and hearing the person using webcams, the natural progression is to be able to communicate a pure emotion at a distance by having a physical and psychological reference. When it comes to showing affection towards another individual, oftentimes it is the fact that someone is thinking about him or her that makes the gesture appreciated. This is the fundamental basis of eMotion.

One of the strongest emotions is the caring that is shared between friends and loved ones, and it is very important to express these feelings. The Best Friend Forever Necklace targets a younger audience because they are the group that is more likely to enjoy and need a product that will convey emotions. It was decided that by designing the product for a younger audience, it will help them reinforce their friendships and also serve as a stepping stone to launching other products using similar technology to different target markets in equal need.

eMotion as a concept, originally developed by Avelo Roy and Ed Suda, initially dealt with the issue of being able to touch over the internet as a means of connecting people who are not physically there but are emotionally together, a crucial element to maintaining healthy relationships. Also, it was found that the National University of Singapore's Mixed Reality Labs was currently working on a technology that allows simulated touch to be transmitted over the internet. The project, called "Poultry Internet," made the project seem much more attainable. The system was designed as a jacket worn by a receiver. The sender would stroke a doll of the object and the sensation would be transmitted. Utilizing this research and its business potential, eMotion was submitted for the Fall 2006 Business Idea Challenge, placing third overall.

Following this early success, Avelo Roy and Ed Suda continued to research and explore possibilities of touching over the internet, eventually communicating with

Adrien Cheok and James Teh of Mixed Reality Labs regarding collaborative efforts. The offer for collaboration was met favorably, and preliminary exchanges began. The project faced a major revision in its application when several issues were brought up: technical feasibility of such a jacket in a semester and also considering what it really means to be emotionally connected.

Fall 2007 semester witnessed a slew of modifications and developments to the original concept. A preliminary business plan, two functioning prototypes, a small focus group, and a website framework were created. Also, much support was found in outside resources like Nik Rokop of the Knapp Center, providing invaluable insight into the opportunities of the BFF <3 Necklace. All of these elements resulted in strong success for the team, winning five awards including the Best EnPRO, 3rd-best presentation, 5th-best booth, and 1st place in the initial stage of the Idea to Product competition at IIT.

In Spring 2008, eMotion won the first place in the regional competition of Idea to Product challenge, 3rd place in Nascent 500 national business plan competition and also presented at the Midwest venture summit attracting the interest of several potential investors. On IPRO day eMotion won the best EnPRO out of two tracks, best business plan, best team leaders, 3rd best exhibit, 2nd best in project management, etc.

b. Opportunity

Best Friends Forever Necklace (BFF) aims to keep tweens in touch, in style, and independent through wirelessly transmitted implicit messages that take on the form of lights and controlled rhythmic vibrations. While physical touch does not play a role in this instance, the opportunity lies in this age group's ability to abstract touch and its connotations. The touch is purely emotion-based, knowing that a close friend is thinking of them while in class for instance, fulfilling the strong human need of belonging and acceptance.

The preteen market targets girls ranging between the ages of 8-14 years old and accounts for roughly $48 billion per year divided amongst the 10.43 million American girls in this age group who have household incomes over $30,000, according to the 2000 United States Census. Additionally, girls this age visit shopping malls 40% more than any other age group, with 80% of tween girls having reported visiting a mall in the past month, according to Family Education, a research group dedicated to family studies.

## c. Solutions and Technology

The BFF<3 Necklace is a completely customizable fashion accessory, communication device, and gateway to a secure social networking website. This

Unit front showing possible replaceable casing

Unit back showing buttons to control who receives the message, message content, sending messages, and on/off.

device communicates using patterns of lighting and vibration to allow groups of friends to send secret, encoded messages.

To gain a better understanding of the BFF<3 Necklace offering, meet Jessica. Jessica is an 11-year-old public middle school student in the Chicago suburbs. She has several friends, a few of which she considers her best friends. Jessica is sitting in the cafeteria eating her lunch when she feels a slight vibration from her BFF<3 Necklace. She looks down and notices the LED on the left is shining blue. This means the message is from her friend Sara. The light to the right is shining the pattern of blue-yellow-blue, which Jessica knows means "I miss you." She then hits the reply button so that her friend Sara knows Jessica misses her too.

The BFF<3 Necklace also allows users to send messages to multiple friends simultaneously, illustrated by the next example. Jessica is hanging out at the mall with her BFFs when she suddenly selects her recipient friends and then presses the message button twice to send the message green-blue-green, which her friends know means "Check out that cute guy!"

