

# Dec 18, 2014 ME 2300 Intro to Eng Design

## Appreciation

Thank you to Dr. Allen Hoffman for hosting the Robert H. Grant Invention Awards in his ME 2300 Introduction to Engineering Design course. Competition participants learn the value of a successful business pitch to "investors" a.k.a., the judge team, when they win the prizes. Students tether engineering principles to business acumen to address customer need, value, feasibility, prototype iterations, implementation, and marketing, among other business aspects - and even assume a C-Suite title and responsibilities. Our judges are Amy Potts, Principle of Stream Product Development, an award winning design firm; Neil Tischler, Principle of Tischler Resources, a product design and development firm; and Attorney Jeffrey J. Duquette. Our judges bring experience to the table and each invests many personal hours in abstract review, prior art searches, Q&A during team presentations, and choosing winners. We congratulate these teams: First Place: Wire-Follow Game; Second Place: Stair Caddy; Third Place: Coffee Sleeve; and Fourth Place: Sorry! Kit for Blind Children. (See team members and abstracts below.)

### **Wire-Follow Game; Mark Yandian, Melanie Cantwell, Sam Jacobs, Caio Diniz**

Fine motor skill impairment is a condition seen in a wide range of settings – in rehabilitation clinics, in special education classrooms, amongst occupational therapists just to name a few. With this need in mind, the goal of this device was to bring an innovative twist to motor skill fine-tuning devices by designing a fun, feedback-filled game that use would aid in the improvement of fine motor skills of users. As the ring is traced along the loops and turns of the copper tube, users are challenged to avoid touching the copper tube or a buzzer will alarm and a series of red lights will illuminate. If the users complete the course, a series of bright green lights will flash to congratulate their success! The incorporation of a timer will allow users to mark their progression over wire courses of varying difficulty and the use of alternative grips will help to accommodate users that have difficulty gripping.

### **Stair Caddy, Jason Beauregard, Andrew Kennedy, Ethan Barrieau**

As the number of elderly persons increases, there is a greater need for at-home assistive technology to help perform activities of daily living and reduce risk of hazards. One of the most strenuous and dangerous activities is carrying objects up and down a staircase where no hands are free to support on the railing. We decided to develop a device that would reduce the amount of effort needed to transport these items while reducing the risk of falling. The Stair Caddy is a railing mounted device that can adjust to varying railing sizes, as well as support various load carrying attachments. The unit will ascend the staircase with user assistance while providing the user the ability to simultaneously grasp the railing. There is a ratcheting system that will ensure the system does not fall back down the stairs. There will be a release brake located at the top of the staircase that will allow the device to slowly descend the stairs when user input is provided.

### **Coffee Sleeve; Kyle Fitzgerald, Chris Ryan, Tyler Golemo**

One of the most common challenges the elderly face is consuming hot beverages. This is made even more difficult by tremors and arthritis, which are most common in this age demographic. While there are many mugs on the market for arthritis or tremors, there are none for those afflicted by both. Traditional coffee cups are hard to hold and shatter when dropped. The product meant to help the elderly get a better grip on the cup using a plastic sleeve. The sleeve is for a standard 16oz foam coffee cup. The product is weighted to assist those with tremors and has specially designed handles that can be used multiple ways depending on the user's ability to grip. The various components of this device help to overall improve the ability of elderly persons to drink coffee or any other beverage without assistance.

### **Sorry! Kit for Blind Children; Kevin Lynch, Ken Swanson , Joe Igoe**

Play is an important activity for all children as it develops their growth physically, mentally and socially. Industries have developed varieties of different toys and games to aid the development of children, however, there are limited products designed to benefit children with disabilities. Specifically, board game products lack design for visually impaired children. Board games are not a practical activity for the visually impaired due to the visual requirements in which gameplay entails. Our product is a kit for the popular game of Sorry! which streamlines the experience for blind children. The reconfigured board eases gameplay for a visually impaired child by implementing tactile modifications. Our final design is an acrylic cover that mounts over a standard Sorry! board. The acrylic piece contains engravings and magnets for space recognition, as well as holes for added security of the game pieces. Identification of the game pieces are recognized by specific shapes developed on the piece. Braille labels laid out upon the cover will help the visually impaired child understand the layout of the board. Stickers are provided to place upon each card to translate what is drawn through braille. A card holder is included to promote easy access to the game cards. This kit is very compatible and enables gameplay for both normal sighted people and the visually impaired.



Wire-Follow Game Team



Stair Caddy Team



Coffee Sleeve Team



Sorry! Kit for Blind Children