IEEE VIS Travel Report

For the report, the four paper I select are from different sessions and different domains. My main motivation of choosing the paper lies in their relevance to my own research or experience. The first paper about vitaLITY is my ongoing research at CAV Lab. The second one about autonomous driving is written by two of my friends in China. The third paper about social media is related to a project I did in summer as well as our group's final project. The last paper about chest CT provides a visualization solution to my previous research in medical imaging. All of the four papers focus on visualization applications, and is thus easy for me to understand as an undergraduate student.

The paper titled "VitaLITy: Promoting Serendipitous Discovery of Academic Literature with Transformers & Visual Analytics" is written by Arpit Narechania, Alireza Karduni, Ryan Wesslen and Emily Wall. In order to address the problem that literature research may miss similar topics with different keywords, the authors develop a literature retrieval system called VitaLITY which contributes to serendipitous identification of semantically related articles. The system relies on an algorithm called SPECTER, which uses citation-informed transformers for document-level representation learning. Regarding the methodology, the authors filter data from different venues, scrape argument metadata, preprocess the data, created document embeddings, export data, expose a API for search and built interactive UI for interface. The vitaLITY interface comprises of multi-coordinated view for users to effectively search related literature. The paper mainly contribute to a more effective similarity search and visualization for literature review.

The presentation of the paper is very effective and impressing. The presentation is clearly divided into different parts—topic introduction, current challenges, algorithms used, study goals, system architecture, dataset, interface, future directions, and applications. The flow is very smooth and easy to follow. Also, it is well-structured and straightforward so even for amateurs of visualization, it is easy to understand. The PPT is very interesting, too. The funny pictures at the beginning successfully help viewers learn the current dilemma. When explaining methodologies, the PPT is very concise not to distract people's attention. The algorithms and methodology is very clearly communicated, and not too complex for listeners to understand. Different people are presented so that each contributors are able to engage in the presentation. Therefore, I really appreciate this paper and am very proud of my team.

The second paper titled "Visual Evaluation for Autonomous Driving" is authored by Yijie Hou, Chengshun Wang, Junhong Wang, Xiangyang Xue, Xiaolong Zhang, Jun Zhu, Dongliang Wang and Siming Chen. As autonomous driving is a big trend in current world, the safety and reliability concern of the electronic model can not be ignored. The main contribution of the paper is providing a visual analytics approach for the evaluation of autonomous driving systems for module developers to understand the performance and factors inside the autonomous driving system. With the interactive evaluation interface, the developers can explain various evaluation scores of the autonomous driving system. The evaluation algorithm is based on mathematical modelling of AHP and TOPSIS. From the evaluation interface, the user can see the total score in five modules, the evaluation results over time and different factors related to autonomous driving.

The presentation of is good in its clarity of main concepts explanation. It is clearly divided to different parts and the time distribution is great. However, there are also places where the presentation can enhance. Firstly, the presenter's tone is a little monotonous, so sometimes it is hard to focus. Secondly, the algorithm with mathematical modelling is rather difficult to understand. If the author could assist the explaining with some workflow or conceptual pictures, that will be better. Thirdly, the author could add more working steps so that people could more easily learn about their methodology for the approach. The presentation could be made more interesting with some funny pictures. The interface explanation can shown at the beginning of the presentation for the user to get a sense of the whole system.

The third paper titled "Real-Time Visual Analysis of High-Volume Social Media Posts" is written by Johannes Knittel, Steffen Koch, Tan Tang, Wei Chen, Yingcai Wu, Shixia Liu and Thomas Ertl. As social media develops rapidly and high-volume of data every day, the research aims to increase situational awareness and event monitoring of social media. The main contribution of the paper it providing a visual analytics system to support streaming / real-time analysis allowing scalability and details of high-volume social media data. The paper proposes a dynamic spherical K-Means++ Clustering algorithm for cluster matching. The system supports several tasks like overviewing, learning about themes, monitoring theme, and diving into themes and increase resolution for social media analysis.

The presentation is effective in introducing the concepts in designing the social media analysis visualisation system. However, the presentation can be made better for the following reasons. Firstly, the author enters into the goal of the paper directly, which may leave confused about the broader context. If an introduction of the topic and current interest, that will better introduce the paper. Secondly, the subtitles of the presentation are a little small and easy to miss when watching the presentation. The author can consider exclude the big title of the work and but the subtitles bigger to highlight. Thirdly, when demonstrating the interactions of the interface, the letters on the screen are small, which make viewers hard to read. If the author could zoom in a little bit when presenting different sections, that will be easier for readers to follow speech and digest information.

The last paper titled "COVID-view: Diagnosis of COVID-19 using Chest CT" is authored by Shreeraj Jadhav, Gaofeng Deng, Marlene Zawin, Arie E Kaufman. As there lacks research concerning the relationship between Covid-19 and chest CT and a visualization system integrating 3D and 2D chest visualization, the paper proposes a visualization interface that links 3D visualisation of slab mode and 2D visualization of masked MIP (masked maximum intensity) view of the lung CT-scan. The paper performs classification with deep multiple instance learning (MIL) and use attention-based MIL pooling to map feature factors to semantic embeddings. The main contribution of the paper is providing elaborate visual diagnosis system for Covid patients, incorporating segmentation of lungs and lesions, using classification model as additional reader and heatmap overlay for explanation of results.

Personally, I think the presentation is not very effectively in introducing the research and contribution. The author seems to present each concept—Covid-19 and Chest CT, imaging features, lungs and lesions segmentation, classification independently, so I have a rather difficult time linking them together for a

comprehensive understanding. Also, at the beginning, the presenter introduce many medical and biological concepts which may be hard to understand for a non-medical background viewer. The presenter could reduce specific biological items and include more about big concepts or pictures of them. Moreover, the presenter doesn't talk about the broad background, current challenges, goal of the paper at the beginning, which make the rest part a little difficult to follow.

I watched several sessions of IEEE VIS conference and was impressed by the cutting-edge research and technologies in different domains of visualization. My previous lab organised us to watch the opening keynote of the conference and our CAV lab organised us to watch the closing capstone. I feel happy and warn as IEEE VIS united our visualization researchers around the world at the conference. As a student, I feel it's a really great opportunity for me to gain an understand of visualisation research beyond disparate concepts we learn in class. What I was most impressed is how the topics of visualization can be diverse in so many wonderful areas, from concepts, algorithms to applications in different domains. The paper topics gave me further inspirations in visualization and motivation to perfect my current projects and research. I feel the conference is enjoyable as the virtual format gave us around the globe a chance to watch so many great papers. Even I had a class conflict, I could still watch the recording and review my interested stuff.