All of these elements of the BFF<3 Necklace can be customized at the product offering's affiliate website bfflessthan3.com. Here Jessica and her friends can hear about the latest fashions, exchange gossip, chat, customize and announce their latest BFF codes to their friends, and customize their own unique casings. All of this activity takes place in a secure, monitored environment. Tween girls can only interact with others on the website if they have synced necklaces together in person. This means these girls are provided with an environment safe from online predators, interacting only with known friends that are seen in person. This also adds security that parents prefer for such websites, since there is a

strong probability that these parents also know the friends their daughter interacts with.

### d. Path Ahead

The Fall 2008 semester will focus on further developing the Necklace so that it can be ready for beta testing. The financials need to be revised in order to take into account new developments and added features. In addition, a series of business plan competitions will be entered to obtain necessary capital to help launch the company and gain valuable feedback. Prototyping, revising, and continual consumer-use feedback through focus groups will ensure that this venture is heading in the right path toward business viability in upcoming semesters. The goal is to have a working necklace, a working website and a working desktop software by IPRO Day.

## III. Objectives

### a. Business

i. Business Model updates
   1. Business plan
   2. Distribution model exploration
   3. Product finalization
   4. Promotion strategy
   5. Revenue model

ii. Market Research
   1. Conduct Focus Group of parents and tweens
   2. Understand purchasing habits and who pays
   3. Expand on secondary research
   4. Determine how parents regulate child's internet activities

iii. Ethical Considerations
   1. Determine relevant ethical issues
   2. Intellectual property
   3. Determine how ethical implications relate to legal issues
   4. Website disclaimer
   5. Contracts to outsourced services

iv. Finances
   1. Research concrete numbers for market, industry, and eMotion venture
   2. Determine conclusive adoption rate based on precedent
   3. Revision of pricing strategy
   4. Write financial statements

b. Technology
    i. Develop necklace prototype
        1. Reduce sizing of necklace prototype
        2. Increase transmission range
        3. Integrate with fashion casing
        4. Integrate rechargeable power source with USB cable

    ii. Features
        1. Allow for multi-syncing and receiver control
        2. Develop desktop software integrated with BFF <3 unit
        3. Lightweight and low power usage

    iii. Website
        1. Update website to reflect product modifications
        2. Create full set of templates for game and BFF <3 Necklace casing components

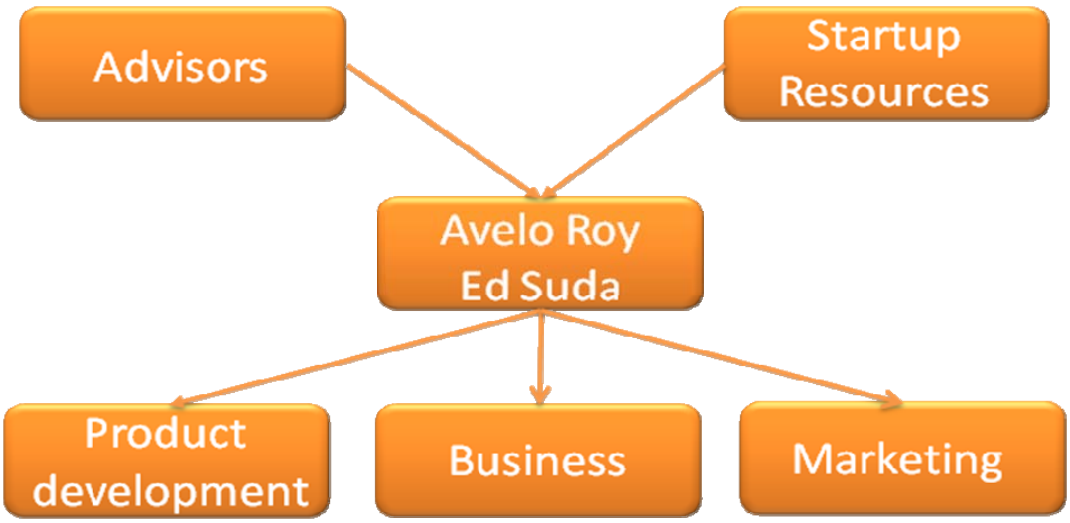
# IV. Methodology

## a. Sub-team Hierarchy

The tasks consist of those aimed at creating and forwarding the eMotion product technology and those aimed at formulating the eMotion business strategy. Consequently, the team of eMotion is divided to three sub-teams generally defined as the product development sub-team, marketing sub-team and the Technology Sub-team.

