Engineering 090 Topic Selection Memo

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Spatially Oriented Haptic Computer Input Device

We propose to design and implement a prototype computer input device that provides haptic feedback suitable for the visually impaired. This device will differ from other devices, such as that designed by Lauren Stadler and Heather Jones for their E90 project last year, in that it will use a tablet for absolute spatial positional input as opposed to using a relative device such as a mouse or a trackball. We feel that this spatial orientation will greatly improve usability for the visually impaired as it will reduce or eliminate problems with losing track of the cursor position. Additionally, we hope to provide extensive haptic feedback. To make the project more interesting, we intend to collect input by using 3D cameras obtained from Canesta, Inc. (http://canesta.com/). This has the advantage of providing the system the potential to easily scale for a particular interface (as opposed to having a fixed-size tablet) and, perhaps more interestingly, opens the potential for 3D applications that might be useful for sighted users as well.

A key concern for the completion of this project is the ability to obtain a Canesta development kit at a reasonable price. This will likely involve sending a proposal/request for a kit to the company within the next month.

We plan to work with Professors Bruce Maxwell and Carr Everbach.