

Roy Zhu
roy.zhu@arup.com
699 Collins St, Docklands VIC 3008

April 30, 2020
Attention: Scott Benjamin
Australian Institute of Traffic Planning and Management (AITPM)
VIC Branch President

Subject: AITPM 2020 Young Professional Award Application

Dear Mr Benjamin,

My name is Roy Zhu and I wish to put forward my nomination for the 2020 AITPM Young Professional Award for the Victorian / Tasmanian branch.

Eligibility

I am currently employed as a graduate transport planner at Arup in Melbourne. I completed my studies at the University of Queensland in July 2019, with First Class Honours in Engineering (Civil) and Commerce (Finance). I am applying for the AITPM Young Professional Award as I believe it offers an exciting opportunity to shape the organisation's offerings for aspiring transport planners and engineers.

My Journey in Transport Planning

Research Achievements in University

My passion is simply to *make things better*. This incited me to pursue a dual degree in civil engineering and finance, as I believed that both technical skills and business acumen were vital for any practical problem solving. However, I struggled to find an appropriate pursuit until my third year, when I joined the UQ Icarus Program Transport Research team led by Dr Jiwon Kim and Dr SangHyung Ahn. Our first project – “Computer Programming for Transport Data Analytics” – centred on using C++ programming and Qt Creator to build an application for analysing public transport smart card data. After isolating relevant data, we developed visualisations to analyse stop patronage and peak period travel. This project established my capabilities in Excel, programming and statistics, which are now fundamental in my day-to-day workflows. More importantly however, I finally found a subject which piqued my interest.

In early 2017, Arup sponsored our research team. We would be mentored by Kylie Nixon and her broader transport planning team in a new industry research venture between Arup, the University of Queensland and the University of Maryland. I led an interdisciplinary team of eight undergraduates in scoping and developing improvements for Brisbane's CityCat ferry operations. To accomplish this, we focused on optimising travel time and streamlining public transport intermodal connections, applying techniques such as agent-based simulation and smart card data analysis. We also considered the human aspect, examining the user journey for pain-points and perceptions in order to inform our recommendations. The project ultimately ran for two years and we travelled to present our findings to academia and industry experts worldwide. A key takeaway for me was understanding the role of transportation in society; it services our communities' mobility needs and therefore, our solutions must always centre around an understanding of users' needs and preferences.

After the project's conclusion, I began my own research into Brisbane's ferry operations and smart card data. While existing research focused largely on the strategic applications of smart card data and how it could be utilised for broader investigations on city-wide travel patterns, few researchers examined its applicability to

public transit operations. As such, I targeted this niche and developed new visualisation and analytical techniques with a focus on individual passenger movements and vehicle dwell time. Using my approach, we could determine the infrastructure characteristics that facilitated faster commuter movements and thus decreased public transit dwell time. The outputs could also be used to inform simulation models. From my work here I first authored three conference papers and a final year thesis, which scored 99% and was runners up for best thesis. My most notable achievement during this time was being sponsored to present my research at the Transportation Research Board's 2018 Annual Meeting in Washington D.C. It was a privilege to share my work at such a prestigious conference and the experience broadened my perspective regarding how many fields and disciplines must be coordinated to deliver transportation solutions to our cities and communities. Indeed, I would later find that by combining a wide variety of subjects and perspectives – from urban planning to commuter psychology to traffic engineering – we as transport planners can produce more holistic solutions when fulfilling our cities' mobility needs. During this period, I also presented my findings at the Australasian Transport Research Forum and at the Australasian Conference of Undergraduate Research.

Transitioning to Industry as an Undergraduate Engineer

My experiences in transport research led me to pursue a career in transport planning. I was first employed as a student traffic engineer for the Brisbane City Council's Congestion Reduction Unit in 2017. Here, I evaluated and designed signalised intersections using SIDRA and SCATS, aiming to improve the performance of traffic corridors. We also sought to improve road safety at several intersections without affecting performance, in response to concerns raised by the community. While this opportunity strengthened my technical capabilities and introduced me to community engagement, the most rewarding experience was seeing my contributions directly benefit local communities.