Each of the teams work closely with each other to ensure that proper communication is facilitated and that there is minimal wasted effort toward an idea that another group might find unreasonable to pursue. Additionally, this close communication facilitates better-quality ideas that work toward creating a successful BFF Necklace.

Sub-team leaders are responsible for managing the progress of their sub-teams. Additionally, the sub-team leaders are responsible for making sure the close, constant communication is ongoing between sub-teams, the team leader, and the project advisors. If inadequate progress is noted, the entire team works together to create a resolution to the issue.




b. Meeting Times

EnPRO 354 is scheduled to meet every Tuesday and Thursday evening. The schedule was modified after the division into sub-teams, reducing the entire-team meetings to only once a week on Tuesday evenings. The sub-teams are each required to meet at least twice a week, where issues specific to the sub-team are discussed and explored. Members of the sub-teams are strongly encouraged to attend meetings of the sub-team the individual is not officially a part of to keep abreast with current issues and developments.

Entire-team meetings are utilized as a forum for members of the eMotion project to present reports on recent developments and obstacles faced within the sub-team and what it means for the entire group. Solutions are then brainstormed and the process repeats. Additionally, time in class is spent reviewing and revising the set schedule of events to make sure the issues outlined are relevant and realistic based on current progress directions.

## V. Schedule of Tasks and Milestones

a. Schedule of Tasks

A schedule of tasks and goals is created as a set of guidelines for the team to adhere to as closely as possible. This is only preliminary, since all conditions which may arise during the research and development processes cannot be foreseen and accounted for. Individual member assignments are also flexible, as some tasks may be greater or lesser than initially anticipated. The constantly-modified project schedule will be posted on iGroups so everybody is well-informed of where the team needs to be. The Sub-team leaders are responsible for the individual weekly allocation of tasks, while the Team Leader and Internal Coordinator support and guide these tasks.

PRODUCT DEVELOPMENT TEAM

| Start | Finish | Who | Task |
|---|---|---|---|
| ***** HARDWARE** | | | |
| | 09/21 | Alex | Assemble 2 prototype3 circuits |
| | 09/22 | Alex,Haojie | Test prototype3 hardware |
| | 09/30 | Alex | Assemble 2 more prototype3 circuits (4 total) |
| | 10/10 | Alex | Test solder paste |
| | 10/10 | Alex | Revise prototype3 circuit & PCB |
| | 10/10 | Alex | Order revised prototype3 PCB |
| | 10/21 | Alex | Assemble revised prototype3 circuits |
| | 10/24 | Alex,Haojie | Test hardware |
| | 11/01 | Max | Research other possible parts: LCD, accelerometer, UI, etc |
| | 11/01 | Max | Research case button mechanisms: membrane, etc |
| ***** SOFTWARE: Necklace Firmware Code** | | | |
| | 09/20 | Haojie,Alex | Write & test base code (i.e. chip config, LEDs, interrupts, etc) |
| | 09/22 | Haojie,Alex | Write & test RF code |
| | 09/25 | Haojie,Alex | Write & test flash data storage code |
| | 09/25 | Haojie,Alex | Write & test PWM code |
| | 10/01 | Haojie,Alex | Write & test USB code for device |
| ***** SOFTWARE: Necklace Application Code** | | | |
| | 09/12 | Haojie,Vivek,Max | Update & test appcode friends/groups code as necessary |
| | 09/22 | Haojie,Alex | Update & test appcode RF protocol as necessary |
| | 09/22 | Haojie,Alex | Update & test appcode sync protocol as necessary |
| | 09/24 | Haojie,Vivek,Max | Update & test appcode with latest UI design changes |
| | 09/25 | Alex,Haojie | Finish & test appcode |
| | 09/30 | Alex,Haojie,Vivek,Max | Test device in regular operating conditions |
| ***** SOFTWARE: Desktop Code** | | | |
| | 10/15 | Alex | Write & test USB code for host PC |
| | 10/15 | Alex | Write & test PC software core functionality |
| | 10/20 | Alex,Vivek,Max | Write & test PC software webbrowser/website functionality |
| ***** MISC: Cases, Testing, etc** | | | |
| | 09/23 | Alex,Haojie,Vivek,Max | Consult with development/manufacturing professional |
| | 09/28 | Alex,Dan,Vivek | Design initial prototype3 cases |
| | 11/01 | Alex,Dan,Vivek | Design final prototype3 cases |
| | 11/12 | Alex,Dan | Fabricate prototype3 cases |
| | 11/10 | Alex,Haojie,Vivek,Max | Durability & reliability testing |
| 11/15 | 11/30 | | User testing |
| 11/30 | 12/05 | Alex,Haojie,Vivek,Max | Tweaks & final stage user testing |
| 01/08 | 01/14 | Alex, Avelo, Ed | Apply for FCC/etc certification |
| 05/11 | 05/28 | Alex, Avelo, Ed | Full-scale production manufacturing |

