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Demo: TA$Ker: Campus-scale mobile crowd-tasking platform

Nikita JAIMAN
Singapore Management University, nikitaj@smu.edu.sg

Thivya KANDAPPU
Singapore Management University, thivyak@smu.edu.sg

Randy TANDRIANSYAH
Singapore Management University, rtdaratan@smu.edu.sg

Archan MISRA
Singapore Management University, archanm@smu.edu.sg

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Nikita Jaiman, Thivya Kandappu, Randy Tandriansyah, Archan Misra
School of Information Systems, Singapore Management University
{nikitaj, thivyak, rtdaratan, archanm}@smu.edu.sg

ABSTRACT

We design and develop TA$Ker, a real-world mobile crowdsourcing platform to empirically study the worker responses to various task recommendation and selection strategies.

1. INTRODUCTION

In order to gain more understanding of the collaborative task execution paradigm, *TA$Ker*, is focussed on a large urban campus. *TA$Ker* provides voluntary student participants the opportunity to earn real monetary rewards by performing various campus-oriented tasks, such as "reporting on the cleanliness of restrooms", "verifying the availability of specific drinks in a vending machine", "validating the crowdedness of study areas", etc.

TA$Ker's back-end infrastructure is characterized by two unique features:

- The continuous medium-grained indoor location tracking (with typical errors of ±6–8m) of all workers on the entire SMU campus, via a Wi-Fi fingerprinting (similar to approaches described in [1]) based solution.
- The partitioning of the worker pool into two sets; one with limited set of tasks that lie along their predicted movement trajectory, and the other in which tasks are manually chosen from the entire list available.

The following are several questions that we seek to investigate:

- Are there any tangible overall benefits in providing recommendations to the users proactively?
- Are there observable behavioral differences between the two sets of users, in the way they accept and perform tasks?
- Are there any tangible benefits in offering a package of tasks instead of atomic ones?
- Are mobile crowdsourcing markets vulnerable to cheating? And if so what affects the tendency to cheat more: (1) intrinsic properties of user or (2) contextual factors?

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2. TA$KER: AN OVERVIEW

As detailed in [2], in addition to the mobile App, the *TA$Ker* backend system includes: (a) *Route Predictor*, that predicts an individual user's movement trajectory based on user's historical movement traces; (b) *Task Recommender*, that suggests tasks which best match the predicted trajectory of a worker; (c) *Task Management Portal*, that allows *TA$Ker* administrators to create, modify and monitor the set of available tasks, (d) *Bundle Engine*, which combines multiple tasks that lie in close proximity into a bundle, and (e) *Incentive Engine*, that decides the right reward values of the tasks based on the factors such as how crowded the task location is?

3. DEMONSTRATION

We demonstrate the feasibility of the campus-based mobile crowdtasking by using Android/iOS prototype for users to perform tasks and backend server that stores user data and communicates with the App. First, we will give an overview of how the tasks (and associated details) are being entered into the database via a Web interface. Then, the attendees will also be given the exposure to the end to end functionality of the App such as accepting and performing tasks, creating new tasks, checking rewards etc. Finally, we will show the *results analyzer* that is used to analyze the results of various experimental strategies, and thus deduce insights into the effectiveness of various task recommendation/incentivization strategies and their effects on individual/aggregated crowd-worker behaviors. This demo requires all the devices to be connected to the Internet. Attendees will be able to actively participate in the demonstration by using one of the demo devices.

4. REFERENCES

[1] Azeem J. Khan, Vikash Ranjan, Trung-Tuan Luong, Rajesh Krishna Balan, and Archan Misra. 2013. Experiences with performance tradeoffs in practical, continuous indoor localization.. In *IEEE WOWMOM*.

[2] K. Thivya, A. Misra, S. F. Cheng, N. Jaiman, R. Tandriansiyah, C. Chen, H. C. Lau, D. Chander, and K. Dasgupta. 2016. Campus-Scale Mobile Crowd-Tasking: Deployment & Behavioral Insights..