MSc(CS) Dissertation Public Seminar

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Title: A Study of Bitcoin Transaction Network

Speaker: Tang Jingxin

Date & Time: April 28 2020, Tuesday, 02:30pm

Zoom Meeting Link: https://hku.zoom.us/j/97941929084

Meeting ID: 979 4192 9084

Password: 650009

Abstract:

After 11-year development, Bitcoin system has grown to be a non-ignorable currency in the global financial market. As the first de-centralized cryptocurrency, Bitcoin can be regarded as a best practice of this new type of currency. Researchers paid much attention on its transaction network to discover its strengths and risks, especially for the potential illegal transactions like money laundering.

In this dissertation, the past research achievements were introduced and concluded. Bitcoin data stored in blockchain was parsed and analyzed in both statistical and topological way. Various graphs were constructed based on predecessors' methodologies to explore the characteristics of Bitcoin transaction network, including transaction graph, user graph, address-related transaction graph, etc. The typical patterns in those graphs were extracted and analyzed to discover the typical user activities in Bitcoin transaction network.

About the Speaker:

Tang Jingxin is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. Her supervisor is Prof. SM Yiu.

All are welcome!

Tel: 3917-1828 for enquiries

MSc(CS) Dissertation Public Seminar

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Title: Smart Patrol Robot for Airport

Speaker: Ji Ting

Date & Time: April 28 2020, Tuesday, 03:15pm

Zoom Meeting Link: https://hku.zoom.us/j/97941929084

Meeting ID: 979 4192 9084

Password: 650009

Abstract:

Nowadays, robots are employed in several international airports for management efficiency improvement. In our study, we develop a smart patrol robot for Hong Kong International Airport, aimed to help passengers board the plane on time. The robot consists of three main components: face recognition, route planning and broadcasting. For face recognition component, we adopt Deep Residual EquivAriant Mapping (DREAM) block for profile face recognition and Dynamic Feature Matching (DFM) for partial face recognition. Route planning component is responsible for navigation and calculating optimal target locations where unboarded passengers are most likely to be. Broadcasting component conveys the reminding message to unboarded passengers with a proper language. The performance of the robot is evaluated by several unit tests, ensuring each component working well.

About the Speaker:

Ji Ting is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. Her supervisor is Dr. TW Chim.

All are welcome!

Tel: 3917-1828 for enquiries

MSc(CS) Dissertation Public Seminar

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Title: Research on Blockchain Performance Based Byzantine Fault Tolerant Consensus Algorithm

Speaker: Zhu Xueying

Date & Time: April 28 2020, Tuesday, 04:00pm

Zoom Meeting Link: https://hku.zoom.us/j/97941929084

Meeting ID: 979 4192 9084

Password: 650009

Abstract:

Block chain technology realizes the digital payment system independent of trusted third party in the open P2P network. Consensus algorithm is the key technology of blockchain and determines the performance of blockchain directly. However, consensus algorithms adopted by mainstream blockchain are far from meeting the performance requirements of most application scenarios.

This report proposes an improved PBFT consensus algorithm with downgrade mechanism. The delegate mechanism of DPoS algorithm is applied to PBFT algorithm and in order to increase the election cost, the computing power competition of PoW algorithm is introduced into the delegate mechanism. The three-phase protocol in the traditional PBFT algorithm is changed to a two-phase protocol to reduce network consumption and thus reduce latency and achieve higher efficiency. The scoring downgrade mechanism is used to improve security by preventing malicious behavior of consensus nodes in time.

In the simulation experiments, using java to design the improved PBFT consensus algorithm. And it is compared with other consensus algorithms from three aspects, throughput, transaction latency and fault tolerance. The experimental results show that the proposed algorithm is significantly more efficient than PoS, PBFT, and is comparable to the performance of DPoS. And when the block generation time is 20 seconds, TPS reaches about 5000 and the time delay is about 200ms. The performance has been greatly improved and can meet the needs of most application scenarios.

About the Speaker:

Zhu Xueying is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. Her supervisor is Prof. SM Yiu.

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MSc(CS) Dissertation Public Seminar

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Title: Smart Student Assistant

Speaker: Xu Ziyi

Date & Time: April 28 2020, Tuesday, 04:45pm

Zoom Meeting Link: https://hku.zoom.us/j/97941929084

Meeting ID: 979 4192 9084

Password: 650009

Abstract:

The Faculty Innovation Wing will be available to all engineering students and which is supposed to be self-serviced. A fully-automatic and smart student assistant will standby to offer help to students. For example, a student can present a tool to the smart student assistant, which could do the following: recognition of the tool and then tell students how to use it safely; facial recognition of the student and recording who have borrowed and returned the tools.

About the Speaker:

Xu Ziyi is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. Her supervisor is Dr. TW Chim.

All are welcome!

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