OPERATING AND MARKETING TEAM

| Start | Finish | Who | Task |
|---|---|---|---|
| ***** FINANCES** | | | |
| | 09/23 | Avelo, Dan, Ed | Meeting with Dr. Pistrui |
| | 10/07 | Avelo, Dan, Ed | Meeting with Dr. Pistrui |
| | 10/21 | Avelo, Dan, Ed | Meeting with Dr. Pistrui |
| | 10/10 | Avelo, Dan, Ed | Source revenue streams |
| | 10/10 | Dan, Monica | Determine market value of revenue streams w/ precedent |
| | 10/10 | Dan, Ed | Complete Cost Analysis |
| | 10/21 | Dan | Create flexible working budget |
| ***** BUSINESS PLAN** | | | |
| | 09/20 | Ed | Send 5 page to Waverly Deutsch for review |
| | 09/22 | Avelo, Dan, Ed | Integrate updated financials |
| | 09/25 | Prof. Braband | Verify document for intellectual consistency |
| | 09/25 | Ed | Verify document for formatting consistency |
| ***** MARKET RESEARCH (Primary)** | | | |
| | **Site Visits** | | |
| | 09/12 | Avelo, Ed | Visit Justice |
| | 09/22 | Avelo, Ed | Visit Limited Too |
| | 09/22 | Avelo, Ed | Visit American Girl |
| | 09/24 | Avelo, Ed, Braband | Visit Claire's |
| | 09/25 | Dan | Visit Club Libby Liu |
| | 09/30 | Monica, Ed, Avelo | Visit Build-A-Bear |
| | **Focus Group 1** | | |
| | 09/21 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 1 goals & strategy |
| | 09/21 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 1 methodology |
| | 09/22 | Monica, Lory, Ed, Avelo, Dan | Contact focus group 1 participants |
| | 09/23 | Monica, Lory, Ed, Avelo, Dan | Determine focus group 1 questions and logistics |
| | 09/28 | Monica, Lory, Ed, Avelo, Dan | Perform focus group 1 |
| | 09/28 | Monica, Lory, Vivek, Edvelo, Dan | Results Analysis |
| | **Focus Group 2** | | |
| | 10/05 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 2 goals & strategy |
| | 10/05 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 2 methodology |
| | 10/06 | Monica, Lory | Contact focus group 2 participants |
| | 10/07 | Monica, Lory, Ed, Avelo, Dan | Determine focus group 2 questions and logistics |
| | 10/12 | Monica, Lory | Perform focus group 2 |
| | 10/12 | Monica, Lory, Vivek | Results Analysis |
| | **Focus Group 3** | | |
| | 11/09 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 3 goals & strategy |
| | 11/09 | Monica, Lory, Ed, Avelo, Dan | Outline focus group 3 methodology |
| | 11/10 | Monica, Lory | Contact focus group 3 participants |
| | 11/11 | Monica, Lory, Ed, Avelo, Dan | Determine focus group 3 questions and logistics |
| | 11/16 | Monica, Lory | Perform focus group 3 |
| | 11/16 | Monica, Lory, Vivek | Results Analysis |
| ***** MARKET RESEARCH (Secondary)** | | | |
| | 365 | Avelo, Lory, Ed | Research online databases and news articles about tweens |
| | 10/15 | Avelo, Lory, Ed | Research Allykatzz, Girlserve, Webkinz |
| | 10/15 | Lory | Meet Dr. Bob about tween development |

| | | |
|---|---|---|
| 10/15 | Lory | Meet Dr. Bob Heather McLinden about tween psych |
| 10/15 | Avelo, Lory, Ed | Research Allykatzz, Girlserve, Webkinz |
| 10/15 | Avelo, Lory, Ed | Research Allykatzz, Girlserve, Webkinz |

