Jessica Tong

5 July 2020

Reece Humphreys and Louise Baldwin

Victoria State Branch President and Vice President

Australian Institute of Traffic Planning and Management (AITPM)

Dear Reece and Louise,

RE: 2021 AITPM Young Professional Awards Nomination – Victoria

I am writing to apply for the 2021 AITPM Young Professional Awards for the Victorian branch. I am currently a Graduate Transport Engineer at WSP working in the Victorian Planning and Mobility team. I recently graduated from the Master of Engineering (Civil with Business) with Distinction at the University of Melbourne in 2020, where I also completed my Bachelor of Science majoring in Civil Systems.

I have been a part of the Planning and Mobility team at WSP since mid-2018 and have been exposed to a diverse range of transport projects. In addition, I hold a concurrent Research Assistant role with the Transport Technology group at the University of Melbourne. These experiences have shaped my continued interest in the transport industry and inspired me to apply for the AITPM Young Professional Award. I believe this award offers an opportunity to further expand my knowledge and continue contributing to an industry that I am passionate in.

My initial interest in transport stems from my involvement in Modal Solar Car Victoria in early high school. This inspired me to pursue a degree in Civil engineering and ultimately led me into the transport engineering and planning industry. To me, transport engineering and planning involves visualising new ways to keep the population moving. I believe that this vision is implemented every day by transport professionals through modelling, analysis, design, and construction of transport infrastructure. AITPM supports this by connecting industry practitioners and providing knowledge sharing opportunities to continually improve best practices.

Working in the transport advisory sector has enhanced my interest in strategic transport planning and its role in creating harmony within urban and rural environments. While I have only begun my career, I have already been involved in small to large scale Victorian transport projects, including the opportunity to work on planning studies and provide evidence-based recommendations for future transport projects. Two key aspects of the transport field that I am passionate about are *future mobility* and *transport data analytics.*

I believe that the application of technology data and policy for connected and automated vehicles is an important development that will transform the transport sector. Similarly, I believe effective data analytics and visualisation is critical in establishing an evidence-based system to understand current transport trends and inform future planning. I have been involved in these two specific aspects through my role at WSP and as part of my research at the University of Melbourne.

In the field of transport technologies and future mobility, I have worked with academics and industry professionals to investigate the global application of transport technologies. Through my Research Assistant role at the University, I recently published a series of research reports with ITS Australia through iMOVE, Australia's leading applied research centre, investigating the use of [Cooperative Intelligent Transport Systems (C-ITS) technology to improve road safety and efficiency (see embedded link)](). This research was conducted with the Australian Department of Infrastructure, Transport, Regional Development and Communications (DITRDC), IAG, Intelematics, and Transmax. We investigated the development of connected vehicle technology in the global context to inform the future direction of Australian C-ITS deployment. I was the lead author of multiple research inquiries including assessment of C-ITS benefits and use cases, stakeholder interviews, and evaluation of road safety data. This project has driven my interest in the benefits of new transport technologies – specifically, use cases for future mobility and safety, pathways for their integration and uptake in the Australian environment. Fortunately, I have been able to continue working in the C-ITS technology space on a project for the Commonwealth Government. I have also been working with Intelligent Transport Systems professionals at WSP to develop deployment models that outline an ecosystem where C-ITS technology can generate sustained value for Australian society. On this project, I performed the technical assessment of C-ITS technology and infrastructure, provided advice on C-ITS deployment opportunities and challenges, and developed a systems dynamics model to understand factors influencing and driving technology deployment. I look forward to continuing to expand my knowledge in this space and exploring the impacts that connected vehicle technology will have across all transport modes.

Another area that I am passionate about is transport data analytics. For my final year Masters research project, *'Measuring the temporal and spatial impacts of short-term events on pedestrian flows'*, I used automatic detection methods to quantify the effect of major short-term events in Melbourne and developed an [interactive web application (see embedded link)]() to visually represent these results. Using pedestrian sensor data from the City of Melbourne, I explored historical events to understand the extent of their temporal and spatial impacts on the network. My research produced results that can be used to inform future city and event planning activities, and is particularly relevant (albeit not during a pandemic) for short-term recurring events such as festivals, public holidays, and sporting events.

