AR Phone Way-finding Using Imagery and Navigation for Indoor Environments

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Brief Introduction

1. This is an individual project based on my previous work of image based outdoor navigation and Zhibo Zhang’s work of button based indoor navigation app.

2. It is an improvement of an existing phone application in terms of its usability, accuracy and robustness.

3. Programming Requirement: C#, Unity3D;

4. Other skills requirement: Socket;
Human centered design and evaluation;
Image based techniques;

5. Challenges: Hard to use deep learning model;
   Accuracy of the navigation;
   Direction;

6. Why this project?
Background: AR

Augmented Reality – Mixing real-world environment with virtual objects.

Image From: https://imgix.bustle.com/mic/eelbogf5seevwdxnrgrichzmcj2o4m8stl8g6sffa5qscg4lqbdx9uhtfox7lpf.jpg
Background: Indoor Navigation

GPS Indoor: Inaccurate
Background: HCD

HCD with DT (design thinking):
Empathize -> Define -> Ideate -> Prototype -> Test
Approach and Plan

1. Reconstruct Zhibo’s indoor navigation app;
2. Reorganize my previous work on outdoor navigation, and use components from it to the indoor navigation one;
3. Use socket to build up client-server model;
4. Figure out how to use QR code and computer vision techniques to recognize direction;
5. Interview – based on user experience and feedback to build a more user friendly UI with enough functionalities;
6. (Experimental) Build a DL model and figure out its accuracy and usability;
Conclusion

This presentation is mainly about what I am going to do, while the whole process is much complex than I have just demonstrated.

Challenging, but worthwhile to do!
Thanks for your time!

Yukun Hao