***** MARKETING:**

**Design**

| | | |
|---|---|---|
| 09/23 | Lory, Monica, Dan | Casings and faceplates material investigation |
| 09/28 | Lory, Monica, Dan | Casings and faceplates material analysis |
| 11/01 | Lory, Monica, Dan | Casings and faceplates material determination |
| 11/12 | Lory, Monica, Dan | Casings and faceplates color investigation |
| 11/10 | Lory, Monica, Dan | Casings and faceplates color analysis |
| 11/30 | Lory, Monica, Dan | Casings and faceplates color determination |
| 11/12 | Lory, Monica, Dan | Casings and faceplates texture investigation |
| 11/10 | Lory, Monica, Dan | Casings and faceplates texture analysis |
| 11/30 | Lory, Monica, Dan | Casings and faceplates texture determination |
| 11/12 | Ed, Avelo | Investigation and connection with industrial designers |

**Packaging**

| | | |
|---|---|---|
| 11/12 | Monica, Dan, Ed | Packaging material |
| 11/10 | Monica, Dan, Ed | Package design |
| 11/30 | Monica, Dan, Ed | Package written content analysis |
| 11/12 | Monica, Dan, Ed | Package written content creation |
| 11/10 | Monica, Dan, Ed | Investigation of bundling |
| 11/30 | Monica, Dan, Ed | Determination of bundling |

**Sales Structure**

| | | |
|---|---|---|
| 11/12 | Avelo, Monica, Dan | Distribution channel mapping |
| 11/10 | Lory, Ed, Vivek | Distribution channel precedent analysis |
| 11/30 | Avelo, Vivek, Monica, Lory, Ed | Product placement: retail investigation |
| 11/12 | Avelo, Vivek, Monica, Lory, Ed | Product placement: media investigation |

**Blogging**

| | | |
|---|---|---|
| 11/10 | Lory, Monica, Avelo | Blog creation: domain name analysis and determination |
| 11/30 | Lory, Monica, Avelo | Blog promotion strategies brainstorm |
| 11/12 | Lory, Monica, Avelo, Vivek | Blog promotion strategies analysis |
| 11/10 | Dan, Ed, Vivek, Monica | Blog promotion tactics brainstorm |
| 11/30 | Dan, Ed, Vivek, Monica | Blog promotion tactics analysis |

**Instruction Manual**

| | | |
|---|---|---|
| 09/23 | Ed, Max, Vivek | Creation of user manual outline |
| 09/23 | Ed, Max, Vivek | Creation of quick install graphics process |
| 09/28 | All-team | Quick install graphics review and revision |
| 11/01 | Ed, Max, Vivek | Creation of detailed process graphics |
| 11/12 | Ed, Max, Vivek | Creation of detailed process text |
| 11/10 | All-team | Detailed process graphics and text review |
| 11/30 | Andy (Kent) | Determine necessary legal disclaimers |

***** PARTNERSHIPS:**

**Manufacturing**

| | | |
|---|---|---|
| 09/23 | Avelo, Ed | Contact knowledgeable IIT faculty about processes |
| 09/28 | Avelo, Ed | Meet with manufacturing company rep. |
| 10/08 | Ed, Avelo, Alex | Meet with Chicago Manufacturing Renaissance Council |
| 11/12 | Dan, Vivek | Research Chicago-area manu. and assembly houses |
| 11/10 | Dan, Alex | Source mold manufacturers |
| 11/30 | Avelo, Ed, Alex | Commission injection molds |
| 11/12 | Avelo, Ed, Alex | Begin early stage negotiations to source beta version |
| 11/10 | Alex | Work out final hardware design drawings |

| | | |
|---|---|---|
| 11/30 | Monica, Dan | Work out final casing drawings |
| 11/12 | Monica, Dan | Work out final faceplate drawings |
| 11/12 | All-team | Map out supply chain |
| 11/10 | All-team | Map out assembly process |
| 11/30 | All-team | Map out distribution chain |
| **Partnerships** | | |
| 10/12 | Avelo, Dan, Ed, Lory, Monica | Strategize partnership goals and outcomes |
| 10/22 | Avelo, Dan, Ed, Lory, Monica | Strategize types of partnerships |
| 11/30 | Avelo, Dan, Ed, Lory, Monica | Investigate potential partners |
| 11/12 | Avelo, Dan, Ed, Lory, Monica | Analyze and prioritize partnerships |
| 11/10 | Avelo, Dan, Ed, Lory, Monica | Map out how preferred partnerships could work |
| 11/30 | Avelo, Ed | Contact preferred partners |
| 01/14 | Avelo, Ed | Begin partnership negotiations |

