Dining Presenter: Augmented Reality system for a dining tabletop

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Abstract

In this paper, we propose an Augmented Reality system called DiningPresenter that enhances the visual appearance of food, dishes, and a tabletop in a dining room. DiningPresenter detects the position of dishes and the amount of food to overlay a variety of information using a camera and a projector attached over a dining table. We believe that DiningPresenter helps in communication and education in a dining room and that it makes dining environments more attractive.

Keywords

Augmented Reality, dining room, dish, dietary education

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

People find food to be delicious because of its taste, flavor, texture, and appearance. The visual appearance of food is of great importance since approximately 80% of the human perception is related to the visual sense. We propose an augmented reality (AR) system called DiningPresenter that can enhance the appearance of food, dishes, and a tabletop in a dining room. Although

many research projects are using AR technology, most are focusing on tabletop applications in office environments. Lin[1] proposed an AR application for disciplining young children at a dining table[1]. DiningPresenter aims to make dining environments more attractive.

DiningPresenter

DiningPresenter mainly consists of two components (shown in fig. 1): (a) authoring tools and (b) presentation tools. First, we describe the authoring tools. We attached a camera over a kitchen counter and installed a tablet PC in a kitchen drawer. When a user takes a picture of a dish using the camera, the picture is automatically imported into the drawing software running on the tablet PC. Using this software, the user can draw illustrations and messages on/around the dishes using pen tools and pre-prepared artwork (fig. 1a). Next, we describe the presentation tools. We attached a projector and a camera over a dining table (fig. 1b). We used the camera for image processing to detect dishes and the amount of food remaining on them. When a user places a dish on the table, the system identifies the dish by its edge color and projects the corresponding content on/around the dish. As the amount of food decreases, the system automatically changes the contents. When the user removes the dish and places the next one, the system projects new contents. We introduce some examples of contents projected using DiningPresenter. Figures 2a and 2b show contents used for dietary education. Figure 2a shows information about the ingredients of food, such as the original shapes before harvesting and the growing district. Figure 2b shows an illustration and a message for motivating children to eat food they might dislike (e.g., carrots or peppers). Figure 2c

shows an example of an artistic decoration used for special dinners. The system projects images such as attractive place mats around the dish and a heart icon on the steak.
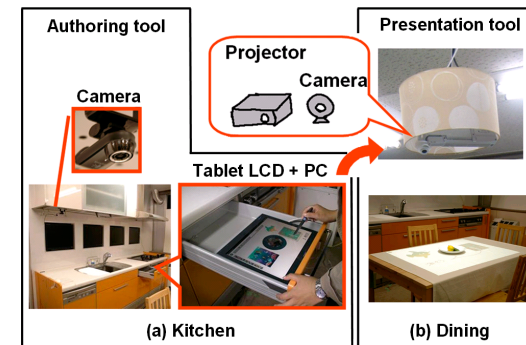

figure 1. Components of DiningPresenter: (a) authoring tools in a kitchen and (b) presentation tools in a dining room.
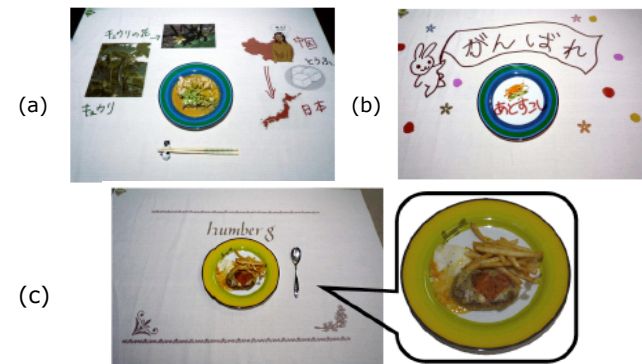

figure 2. Examples of contents projected using DiningPresenter: (a) and (b) show examples used for dietary education and (c) shows an example of artistic

References

[1] Lin, T.-Y., et. al., A persuasive game to encourage healthy dietary behaviors of young children. Adjunct proceedings of Ubicomp2006, 2006.