Project Proposal

Members: Tae Hyun Koh, Ryan Jaipersaud

Roles / Contributions: Programming will be split between both Tae and Ryan.

Tae is responsible for determining what is necessary to ensure a secure transaction as well as integrate multi agent aspects.

Ryan is responsible for determining requirements for setup demo on Hyperledger for this project as well as developing a page for the project on something like Wix.

Hypothesis

Blockchain and smart contract technology allows two parties that lack trust in each other to agree on an exchange or a contract. Traditionally, a third party or a middleman has been needed to oversee the exchange to ensure safety. In many cases, the necessity of a middleman has created opportunities for large platform business companies to exploit their position as a mediator and charge substantial fees. The project hypothesizes that blockchain technology can minimize or possibly eliminate the need for a mediator in exchanges, enabling people to enjoy the same benefit and convenience of using a platform business while paying minimal commission fees. Among numerous sectors of the market, this project will focus on improving the current food delivery businesses.

Background

Platform business models were largely limited to sectors in economy where large sums of money had to be transferred or the transaction itself needed expert knowledge such as buying and selling real estate. However, the advancement of technology and the availability of

smartphone application has led to the spread of platform businesses into various sectors such as lodging, transportation, and even food delivery.

Some renown names in the food delivery platform businesses are Seamless, Grubhub, DoorDash, and Uber Eats. The specifics of how these companies get food delivered vary but they generally operate in the same fashion. A customer can browse and select items from various restaurants displayed inside the application. When a customer submits an order through the app, the order and payment is transferred through the application's network to the restaurant and a nearby deliveryman registered in the network is assigned to deliver the food. In the process, the platform business earns profit in several ways. First, it charges the restaurant commission fee for being featured in the application by taking as high as 30% of the price of the order. Second, it charges the customer a service fee for using the service . Third, it takes a part of the tip that the customer pays for the delivery man. This payout is possible because the application is the central redistributor and the only participant that receives the customer's payment directly.

The reason why so many similar business models are thriving is because even with the commision fees, they are profitable for all the participants in the exchange. However, some concerns have been raised among the customers, restaurants, and the delivery men after realizing that commission fees are too high. Some restaurants are even trying to boycott such applications claiming they are monopolizing the restaurant industry. Moreover, the customers pay more for using such a platform compared to the traditional way of ordering by calling the restaurant. Integrating blockchain will eliminate the need for a central redistributor to exist, making deliveries cheaper for customers and more profitable for restaurants and delivery men.

Related Work

In October 2017, a social platform that focused on food reviews called “Munchie” tried to expand their business by releasing an in-app cryptocurrency. The currency was to be used for rating reviews and delivery service which the company announced it would add in the near future. After performing an ICO, however, the SEC accused them of maliciously spending the investment and shut them down.

Similarly, in December 2017, INS Ecosystems announced they were developing a blockchain-integrated decentralized platform for grocery deliveries. They aimed to create a network that allows grocery manufacturers to list and sell groceries directly to consumers. It performed an ICO for its cryptocurrency and is still in its developing process.

Excluding the case above, there have been numerous cases when companies tried to integrate blockchain into food industry such as Ripe and FoodCoin. They focused on using blockchain to track agricultural resources until they reach the retailers. Hence, it aimed at the producers of food, not the consumers.

How is it important

Making food deliveries unprofitable for restaurant and delivery men will eventually make the service and quality the consumers receive decline. Unfortunately, this is what a lot of restaurants are starting to realize. Maintaining the convenience and reducing the cost of the current delivery services will benefit every participant in the exchange; it will grant the consumer the best quality for the price and the restaurants and the delivery men maximum profit.

How is it new

Blockchain and smart contract have been applied the most in cryptocurrencies up until now. Due to the nature of cryptocurrencies and the fact that it is a new technology, society has yet to adapt. Cryptocurrencies have been considered mostly as an investment rather than a currency. All the transactions happen online by small groups of enthusiasts and it lacks connection to the "real world". This project will experiment how blockchain will perform in a real world environment.

Platform

As of now, the setup for this problem resembles that of the lifecycle network we created for the last homework assignment and thus Hyperledger will be used to create our blockchain. Instead of adding manufacturers and car owners we would add customers and restaurants. The asset would still be an order with a specific ID that also contains the order details and the status of the order.

Plan to evaluate project

The project can be opened to a small group of users first. (Possibly to cooper students willing to partake in the experiment) Their experience of using the service will provide feedback that will reveal any loopholes in the system and whether it indeed is as convenient as the existing delivery application.

What to demo

A student will be able to submit an order to a restaurant. The restaurant will notify the user the order has been received. The restaurant will deliver the food to the student. The student

and the deliverer will verify each other's public key and perform a transaction. A video or in class demonstration will be provided.

How to maintain project page

The project page will contain an "about" section detailing the goals of the project and what it aims to solve. There will be status updates about what progress has been made as well as a future work section to give others a sense of direction we intend to go towards. There will be a github link so others can view the progress we have achieved so far and validate our claims. We will attach a link of a video showing how a transaction takes place.

Low hanging fruit

The low hanging fruit of this project is evaluating the information needed to specify an order and to get the goals of the project setup on a website. We may need to use a website builder such as wix.

Challenges / contingency plans

The challenging and time consuming part will be coding the transactions into hyperledger and determining the optimal parameters such that the code does not become unstable. If the project becomes out of scope it will be scaled down by either capping off the number of users/deliverers or by limiting the transaction to a specific product.

Schedule / timeline:

April 16th to April 20th : Integration of multi agent aspects

April 23rd to April 27th : Website detailing the project

April 30rd to May 4th: Code allowing for the submission of an order, updating status of order

May 8th: Project demonstration in class

References:

1.) Forbes, P.; *GrubHub Charges Restaurants on Average 13.5 % Commission Per Order*; https://www.eater.com/2014/3/3/6270739/grubhub-charges-restaurants-an-average-13-5-commission-per-order, (accessed April 11th 2018).

2.) Business.com; *Should Your Restaurant be on GrubHub*; https://www.business.com/articles/is-grubhub-good-for-restaurants/, (accessed April 11th 2018).

3.) Ramachandran, R.; *The Blockchain of Food*; https://www.forbes.com/sites/themixingbowl/2017/10/23/the-blockchain-of-food/#3305df1b775f, (accessed April 11th 2018).

4.) Haring, B; Munchee Brings Blockchain to Food Reviews and Delivery - ICO Soon; http://blocktribune.com/munchee-brings-blockchain-food-reviews-delivery-ico-soon/, (accessed April 11th 2018).