Progress Summary - Mindful Chef (MC) - S2DS Data Science Project

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Task: To develop and test onboarding games, which would identify a new customer's adventurousness metric. This feeds into an established recommender system, which suggests the most appropriate future recipes for the customer.

Game Development: Three onboarding games were developed. Each game would establish a 'virtual order history' of two orders, where each order contains 2-5 recipes. The three games were:

1) **Baseline:** Randomly selects recipes from the existing MC catalogue and displays them to the user. The user is shown 10 images and must select 2-5 recipes. This process occurs twice, thus generating the virtual order history. This largely reflects the current recipe selection process.

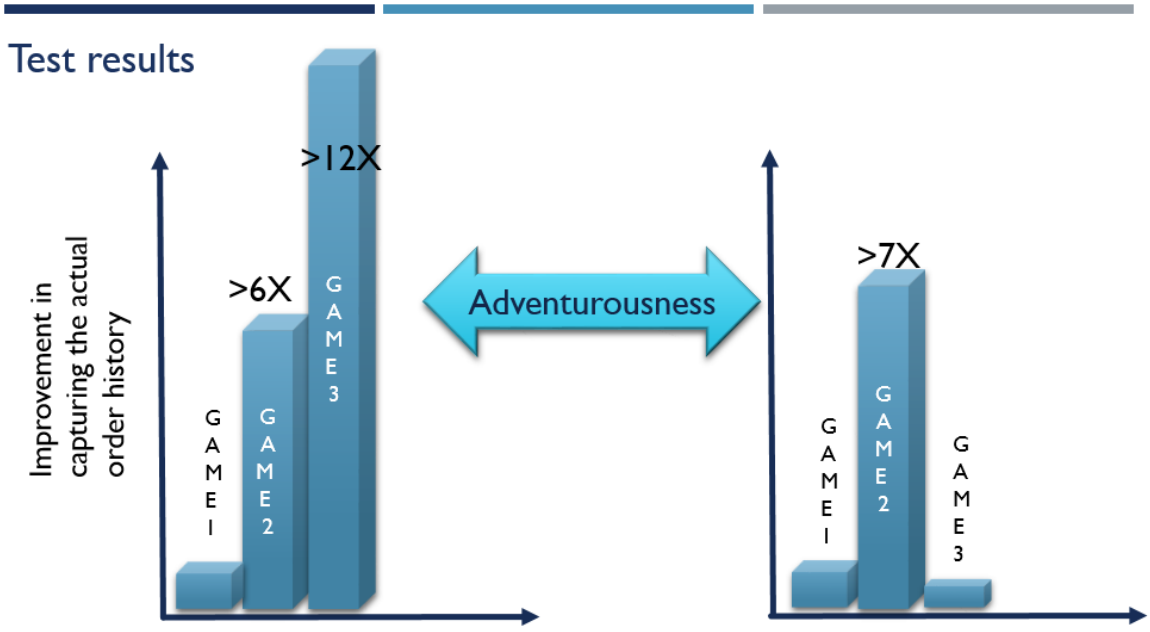
2) **Extremes:** Data processing of the recipe text is used to plot the MC catalogue into a virtual space. In the game, the user initially picks their desired food group preferences (vegan, chicken, beef etc.) In each round, a total of 10 images of recipes are shown, selected from the chosen food groups. Within each food group, images are chosen from the extremes, and centers of the group. The customer selects 2-5 recipes per round, thus generating the virtual order history.

3) **Clustering: '**Topic modelling' on the recipe table gave 4 major clusters. Equal number of recipes from all the clusters are shown in 4 questions. The user chooses their desired 2-8 recipes in each question. This generates a cluster distribution profile for each user. This percentage split by cluster is used to select 10 representative recipes, which generates the virtual order history.

A/B Testing: An email containing a version of the game was sent last Friday (28/08) to 21,000 loyal MC customers, who have existing order profiles. Each game was sent to 7,000 customers and the response rate was over 11% in each case. The data was successfully collected and analyzed.

The adventurousness of the user based on the onboarding game, was compared with their adventurousness based on their actual order history. We have two potential metrics for adventurousness: 1) Delta12, developed last year, which captures changes in adventurousness between orders, and 2) Magnitude, which captures adventurousness between recipes.

The difference in measured and actual adventurousness was calculated for each game. Our preliminary results show that, with Metric 1 (Delta12), Game 2 and Game 3 were 6x and 12x better at predicting adventurousness, compared to Game 1. Using Metric 2 (Magnitude), Game 2 was 7x better at predicting adventurousness, compared to Game 1 (see following diagram).



Commercial impact: Between April and August, ~58% of new customers left the service after two orders (27,144 customers). Assuming that 20% of these customers were not satisfied due to poor recipe suggestions, 5,400 customers could be retained by an onboarding process. If these customers make 1 order/month (£45 each), for 1 year, an estimated increased revenue of £2.9m could be generated a year. To reach a more accurate estimate, we would ideally have more information as to why new customers discontinue the service. Furthermore, the new adventurousness metric discussed earlier could be implemented into MC's current recommender system, to suggest more tailored recipes to existing customers.