In 2018, I began my employment at Arup as an undergraduate transport planner. For 1.5 years, I designed and analysed transport solutions around Australia and internationally. From major infrastructure projects such as Canberra Light Rail and Coffs Harbour Bypass to more local community-focused undertakings, Arup offered me a wide range of experiences and learning opportunities. My favourite project involved conducting a strategic transport study for a region in Brisbane, where we identified ongoing and emerging issues relating to private vehicle, active transport and public transport networks. I primarily contributed to the community engagement program, where I analysed and summarised information obtained from various community touchpoints e.g. online surveys, CollabMap feedback and engagement hubs. Furthermore, I designed the presentations used for engaging a wide range of stakeholders, including clients, communities and politicians. This project was my most rewarding experience as it introduced me to customer centricity and in turn, outcome led design. A key focus was integrating community expectations, user desirelines and travel demand patterns with technical analyses, ultimately yielding a holistic understanding of the region's transport needs. I was particularly keen on being able to cater for our users' specific needs when planning the region's future transport network.

Commencing as Graduate Transport Planner

Upon graduating from university in 2019, I moved to the Arup Melbourne office to begin my graduate program as a transport planner. I was fortunate to join with the commencement of several significant engagements, allowing me to contribute to numerous projects for Major Road Projects Victoria (MRPV) and Infrastructure Victoria (IV). Thus far, my highlight has been working on IV's 30 Year Infrastructure Strategy Update. Our objective was to assist the client in understanding how major infrastructure projects and land use changes would address the state's needs in the future. Using the Victorian Integrated Transport Model (VITM), we simulated numerous scenarios across future years and evaluated their impact on mobility in the state. My favourite role in this engagement was designing intuitive visualisations in QGIS to facilitate analysis and produce public-facing materials. The project also offered a very efficient way for me to familiarise myself

with my new home, as I needed to quickly understand Melbourne's urban structure and land use patterns in order to commentate on impacts arising from various interventions.

Benefits from Virtual Conference Attendance

Now as I begin my career, I recognise that there are many things to learn before I can make my desired impact. AITPM's events offer the ideal first step, presenting a wide range of topics to a mix of both seasoned engineers and early career professionals. I would be particularly interested in talks discussing the impact of autonomous vehicles and micro mobility on our existing transport networks. As these new technologies loom on the horizon, I aim to equip myself with the right skills and mindset to facilitate their adoption and assist in developing cities with world-class transportation.

On a broader basis, I also aspire to learn about as many disciplines as possible, and more importantly, connect with those who work in those disciplines. This would enable me to bolster my knowledge across the broader field of transportation, such that I can understand how different fields must synergise in the development of transport solutions. Moreover, I believe that, now having experienced the congestion of more populated cities such as Melbourne and Sydney, private vehicle usage in its current form cannot be the way forward and must be replaced with more sustainable and accessible alternatives that better serve its users. AITPM embodies our region's knowledge which will make this future a reality.

Willingness to sit on the VIC/TAS State Branch Committee

I would be thrilled to help other young professionals and students in expanding their network. After all, my own interest in transport was sparked by the happenstance that I sat next to my eventual mentor at a networking dinner. This one event cascaded into all the opportunities I narrated previously, kick-starting my career and guiding me towards my passion. Accordingly, I would be eager to be part of the AITPM VIC/TAS State Branch Committee as a representative for young professionals and to assist them in making the same, quality connections which led me onto my path. Furthermore, I am keen to contribute my experiences as the Secretary (2018 and ongoing) of the Pedestrian and Bicycle Transport Institute of Australia (PedBikeTrans) and as an Executive Committee Member (2018 – 2019) of the Australia-China Youth Association. I also endeavour to use this opportunity to assist passionate students and young professionals in developing soft skills often neglected in academics, especially presenting and written communication. Both skills were vital on my journey and I hope to deliver their benefits to others too.

Thank you for your consideration.

Yours sincerely,

Roy Zhu

Graduate Transport Planner | Arup