CELLPHONE-BASED NUTRITION E-DIARY

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The objective of this feasibility study was to extend a recorder-based, physical activity (PA) E-diary system (Zhu et al, 2006) to a cellphone-based nutrition E-diary to automatically collect and analyze nutrition information. A single-line calling center was first developed for the study. Thirty-nine 24-hour food recall records were randomly selected from a survey study and 22 subjects were instructed on how to call and read these records. Text data were coded by three raters, and coded using USDA National Nutrient Database. Of 681 records obtained; 614 records were used for training (i.e., develop a text classification model using Support Vector Machines) and 70 records were used for testing (i.e., cross-validation of the model). The number of uniquely used classes (kinds of food) was 315, which is triple that of PA diaries. Misclassification (54% error rate) included 23 (32.86%) "misprediction" and 15 (21.43%) "no prediction given" indicating better training/prediction is needed. The relatively low accuracy results were somewhat expected since: (a) training sample size was very small and (b) classifier is developed based on PA diaries. For the PA system, 71.% accuracy of the text classification, which is similar to human raters, has been achieved. With a large sample of food records, a food diary based classifier, narrowing of food selections in the database, and better training, a classification accuracy similar to PA diaries will be achievable.

Key words: text classification, cell-phone, diary

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