



## A PhD Scholarship in **SPARC Hub**

### The Opportunity

The ARC Smart Pavements Hub (SPARC) invites applications for a PhD-position in road pavement upgrade planning and scheduling.

### Smart Pavements Australia Research Collaboration ([SPARC](#))

SPARC Hub, which is a partnership between Monash and 7 other Australian Universities and 20+ Industry Partners, is embarking on a range of exciting research projects, offering an unprecedented opportunity for recent graduates to establish their postgraduate career in various engineering fields. The Hub offers a coherent PhD and Masters by research program for high achieving passionate students and is committed to create an intellectually exhilarating and vibrant environment towards excellence.

### Project Background

Each road upgrade causes some disruption – reducing the capacity of a road to fewer lanes, or a single lane with traffic signals, or even a complete road closure. Also, each disruption has consequences for congestion on the surrounding area and requires resources and incurs costs, but the pool of resources and the available budget are both limited at any time. Different road upgrades have different urgency, and potentially may need to be completed before a deadline.

The challenge is to plan all the upgrades such that sufficient resources are available, the budget is not exceeded, the urgent upgrades are scheduled in due time and disruption is minimised. For example, multiple upgrades along the alternative routes connecting major centres should not be executed at the same time but multiple upgrades along a single route should preferably be synchronised.

This project aims to optimise the scheduling of pavement upgrades so as to: (i) minimise the disruption to traffic across the Melbourne road network; (ii) ensure upgrades are completed in time; and (iii) match the work scheduled to the equipment and available appropriately skilled people.

### Qualification Requirements

1. Applicants must have completed at least a bachelor's degree in one of the following areas: IT or Computer Science. Both Australian and international applicants will be considered
2. The applicant must have a strong academic record, which, for example, amounts to a grade point average (GPA) of 3.7 (out of 4.0) or higher, or equivalent to H1 or First Class Honours Degree
3. The applicant should have good programming skills (proficient in Java, C or C++) and should have some knowledge/background in transport planning, path finding and/or discrete optimisation
4. The applicant must have an interest in mathematical modelling
5. The following criteria will be considered during the assessment:
  - (i) Candidate's academic performance in the bachelor's degree (or Master's degree),
  - (ii) Quality of the degree completed (preference will be given to Master's degree),
  - (iii) Completion time of the degree,
  - (iv) Knowledge in the relevant research field including any publications in reputable journals,
  - (v) English language proficiency (refer to the following link for more information: [English Language Requirements](#)), and
  - (vi) Online interviews and references.



# MONASH University

**Faculty / Portfolio:** Faculty of Information Technology

**Location:** Clayton campus, Monash University

**Remuneration:** Stipend can range from \$27,872 to 32,300 p.a. full-time rate (pro-rata) and tax-free

**Closing date for expression of interest (EOI):** 23<sup>rd</sup> of August, 2019

**To Apply:**

- Submit an [Expression of Interest](#)
- A curriculum vitae, including a list of published works
- A full statement of academic record, supported by scanned copies of relevant certified documentation
- Contact details of two academic referees
- Evidence of English-language proficiency (international applicants only)

**Enquiries and EOIs shall be sent to:**

The Lead Chief Investigator, [Professor Mark Wallace](#), Faculty of Information Technology, Monash University, Clayton Campus (Australia)

Email: [mark.wallace@monash.edu](mailto:mark.wallace@monash.edu)

**SP/RC** Smart Pavements  
**HUB** Australia Research  
Collaboration