Bed-Side Assistance System

AMMA TECH.

Presentation Outline

- Purpose
- Individual Roles
- System Overview
- System Design
- Business Approach
- Prototype Budget
- Design Challenges
- Individual Achievements
- Future works
- Acknowledgements and Questions

Motivation and Purpose

- Our motivations are to assist those experiencing difficulty getting into bed.
- The reason to support these individual?
  - Unstoppable effects of old age
  - Hindering Disabilities
  - Delicate recoveries

Project Roles

- Michael Quong – Chief Executive Officer
  - Project Manager
  - Electronics Design
- Martin Wong – Chief Operations Officer
  - Hardware Design
  - Tests and Implementation
- Andrew Yip – Chief Financial Officer
  - Software Design and Programmer
  - Overseer of Expenditure
- Amer Kalla – Chief Technical Officer
  - Hardware and Mechanical Research

System Overview

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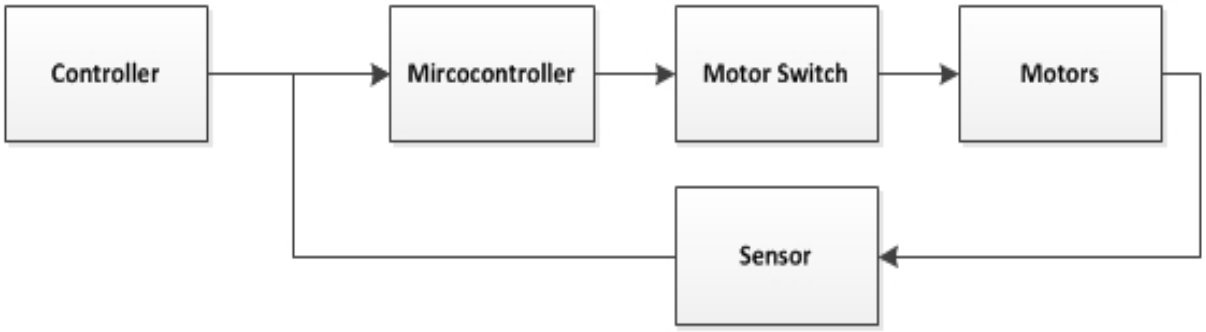
High Level System Design

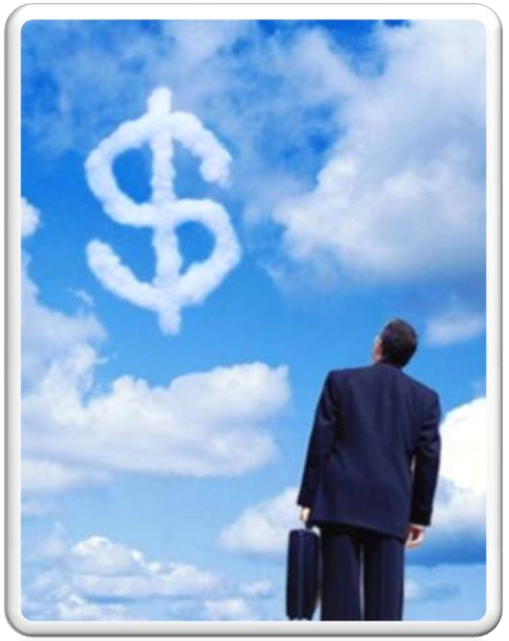


Feedback system

Why People need something like this?

Business Approach

- Market Research
  - Why People need something like this?
- The Types of Competition
  - What is out there?
- Our Audience
  - Who we are aiming for?