# VI. Expected Results

## a. Business

i. Objective – Marketing strategy
Results –
Come up with a strategy to sell the product to first 10,000 tweens.

ii. Objective – Business Plan Competitions
Results –
Gain feedback on improving the project from diverse sources and experienced entrepreneurs to solidify the project and gain insight into the target market and launching process.

iii. Objective – Update financial statement
Results –
Create an accurate financial statement which will assist in securing future funding for the venture and impact planning on the pricing and marketing strategy.

iv. Objective – Focus groups and product testing
Results –
The focus groups are a crucial element to tailoring the product to customer needs, as well as gaining insight into how parents and children influence each other's buying decisions. The feedback will be incorporated in the designing of the product and then sent out for testing to selected girls who are identified as trend setters and influencers.

## b. Technical

i. Objective - Develop a necklace prototype
Results –
Create a lightweight necklace with minimal power consumption that has wireless capability, and a multicolor light with a force sensation. Integrate with the replaceable casings.

ii. Objective - Final, production ready necklace implementation
Results -
Minimize cost, size, weight, power consumption on original prototype. Develop a printed circuit board to compact existing components.

iii.

iv. Objective - Develop website and desktop software
Results -
The website and desktop software provide the necessary support for the BFF <3 Necklace an interactive website that

enhances the user experience and extends the lifespan of the product. It also supports a recurring revenue stream and provides barriers to entry through the sophisticated user interface.

## VII. Team Member Roles

a. Avelo Roy (Co founder,Team Leader)
   i. Major: Computer Engineering
   ii. Certificate in Leadership studies
   iii. Year: 4th
   iv. Skills related to eMotion
      1. 2 semester eMotion experience as Team Leader
      2. Extensive experience in leadership and team management
      3. Experience with circuit analysis and circuit design
      4. Microsoft Office – Word, Excel, PowerPoint, Project, Access, Visio, FrontPage

b. Edward Suda (Co founder, Marketing Sub team leader)
   i. Major: Architecture
   ii. Minors: Architectural Engineering, Entrepreneurship
   iii. Year: 5th
   iv. Skills related to eMotion
      1. 2 semester eMotion experience as Internal Coordinator
      2. Extensive leadership and managerial skills
      3. Microsoft Office – Word, Excel, PowerPoint, Project
      4. Knowledge of metal and woodshop machinery

c. Alessandro Segre (Technical Sub-team Leader, Hardware developer)
   i. Major: Computer Engineering
   ii. Year: 3rd
   iii. Skills related to eMotion
      1. Electrical and Electronic:
         a. Basic electronic digital systems design and implementation
         b. Moderate electronic knowledge and experience
         c. Basic low-power electrical power-systems knowledge and experience
         d. Extensive non-SMD soldering & circuit assembly experience
         e. Basic surface mount (SMD) PCB soldering
      2. Mechanical
         a. Design and implementation of precise mechanical systems for optical use via computer aided drafting (CAD) software
         b. Precision operation of metal and wood shop machinery for the creation and modification of standard and custom designed components

d. Haojie Luan (Software developer)
    i. Major: Computer Science
    ii. Graduate Student
    iii. Skills related to eMotion
        1. Software design experience
        2. Hardware development experience
e. John Graziano (Circuit designer and programmer)
    i. Major: Computer Engineer
    ii. 3rd year
    iii. Skills related to eMotion
        1. Software design experience
        2. Hardware development experience

f. Vivek Sharma (Software developer, iGroups file organizer)
    i. Major: Physics
    ii. Minor: Computer Science
    iii. Year: 3rd
    iv. Skills related to eMotion
        1. Programming
        2. Undergraduate Researcher

g. Lory Mishra (Focus group coordinator)
    i. Major: Psychology
    ii. Year: 3rd
    iii. Skills related to eMotion
        1. Psychological knowledge
        2. Conducting focus groups
        3. Researching abilities

h. Monica Hernandez (prototype designer)
    i. Major: Architecture
    ii. Year: 5th
    iii. Skills related to eMotion
        1. Proficient in model making
        2. 4 years “Build a bear” experience
        3. Skilled in using Auto CAD.