Phone Tag
EE 368 Project Proposal

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1 Motivations

Ubiquitous smartphones with their wide range of integrated peripherals present designers with opportunities to use the devices in novel ways. Interactive augmented-reality experiences that would have previously been deemed too expensive to be commercially viable can now be produced at a low cost. Leveraging the hardware that the consumer already carries has produced a wide variety of options for entertainment. To explore the use of these resources in an interactive social context, we propose the development of a multiplayer game, played in real space, with game mechanics that are supported by an augmented reality display provided by a smartphone. Our model will be a game similar to laser tag, with the laser tag gun, sensors and controllers replaced with the players’ smartphones (in this case Android devices).

2 Goals

Our goal is to build an Android app that turns a smartphone into the equipment to play a game similar to “laser tag”. The camera and flash will be used to detect and “fire” a “shot” respectively. We will need a fast blob detection algorithm to characterize LED flashes produced by an opponent’s smartphone [3]. Animated, interactive, viewfinder augmentation will be based on location information determined by the blob detection algorithm. Targets will be differentiated by image processing of the opponent device’s flashes or by a special-purpose registration marker [5]. One approach would use the “light bullet” (flash sequence) itself to encode information such as which opponent fired the shot [4]. Such codes would also effectively filter out spurious “shots,” such as camera flash from spectator photography.

3 Technologies

We plan to use the following technologies:

- Android SDK [1]
- OpenCV [2]

4 Equipment Request

We would like to request between 1 and 3 Android devices for the purposes of this project.

References