

**CHENNAI – PONDICHERRY**

**An Efficient Prediction-Based user Recruitment for Mobile Crowdsensing**

**Abstract:**

Mobile crowdsensing is a new paradigm in which a group of mobile users exploit their smart devices to cooperatively perform a large-scale sensing job. One of the users’ main concerns is the cost of data uploading, which affects their willingness to participate in a crowdsensing task. In this paper, we propose an efficient Prediction-based User Recruitment for mobile crowdsEnsing (PURE), which separates the users into two groups corresponding to different price plans: Pay as you go (PAYG) and Pay monthly (PAYM). By regarding the PAYM users as destinations, the minimizing cost problem goes to recruiting the users that have the largest contact probability with a destination.We first propose a semi-Markov model to determine the probability distribution of user arrival time at points of interest (PoIs) and then get the inter-user contact probability. Next, an efficient prediction-based user-recruitment strategy for mobile crowdsensing is proposed to minimize the data uploading cost. We then propose PURE-DF by extending PURE to a case in which we address the tradeoff between the delivery ratio of sensing data and the recruiter number according to Delegation Forwarding. We conduct extensive simulations based on three widely-used real-world traces: *roma/taxi*, *epfl*, and *geolife*. The results show that, compared with other recruitment strategies, PURE achieves a lower recruitment payment and PURE-DF achieves the highest delivery efficiency.

**Existing System:**

On platform design focuses on proposing a framework or system for mobile crowdsensing, while research in terms of incentive mechanisms focuses on designing incentive mechanisms for crowdsensing to attract users to participate in the crowdsensing task. Among them, a common challenge for most mobile crowdsensing applications is to identify mobile users who can contribute the most value to the sensing task. Therefore, the user recruitment strategy is one of the most important topics of discussion. However, previous studies do not consider the uploading cost of sensing data.

In this paper, we focus on proposing an efficient Predictionbased User Recruitment for mobile crowdsEnsing (PURE) where multiple users with a higher contact probability to the destinations can be recruited to cooperatively perform a common task, ensuring that the expected data-uploading cost is minimal.

**Proposed System:**

We propose a points-of-interest (PoI) trajectoryprediction method that uses a semi-Markov process to determine the probability distribution of user arrival times at PoIs. Furthermore, inter-user contact probability is predicted according to the PoI prediction.

We propose an efficient Prediction-based User Recruitment strategy for mobile crowdsEnsing (PURE), which groups two types of users with different data uploading schemes (Pay as you go (PAYG) and Pay monthly (PAYM)) that will cooperatively finish a crowdsensing task.

Taking the relation between delivery ratio of sensing data and recruiter number into consideration, we propose PURE-DF, based on Delegation Forwarding, to address the trade-off.