Stephen Kemp

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3 Problem Statements and Context

1. Magic the Gathering Card Sorting Device

Many players of the ‘Magic the Gathering’ trading card game collect many cards just from playing the game and building decks. This results in boxes full of unsorted and unorganized cards which makes coming up with and constructing decks difficult.

Before starting on this project, I would need to research whether a device exists that solves this or a similar problem to see approaches people have taken and how this device can be better. In what ways would people want their cards sorted? How do playing-card-sorting machines that are currently on the market work? The major stakeholders would be MTG players and collectors, as well as game store owners who would buy and sell this product. MTG players and collectors would be most impacted by this device because they are the ones with the aforementioned problem.

To this project, I would bring my skills of project management and control system design/testing as well as my communication and writing skills. From this project, I would hope to improve my project management skills and learn practical aspects of the design and prototyping process.

**Problem Statement: Players of the ‘Magic the Gathering’ (MTG) trading card game collect tens of thousands of cards from playing the game. These cards end up in boxes, unsorted and disorganized, making deck-building difficult due to the monumental task of finding specific cards in the mess. The goal of this project is to design a device that will automatically sort MTG trading cards by color, converted mana cost (CMC) and card type.**

1. Coffee Grinder improvement

When grinding coffee using a standard burr grinder, it is difficult to get a consistent coarseness of grind for brewing techniques that require a specific granularity (coarse for French press, very fine for espresso, pour-over). The alternative, variable hopper grinders, give a more consistent variable grind but are expensive, starting at $50 and averaging about $100, and often have more settings than the average user will need.

What about a variable grinder causes it to be so expensive to make? Is it feasible to make an inexpensive grinder that grinds both coarse and fine coffee with consistent granularity? What causes burr grinders to produce inconsistent granularities? The major stakeholders of this project will be potential users of the device and the inventor, as it would be a patentable device. The people most impacted by this project would be consumers of coffee who use a brewing technique aside from a drip coffee maker and who can’t afford a variable grinder.

To this project, I would bring my skills in electronic design and ideas of how the device might function. From this project, I would hope to learn about the mechanical function of a coffee grinder and the size of the potential market for such a device.

**Problem Statement: People who grind coffee for use aside from drip-coffee brewing have difficulty achieving a consistent coffee-granularity for brewing techniques such as French-press and pour-over that require a specific granularity. Hopper grinders solve this issue but cost between $50-$200 and have excess functionality. The goal of this project is to create an affordable coffee grinder that achieves a consistent granularity for a range of brewing techniques.**

1. Pill Organization System

People who have many supplements or medications they take on a regular basis often forget to take them. Additionally, when they change their regimen, either what pills they take or when they take them, they must either buy entirely new pill-boxes or use nonportable ones with many, oversized containers to accommodate possible future regimen changes.

Why do people forget to take their pills? Are there systems currently in place that could be utilized to remind people to take their pills? What kinds (shape, size, utility) of pill boxes are currently on the market? What are their pros and cons? Are there expensive pill organization systems that could be made less expensive while maintaining relevant function? The major stakeholders would be consumers of the product, the inventors of the product, doctors who may recommend the product to patients and pharmaceutical stores that may sell the product. Consumers of the product would be most impacted by the deliverables.

To this project, I would bring my writing, electrical design and communications skills. Additionally, my girlfriend would be a resource as a device user/functionality feedback because she takes large amounts of pills daily, frequently adjusts her regimen and forgets to take her pills. From this project, I would hope to learn consumer product design skills and considerations, and how to coordinate more effectively as a part of a product design team.

**Problem Statement: People who take many dietary supplements or medications often forget to take their pills, impeding or even endangering their health. Additionally, to accommodate changes in their daily regimen, they must either buy many kinds of pill boxes or buy pill boxes with too many (often oversized) compartments, both of which sacrifice portability for function. A potential approach would be to have a modular pill organizational system with differently sized, shaped and labelled compartments that could be substituted to fit the user’s current daily regimen. This system would also remind the user to take their pills via a customizable alarm system, sounding through built-in speakers or via reminders to the user’s mobile phone.**