

## MSc(CS) Dissertation Public Seminar

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Title: Scene Text Spotting for Chinese Artistic Text

Speaker: Hao Xixuan

Date & Time: April 12 2022, Tuesday, 2:30pm

Zoom Meeting Link: <https://hku.zoom.us/j/92300546872>

Meeting ID: 923 0054 6872

Password: 224657

### Abstract:

Scene Text Spotting comprises of text detection and recognition modules, aiming at reading texts end-to-end. Although the diversity of luminosity and orientation in scene texts has been widely studied, the font diversity and shape variance of the same character are ignored in recent works, since most characters in natural images are rendered in the standard fonts.

To solve this problem, I develop a cross-font text spotting method (CF TextSpotter) to solve the recognition problem of complex deformation of characters in different fonts. Specifically, I utilize the landmark detection module to highlight the important features based on the unsupervised landmark detection sub-network. The graph convolution network is further constructed to fuse the character features and landmark features, and then performs semantic reasoning to enhance the discrimination for different characters. Besides, I propose a Chinese Artistic Text Dataset, termed as ARText, which contains 33,000 artistic images with rich shape deformation and font diversity.

Comprehensive experiments on ARText dataset and IC19-ReCTS benchmark indicate the effectiveness of CF TextSpotter, surpassing other methods by 0.9% and 0.4% on ARText and IC19-ReCTS respectively, in terms of normalized edit distance.

### About the Speaker:

Hao Xixuan is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. His supervisor is Dr. Ping Luo.

All are welcome!

Tel: 3917-1828 for enquiries

## MSc(CS) Dissertation Public Seminar

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Title: Detecting Hidden Failures of Database Management Systems:  
A Comprehensive Metamorphic Relation Output

Speaker: Tang Siu Hin

Date & Time: April 12 2022, Tuesday, 3:15pm

Zoom Meeting Link: <https://hku.zoom.us/j/92300546872>

Meeting ID: 923 0054 6872

Password: 224657

### Abstract:

Owing to big data, the testing of DBMS faces the test oracle problem that it is difficult to verify execution results against expected outcomes. Rigger and Su applied metamorphic testing to alleviate the problem. In Part A of this project, we conduct an in-depth investigation into their work, and have identified gaps between their query partitioning and ternary logic partitioning techniques. We propose a disjoint partitioning approach to address the issue. In Part B of the project, we conduct further investigation into the comprehensiveness of metamorphic relations constructed by disjoint partitioning, comparing them with the metamorphic relation output patterns (MROPs) by Segura et al. We propose a more comprehensive approach regarding MROPs for DBMS. To the best of our knowledge, this is the first project that integrates an in-depth approach and a comprehensive approach to tackle the diverse challenges in DBMS testing. In Part C of the project, we conduct an empirical case study of both approaches by applying them to OceanBase, which is the DBMS associated with the world's fastest online transaction processing system. Even though OceanBase has been extensively tested and widely used in the industry, we have detected 12 hidden failures and 8 new crashes.

### About the Speaker:

Tang Siu Hin is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. His supervisor is Professor T.H. Tse.

All are welcome!

Tel: 3917-1828 for enquiries

## MSc(CS) Dissertation Public Seminar

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Title: Children Language Ability Training App

Speaker: Li Tianpei

Date & Time: April 12 2022, Tuesday, 4:00pm

Zoom Meeting Link: <https://hku.zoom.us/j/92300546872>

Meeting ID: 923 0054 6872

Password: 224657

### Abstract:

In my dissertation, I present a method to improve the children's language ability through practicing describing photos. My research includes algorithm design of image caption, which can generate a description of an image, and app development, which is the vector of the algorithm.

In terms of algorithm design, I applied some newest technologies, like Vision Transformer, to the different structures of the image caption models, including CNN to RNN, CNN to Transformer, and Fully Transformer. Such technologies contribute to improving the performance of the model in some machine indexes like BLUE4 and CIDEr.

When it comes to APP development, the research mainly focused on how to send and receive the data on the app and server. Flask was applied to create several APIs on the server. The challenging task was how to achieve image transferring. According to the characteristics of Python and Kotlin, I designed two different methods. As for the app to the server, I used Base64 to transform an image into a sequence and sent the sequence to the server. Conversely, I saved the image to the server, and the app received the picture through its IP address.

Finally, I used statistical methods to analyze the questionnaires, including t-tests and the confidence interval, all of which were served to test the functions of the app. With such research, I can conclude that the app will realize the target to transmit the correct information from pictures to the users.

### About the Speaker:

Li Tianpei is currently a full-time MSc(CS) student of the Department of Computer Science in the University of Hong Kong. His supervisor is Dr. T.W. Chim.

All are welcome!

Tel: 3917-1828 for enquiries