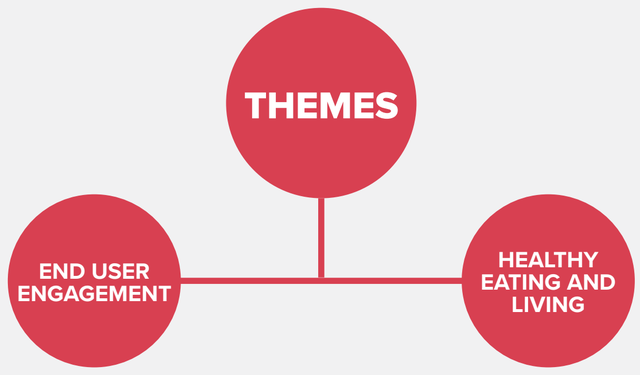
PizzaBox: Studying Physical Object Manipulation based Fast Food Ordering

Luke Jones & Charith Perera

INTRODUCTION

This paper presents the designing and evaluation of PizzaBox, a 3D printed, tangible food ordering system that aims to differ from conventional food ordering systems and provide an unique experience when ordering a pizza by incorporating underlying technologies that support ubiquitous computing. The PizzaBox has gone through both low and medium fidelity testing while working collaboratively with participants toco-design and refine a product that is approachable to all age groups while maintaining a simple process for ordering food from start to finish. We utilised this artefact to conduct an user study at an independent pizzeria to uncover potential opportunities.



DESIGNING PIZZABOX

In high-level, we conducted three rounds of focus groups studies that involved co-design activities. The full details of the methodology, results, and discussions are presented in the paper. Study 1 utilized low prototyping techniques whereas study 2 utilised medium-fidelity. In study 3, we evaluated our high-fidelity prototype.

Study 1: Low Fidelity Prototyping

In this study, each group was provided with set tasks to complete while using four different prototype (shown in Figure 1). Each task contained 6 to 8 steps and aimed to utilise as many of the features of the prototype as possible.

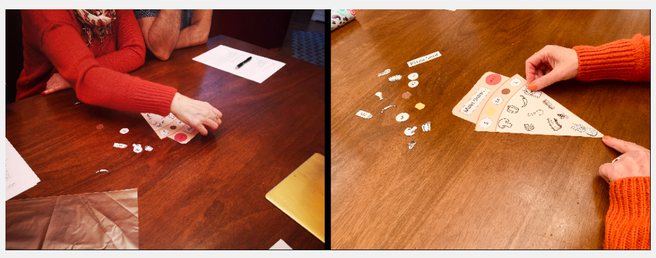


Figure 1: Participants engaging with a prototype in round one. Use of the prototype was unguided to understand how intuitive and easy to use the prototype was.

DESIGNING PIZZABOX (cont.)

Study 2: Medium Fidelity Prototyping

From the data collected from study 1, slight alterations were made to the prototypes that we presented to the participants in study 2.

(a) Participant adding an ingredient to the prototype.

(b) Participant completing a task by pressing the order button.

(c) Participant adding an ingredient to the prototype.

(d) Participants working together to complete a task.

Figure 2: Participants engaging with the prototype during the study 2 medium fidelity tests.

Prototyping PizzaBox

The hardware that we have chosen to use in this project attempts to remain true to the low-cost ethos. Arduino Uno, and LCD screen, SparkFun Simultaneous RFID Tag Reader, and RFID tages were used to build the prototype.

Figure 2: Participants engaging with the prototype during the study 2 medium fidelity tests.

The evaluation (study 3) was conducted in a local independent pizzeria and so participants were recruited upon visitation of the pizzeria. As participants were customers of the store, the demographics of each customer varied slightly with the majority of participants being 40 years of age plus with a mix of genders. Participants under the age of 18 were not asked to participate unless accompanied by their parent or guardian. Participants were then asked questions from a question pool that we felt were applicable to the individual.

DISCUSSIONS

Nutritional Education: Overall, most customers that participated saw a greater appeal to a younger audience as the PizzaBox provided an entertainment value that would be more attractive to a lower age range.

Supporting Special Needs: While on topic of appealing to an older generation, a different angle for the appeal of the PizzaBox that many of the older populous suffer from medical conditions such as communication problems, hard of hearing or physical disabilities that make it difficult for them to use conventional ordering systems and that the PizzaBox would allow them to easily make a food order without having to be anxious or nervous about approaching a pizzeria waitress

Healthy Options: Based on the current version we discussed with customers based on their promote that they had with the PizzaBox would they alter their choice of toppings or reduce the number of unhealthy options they chose.

Ingredients Awareness: A Participant expressed that actually seeing the ingredients would alter their choice as being able to see the food and the quantity that is being added to the PizzaBox gave the customer a sense that they are adding an unneeded quantity of food.

Visual Calorie Counter: A popular opinion across most of the customers was a display on the screen of a total calorie count of each ingredient that was on the PizzaBox

Enforcement and Safety: The discussion of new features for a healthier choice of eating also introduced the idea of being able to add limitations or restrictions to certain aspects of the pizza ordering process e.g. ingredients, quantity or the amount of calories/salt etc.

SUMMARY