



## Xiaolin Tang, Engineer, Integrated Transport & Mobility

**A**s a fresh graduate transport engineer in Aurecon Integrated Transport &

Mobility team, I would like to nominate myself for the 2023 AITPM Young Professional Award.

I have a bachelor's degree in transportation engineering and a doctoral degree specialising in shared mobility, autonomous vehicles, and people's future travel behaviours. With over ten years of ongoing research in transport, I still have passions for transport. I am keen to learn more, just as when I originally commenced my study in transport in 2012.

I will demonstrate my achievements, passions, and involvement in contributing to advancing transport by telling more stories about myself from three perspectives:

- What did I do? – my study journey in transport
- Why transport? – my passions and motivations
- How to make an impact? – my involvement and impacts

### Qualifications & Memberships

- PhD, The University of Western Australia, 2023
- BEng (Transportation), China University of Mining and Technology, 2016
- Project Management Essentials Certified, 2022
- Member, Australian Institute of Traffic Planning and Management, since 2017

### Specialisations

- Traffic Engineering
- Statistics and Data Analysis
- Shared Mobility
- Autonomous Vehicles
- Travel Behaviours

## What Did I Do?

### Unwind my journey in transport: 2012 to 2023

#### 4-year undergraduate study in transportation

I commenced my undergraduate study in September 2012 in China and majored in transportation, which comprehensively covered several aspects of transport: road design, traffic engineering, railway operations, platform designs and signals, mass transit and logistics. Aside from textbook knowledge from university, I also took several interns about railway operations for mining, passengers, and freight during each summer vacation.

For my undergraduate thesis and graduation project, I investigated the existing parking situation and issues for my university campus and re-designed the parking facilities across campus with recommendations for

safer and smooth internal traffic for all road users. I finished my bachelor's degree in 2016, ranking second in the major with a GPA of 3.8/4.0.

#### "4+2" year PhD in autonomous vehicles and shared mobility

With the scholarship offered by the University of Western Australia, I came to Perth to start my PhD journey in 2017 with a research focus on autonomous vehicles and future mobility.

I proposed a conceptual framework to integrate the three mostly used methods to comprehensively investigate travellers' preferences for shared autonomous vehicles and their travel behaviours. I also developed several hybrid choice models to accommodate people's decision-making heuristic heterogeneity for their stated preferences.

Meanwhile, I was a research assistant for a project on the gig and sharing economy for two years, where I gained insights into people's attitudes towards sharing from a broader perspective. I also tutored a unit for undergraduate <data visualisation>, from which I excelled myself at MS Excel and Power BI for data analysis and presentation.

It was never easy to finish a PhD, but luckily, I took my time to saunter through my PhD journey full of ups and not so many downs! Although I suspended my candidature for two years because of COVID to change my research topic, I did not give up. My efforts paid off as my PhD thesis was ranked 5% worldwide by the external examiner – Prof Konstadinos Goulias from the University of California.

#### 4-month graduate engineer in Aurecon

I was so lucky to secure a position as a transport engineer in Aurecon before I finished my PhD, the dream job I've ever wanted since I was an undergraduate. I started working in February 2023 and have had several opportunities to learn real-life transport projects: SIDRA, VISSIM, and Aimsun, from modelling and planning to traffic impact assessment and sustainability.

I've assisted with several projects, including the precinct structure plan, Perth Concert Hall car park renovation, Great Northern Highway corridor transport assessment, gap register for future activity centre development in Northern Territory, etc. With the data analysis and report writing skills I developed from my PhD, I also did some modelling and data analysis and drafted several transport impact assessment reports.

## Why Transport?

**My passions and motivations in transport and the key drive to shift from a researcher to an engineer**

## Everything starts for a reason

My spark for transport was initially lightened up by my professor teaching the unit <Traffic Engineering> with all his passions and unique, fascinating stories. Our assignment for that unit was to optimise the traffic phasing and signals for a busy T-intersection, which required us to collaborate in teams to research, survey, record, analyse, design, and report. The survey took place in 2014 winter, -5C by the roadside; however, the spark inside warmed me up. I truly love optimisations and standards: an efficient transport system when all road users follow the same rules.

## Lighthouse in the Mist: inspiring seniors

Suppose the undergraduate study is broadly introducing us to the basics of transport. In that case, PhD study is drilling deep down where nobody has ever stepped in. I focus on details, but sometimes I might be too focused to forget to jump out and think from a broader picture where my research can fit in the real world. I am fortunate to encounter all the people inspiring me to determine my journey.

My supervisor Dr Brett Smith always asks me, “Why do you do it?” to save me from falling into the struggle and direct me back to the road where I can identify my research contribution from both literature and reality perspectives. Emeritus Professor John Taplin, who used to work in my same office, always encouraged me to “find where your passion is and fight for it”. Right, my passion always lies in how to make people’s travel easier and more desirable. With all the experience I gained from an academic perspective, it is time for me to apply what I have learned to where I can make a real change out of it – working in the industry as a transport engineer and bringing ideas to life!