Specifically, my analysis provided a means to:

— Detect anomalies in sensors that correspond to an event
— Understand the areas affected and the scale of this effect (spatial impact)
— Estimate how long the event lasts within the network (temporal impact), and
— Estimate the increase/decrease in pedestrian flows through affected areas as a result of the event.

I am currently pursuing publication of this research, and hope that the techniques and methods I have used will contribute to the detection of anomalies in large data sets and provide the ability to generate valuable comparisons into event effects on a transport network.

At WSP I have worked on a number of planning studies for local government areas and road corridors including Hobsons Bay, the Hume Freeway Corridor, a bus planning study for the Doncaster area, and planning for intersection and road upgrades for Regional Roads Victoria. On these projects, I analysed existing conditions, consulted with key stakeholders, and used this evidence to inform future planning and recommendations. These projects are exciting to me as they bring together the fields of travel demand forecasting, multi-modal transport planning, and traffic engineering and design to solve complex transport problems to deliver solutions that will improve the accessibility and liveability of these communities.

I have also been developing innovations and initiatives that help solve problems and improve workflows in transport data analytics during my time at WSP. I have developed interactive dashboards in PowerBI and applications on online hosted platforms (ShinyApps by RStudio) for internal use to improve efficiency in commonly performed tasks. These interactive visualisations were developed using large, open source data sets including general transit feed specification (GTFS) data, road safety data, and household travel surveys. Recently, I developed and deployed an internal web application that filters and analyses crash data without the need to use multiple platforms such as a geographic information system (GIS) software and excel. Functionally, through the R programming language, the application automatically downloads the latest crash data, presents an interactive environment to allow freeform spatial filtering of the data, and calculates statistical summaries for users. This application was aimed at improving processing of a frequently used data set and increasing efficiency in commonly performed tasks. The feedback and support I have received on these initiatives has encouraged my interest in developing visualisations and interactive solutions to increase efficiency in routine transport analytics tasks.

While I have been fortunate enough to work on a range of projects, I have only scratched the surface of the transport industry and still have a lot to discover and learn. I believe the award will provide the opportunity to engage with a wider range of transport professionals who are involved in traffic management and operations, transport planning, economics, freight, road safety, public transport, and active transport modes through the National Conference.

I attended my first conference earlier this year – the ITS Asia Pacific Forum 2021. While it was an online event, I found the breadth and depth of knowledge, and quality of presentations to be extremely informative. Here, I had the chance to prepare and co-lead a workshop on *C-ITS Operational Use Cases and Benefits* and facilitate discussions with delegates across Australia. This was a particularly rewarding experience, and I am confident that AITPM's National Conference will be highly informative, whilst providing a chance for nation-wide networking and knowledge sharing. I am particularly interested in the talks on the topics of Transport Modelling – Digital Tools and Data, Intelligent Transport Systems, Automated and Connected Vehicles, and Safety. With the continual development of technology and increased availability of transport data, I believe that these talks will provide valuable learnings on current innovations, challenges, and opportunities to facilitate improvements in transport planning and analysis that I ultimately hope to contribute to.

I look forward to the opportunity to sit on the Victorian state branch committee as a Young Professional representative. I have previously attended AITPM events and webinars where I engaged in networking opportunities and knowledge sharing. I hope to contribute my experience as a co-chair for the *ITS Australia NextGens: The Young Transport Professionals Network* towards efforts targeted at connecting young professionals and promoting knowledge sharing and networking between future leaders and contributors to the transport industry. I believe introducing students and graduates to the AITPM offering will inspire them to pursue a career in this industry.

Thank you for your time in considering my application and I look forward to hearing your response.

Yours sincerely,

Jessica Tong