

2 May 2019

**Re: AITPM Young Professional Awards 2019**

Dear Ms Tessa Knox-Grant and Ms Noha Elazar,

My name is Phoebe Ho and I am pleased to present my nomination for the 2019 NSW Young Professional Award.

I am a currently a graduate in Jacobs' Sydney traffic engineering and transport planning team, having graduated with a Bachelor of Civil Engineering (Honours Class 1) from the University of New South Wales in 2018. Over the past few years through various academic and industry experiences, I have developed a great passion for the field of transport and the critical role it plays in society. With the solid technical foundations I have sought to build, and continue to build upon, I aspire to contribute to a world where people of all socioeconomic backgrounds have access to a variety of safe and sustainable transport options.

**My journey in transport**

My journey in transport began whilst on exchange at the University of California, Berkeley where I took my first course in transportation systems engineering. After hearing about cutting-edge research in activity based modelling using mobile phone data, I was drawn to the potential for impact that this multidisciplinary field has on communities at the local, regional and global scale. I also was fascinated by the complex interrelationships between social, economic and environmental factors in transport systems, as well as the crossover with big data and machine learning techniques.

Upon returning to Sydney, I immediately sought out industrial experience to learn more about the field and to understand what transport professionals do on a day-to-day basis. In September 2016, I began as a transport modelling intern at Aimsun, working on modelling projects for the upgrade of two of Sydney's busiest roads to "smart motorways". During my time at Aimsun, I learnt valuable data analysis and network development skills, as well as gaining insight into the transport modelling and ITS industry. In the summer of 2016/2017, I was awarded a UNSW Taste of Research scholarship to undertake a research project with the Advanced Data Analytics in Transport team at the CSIRO's Data61, where I continued to develop my skills in data analysis and traffic modelling. My industry experiences thus far had confirmed my genuine interest in the field and led me to an undergraduate position in Jacobs' traffic engineering and transport planning team, where I have been working since November 2017. My extensive industrial experience as an undergraduate is a testament to my enthusiasm, dedication and passion for the field.

Simultaneously, I was still yearning for more knowledge at university. To supplement my experiential education, I chose to take all my professional electives in the transport engineering field, completing three postgraduate courses in the areas of transport planning and transport logistics. In my final year, I also completed an industry-sponsored honours research thesis in collaboration with Aimsun and academics at the Research Centre for Integrated Transport Innovation. I conducted an empirical study of the behavioural impacts of variable message signs (VMS) for the M4 Smart Motorway project. This study used one of the largest known datasets in this field, where I developed a process to extract over 4000 usable observations to provide insight into the aggregate diversion behaviour of drivers on off-ramps. VMS was found to have a statistically significant effect on drivers, revealing a shift of up to 3.5% in their route choice. This finding has implications in providing more accurate predictions of traffic conditions and evaluation of incident management strategies deployed on managed motorways. The findings were also used in the development of the Aimsun Live software, a decision support system that provides real time prediction and evaluation of incident scenarios in cities around the world. In addition to receiving a high distinction for my honours thesis, I have been on the UNSW Dean's Honours List for all four years of my undergraduate degree.

Between finishing my undergraduate studies and commencing as a graduate at Jacobs, I was honoured to receive a scholarship to attend the Smart Cities summer school program at Tel Aviv University's Research Centre for Cities and Urbanism. With the fabric of our society accelerating towards technologies such as the internet of things, big data, blockchain, connected and autonomous vehicles, I was interested in learning how all these components are used create smart and sustainable cities of the future. Efficient transport systems will be an integral component of our future cities and as a transport professional, I hope to be equipped with a broad range of knowledge in various fields which must come together to create integrated, multidisciplinary solutions.

Now as a graduate at Jacobs, I've been able to contribute to a number of significant, city-shaping transport infrastructure projects in the greater Sydney region. With the skills that I have developed during my three internships, I am now a core member of the traffic modelling team, helping to deliver models at the microscopic, mesoscopic and hybrid level. In the past seven months of full-time work, my proudest achievement has been developing nine microsimulation Aimsun models for a high-profile project to provide better public transport connectivity in Sydney under limited time and resource constraints. I was the key person responsible for seeing the model development process through, from network development to the calibration, validation and documentation for each model.

#### **Benefits from attending the conference**

I have only just scratched the surface and there is so much more I would like to learn. I am very keen to dig deeper into the world of traffic and pedestrian modelling and further develop my technical proficiency in these areas. However, I would also like to expand my knowledge in areas of transport planning and rail planning. Being the premier conference in transport, the AITPM Conference is an invaluable opportunity to hear from thought leaders in the industry and learn about best practices from various groups around the nation. I am most excited about the sessions on the design of city streets, public transport planning and big data in modelling. I am also interested in participating in the active transport modes workshop and seeing how different strategies might be implemented in future projects in Sydney. This melting pot of ideas and discussions is an extremely valuable opportunity to gain insight into the industry and to understand transport trends in Australia, especially at a time where technology is fundamentally changing our industry. If given the chance to attend the conference, I hope to build lasting connections with like-minded individuals and have thoughtful discussions with peers who will shape the future of transport in Australia.

#### **Willingness to sit on the state branch committee**

It would be an honour to serve on the NSW Branch Committee as a Young Professional representative. I am passionate about being a voice for others and helping to facilitate communication channels. At Jacobs, I am part of the Diversity and Inclusion committee and the Graduate Development committee. Outside of my professional life, I have been involved with running workshops for high school girls with Power of Engineering and being a mentor as part of the UNSW Women in Engineering Society and hope that these experiences would equip me with the skills necessary for carrying out the role of Young Professional representative for the NSW Branch. As a young female engineer, I am passionate about inspiring the next generation to consider a career in engineering, especially in transport. I have already gained so much from attending AITPM events and would love the opportunity to give back to this community that has been pivotal in shaping the early stages of my career in transport.

Thank you for taking the time to read my nomination and I look forward to hearing from you soon.

Kind regards,

Phoebe