## A determined active transport user

We are all transport end users. Everyone has their unique travel behaviour. As a transport engineer, I believe it is critical to consider people’s travel behaviours in all the modelling and planning. The lack of travel behaviour information will lead to the failure of transport design no matter how perfect the modelling results indicate.

I am a determined active transport supporter. I love taking public transport rather than driving alone, and I cycle to work every day. One of the biggest issues in promoting public transport is the first/last-mile solution, for which I have published a conference article discussing the feasibility and travellers’ preferences for autonomous shuttles in the neighbourhood. I will keep exploring more options to encourage the usage of active transport.

## Inspirations from my viva-voce (PhD oral defence)

I passed my viva voce with minor changes on 31<sup>st</sup> March 2023 with two external examiners – Prof Konstadinos

Goulias from the University of California and Prof Matthew Beck from the University of Sydney. It was a wonderful opportunity to express my PhD research work and receive personalised inspiration from two prestigious professors. The key takeaway for me from my viva voce was twofold.

Prof Goulias mentioned the five measures from the WA Department of Transport: accessibility, efficiency, sustainability, safety, and reliability. These five aspects should not only be applied to my own research but also to the future projects and opportunities that I’ll be working on. Prof Beck also encouraged me to enjoy the journey ahead and take challenges in the domain of transport engineering, where males dominate. As a female transport engineer, I can make a difference!

I shall be innovative, fearless, and at the same time, always follow the five measures to build a better transport future that all communities can benefit from it.

## How to make an impact?

**After all the efforts and motivations, how could I make an influence in transport?**

### UWA autonomous bus trial 2018

During the 2018 UWA Open Day, there was an autonomous shuttle bus trial for one week on which I conducted my survey about passengers’ opinions before, during and after their boarding experience. It was reported by several local media, such as Perth Now and local newspapers, which increased the exposure of autonomous vehicle technologies and raised the awareness of local community. The results from this experiment were presented during the 2018 ATRF conference in Canberra.



*The future of autonomous vehicles is here! Be one of the first people to trail an autonomous bus at UWA and give us your feedback. Scan the QR code besides or click here to complete a short survey before, during or after your trip.*



*A glance at the 2018 UWA autonomous bus trial, picture source:*  
<https://patrec.org/2018/08/08/https-youtu-be-ltdhkk6rkqk/>

### 3-minute thesis competition and poster

I always seize opportunities to talk about my research with different people. I hope to raise their awareness of autonomous vehicles and my PhD research. I participated in the 2022 UWA 3-minute Thesis Competition. It was challenging to extract my whole PhD work into three minutes in plain language that the general public could easily understand. But I did it, and I felt a breeze of satisfaction when people actually understood my research and showed curiosity about possible future transport modes. During the 3-minute thesis competition, I still remember another participant's research was also about autonomous vehicles and ethics. We spent hours discussing our research and exchanging our ideas. It is glad to know that others are also advancing transport and that I am never alone.

Likewise, I attended the 2022 Asia-Pacific Business Analytics Conference Poster Competition. I designed an infographic poster to show my research during the conference and won the best doctoral poster design!

### Conferences and networking

Aside from my research, I love attending various events, seminars, workshops, and conferences. I try my best to communicate with different people and exchange ideas. I've been a student member of AITPM since 2017 and have attended many interesting events held locally in Perth and online webinars about various transport-related topics.

I've also attended the 35th Conference of the Australian Institutes of Transport Research (CAITR-2017), the 2018 AITPM National Conference in Perth, and the 2019 and 2022 ATRF held in Canberra and Adelaide, respectively. Recently I nominated myself and was appointed as one of the AITPM WA branch Young Professional Network Committee members for the next two years.

Afterwards, I will step in as a branch committee member to further network with people and provide services of more meaningful events for transporters. And I am willing to wield all my power and passions in my career in the transport pathway.



*Xiaolin with her poster winning the best doctoral student poster at the 2022 Asia-Pacific Business Analytics Conference Poster Competition*

## The Ongoing Journey in Transport

It would be a great privilege for me to attend the 2023 AITPM National Conference in Melbourne, where I am keen to seek brilliant ideas from seniors and peers and know what wonderful changes are taking place this year in transport. Besides, I'd also look forward to expanding my professional network as well as exchanging ideas and experience. I hope to meet more people to inspire and guide me through my early career.

Whilst I have studied for ten years in transport, my career in transport has just sailed. I will keep steering in the right direction, paving the pathway with all my passions and navigating into a brighter transport future.

I sincerely appreciate your time and consideration of my application.

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