A PhD Scholarship in SPARC Hub

The Opportunity

The ARC Smart Pavements Hub (SPARC) invites applications for a PhD position in deterioration mechanisms and factors in unsealed roads.

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

Unsealed roads represent approximately 2/3 of the Australia’s road network. In many instances, these roads represent the single means of transportation for communities and industries. Because of their location and length, any means of reducing the maintenance requirements on these roads will be of significance to particularly local governments, which have limited resources. This project aims reduce the life-cycle cost of Australian unsealed roads. The project will examine from first principles the key deterioration mechanisms and identifying design, material, construction and maintenance practices that could lead to reduced life cycle-costs.

The two deterioration factors that are the focus of this study are:

(i) Formation of corrugations (which impact on user cost, comfort and maintenance frequency)
(ii) Gravel loss (which impacts on maintenance cost and possible loss of function and safety of the road in wet conditions)

Hypothesis 1: A fundamental review of the mechanisms by which corrugations form and gravel is lost from the road surface will identify opportunities for reducing life-cycle costing through improving existing practices or developing new practices.

Hypothesis 2: Changes in tyre, suspension and vehicle design technologies can lead to different (better or worse) corrugation formation patterns and or timelines.

Industry Embedment

ARRB, the National Transport Research Organisation, is the Hub’s lead Industry Partner and Industry Partner for this project. A key requirement for the scholar is to spend a significant proportion of their time embedded at ARRB’s state-of-the-art facility in Port Melbourne. There, the scholar will have the opportunity to work alongside ARRB’s experts in pavement deterioration/performance modelling, life-cycle costing and future transport infrastructure amongst others.
Qualification Requirements

1. Applicants must have completed at least a bachelor’s degree in one of the following areas: Bachelor of Science (Chemistry, Mathematics, Physics or Computational science), Bachelor of Engineering (Civil, Materials, or Geotechnical). 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 3.5 (out of 4.0) or higher, or average score is 80 or higher, or equivalent to H1 or First-Class Honours Degree.

3. The applicant should have some knowledge/background and interest in the following areas: life-cycle costing, data science, mathematical modelling and unsealed roads/road pavements.

4. 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 and conferences,
   (v) English language proficiency (refer to the following link for more information: English Language Requirements), and
   (vi) Online interviews and references.

Faculty / Portfolio: Department of Civil Engineering, Faculty of Engineering

Location: Clayton Campus, Monash University & ARRB, Port Melbourne

Remuneration: Stipend can range from $29,500 p.a. full-time rate (2021 rate, pro-rata) and tax-free

Engineering Tuition Fee Scholarship for the duration of stipend scholarship for international students will be available. Please note that Engineering Tuition Fee Scholarship will be assessed and awarded on a case-by-case basis.

Closing date for expression of interest (EOI): 06 August 2021

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 EOs shall be sent to:

The Lead Chief Investigator, Professor Jayantha Kodikara, Department of Civil Eng, Monash University, Clayton Campus (Australia)

Email: sparc.hub@monash.edu