Report on ISPRS TC IV Symposium 2024 Attendance in Perth, Australia

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Location: Esplanade Hotel Fremantle by Rydges

Introduction

I would like to express my deepest gratitude to The ISPRS Foundation for the travel grant that enabled me to attend the ISPRS Technical Commission IV Symposium 2024, held at the Esplanade Hotel, Fremantle, Perth, Australia, from October 22 to 25, 2024. This symposium was an invaluable opportunity to deepen my knowledge of geospatial and remote sensing technologies, which are essential for my research in 3D modeling for urban forest digital twins. Additionally, the event offered unique networking opportunities with experts in this field.

Experience and Activities Participated

Throughout the symposium, I attended several sessions that were highly relevant to my research. On the first day, Sisi Zlatanova encouraged us, as travel grant recipients, to join a tutorial session. I took this opportunity to attend the session *Collecting Data in the Field with Free & Open Source Geospatial Tools: QGIS, QField, and Mergin Maps*. This session was particularly useful for me as a newcomer to the geospatial field, as it provided practical knowledge on how to efficiently collect, manage, and analyze geospatial data in the field using open-source software. During the opening ceremony, all travel grant recipients were invited to the stage to receive certificates and take a group photo. This experience made me proud to be among experts in geospatial and remote sensing. During the afternoon tea session, I connected with international participants and engaged in insightful discussions. I then attended the session on *Artificial Intelligence and Uncertainty Modeling in Spatial Analysis*, which provided valuable insights into how AI technologies can be applied to spatial analysis, aligning with my research interests.

On the second day, the event began with a presentation by Ahi Saipaia and Karen Joyce, who discussed challenges in field data collection, especially for crop mapping. Karen Joyce presented AI technologies as solutions to these challenges, particularly in segmentation, which was highly inspiring to me. Following this, I attended the session on *Spatial Data Representation and Interoperability*, a topic currently being pursued by my academic supervisor and their research team. This session reinforced the relevance of CityGML as a 3D spatial data format, reassuring me of our research's significance. Unfortunately, I could not stay for the entire second day; I felt exhausted after the afternoon tea session and decided to return to my accommodation to rest in preparation for my presentation the following day.

On the third day, the opening session featured speakers discussing technology related to smart devices for live tracking geospatial data in real time, including a portable GNSS device introduced by Hidenori Fujimura. This technology was particularly fascinating to me due to its connection to IoT communication sensors, which I am already familiar with. I hope to develop similar solutions in the future, especially since the components are affordable and accessible. I then attended sessions on *IoT and VR* and *Spatially Enabled Urban and Regional Digital Twins*, both directly relevant to my research.

Although there were no recordings of these presentations, I was able to access the presenters' work through the ISPRS Archives. During my scheduled presentation, I shared my paper titled *Conceptual Model of Graph-based Individual Tree and Its Utilization in Digital Twin and Metaverse of Urban Forest*. I felt honored to present our paper and to discuss it directly with researchers from around the world. The presentation and discussion session went smoothly, and I received constructive feedback that will be valuable for further improvements. The third day concluded with a social dinner at Gage Roads Fremantle (Freo) Brewery

The fourth and final day of the ISPRS TC IV Symposium 2024 began with two keynote speakers discussing AI technologies for urban observation, monitoring, and mapping. I also attended the session on *Intelligent Systems in Sensor Web and IoT*, which broadened my understanding of IoT sensor applications in geospatial information systems. The final session I attended was on *Industry Use Cases of Digital Twin*, which covered various case studies on implementing digital twin technology in industry, particularly involving geospatial data usage. This discussion offered valuable insights into both the challenges and potential developments in digital twin technology.

Conclusion

I would like to extend my sincerest gratitude to The ISPRS Foundation for this exceptional opportunity. The knowledge and connections gained from this symposium were invaluable, and I am confident that this experience will have a lasting impact on my academic and professional journey. I look forward to applying the insights gained to my research and contributing to advancements in digital twin technology, specifically in the area of urban forest digital twins.

Once again, thank you for this invaluable opportunity.