Market Research

- Profession physiotherapist Recommendations
  - Would such a device be viable?
    - Is a viable option that physiotherapist could recommend their patients if they case accounts for it.
  - Who benefits from a device like this?
    - Individuals which have had hip or knee surgeries
    - Overweight individuals with poor muscle strength due to health conditions or injury
    - Older individuals with deteriorating muscle strength due to age or disabilities

Competition

- Duro-Med Leg Lifter Strap
  - Requires manual effort and strength
  - Extremely cheap and affordable
  - Limited to a particular user base

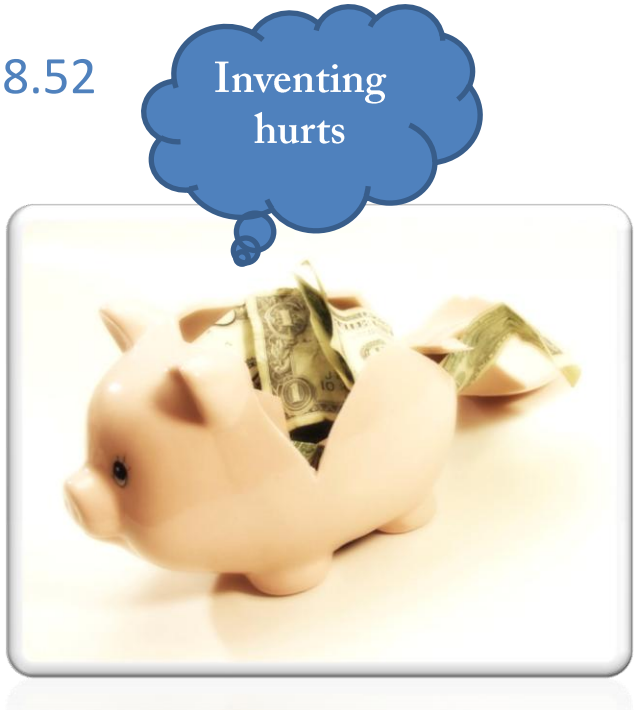
- Patient Lift
  - Comes in manual and automatic models
  - Large investments
  - Requires an assistant operator

Target Audience

- Who are we marketing to?
  - Preying on the Seniors
  - Making a fortune on the unfortunate
    - Those with disabilities and injuries
  - Looking for Recommendations
    - Medical professionals
    - Physiotherapists

Prototype Budget

- Amount expended on prototype
  - $438.52
- Amount awarded through the ESSEF
  - $300.00
- Little things adds up…
  - Amount unfunded: $138.52



Budget Breakdown

Item Name	Description	Quantity	Total Cost (CAD)
Arduino UNO	Microcontroller	1	36.96
Ardumoto	Motor shield + Driver	1	24.95
Linear Actuator	150 lb linear track	1	147.88
DC Motor	1300 lb linear track	1	147.88
Sensor	Force +IR sensor	3	27.85
Switch	Button switches	3	8.85
DC Power Adaptor	Regulated 9V 0.6A	2	8.20
Miscellaneous	All the little things	NA	35.95
Frame Material	Wood	NA	“Free”
		Total	438.52
*Research and development expenses not included			

Design Challenges

- Finding the right parts that fit our design specifications
  - Finding a motor to fit our needs was incredibly difficult on a budget
- The challenges of mechanical engineering
  - Grasping the ideas and the know-how to create an efficient design

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The Learning Process

- Developing and understanding the intricacies of mechanical design
- Project management and the importance of organization
- The learning curve of developing and marketing a product
  - The processes and energy needed to create a solid product to market
- Putting the pieces together
  - Learning how different components fit together properly

Future Works

- Find a more suitable power source for system
- Requires custom built motors to withstand the weight intended.
- Recreating the prototype in custom made metal and plastic sections
- A voice recognition system to replace manual controls
- Encase parts and circuit in a more robust packaging

Acknowledgements

- The Mentors
  - Professor Andrew Rawicz
  - Professor Michael Sjoerdsma
  - Ali Ostadfar
  - Jamal Bahari
  - Moein Shayegannia
- The Shop Owners
  - Lee's Electronics Staff
  - Progressive Automations Representative

Questions

Presentation has been brought to you by AMMA Tech.

Happy Holidays... The Season of giving.

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