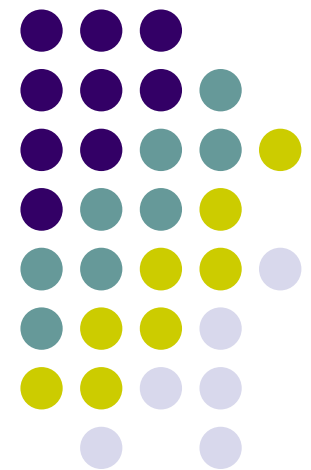
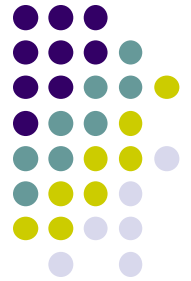


ICRI Web-Based Workshop - Introduction

Wenyi Yan

Professor

Department of Mechanical & Aerospace Engineering
Monash University, Melbourne, Australia



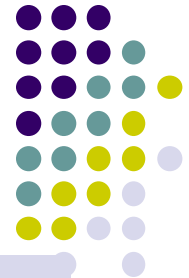
MONASH University



Australia
(Down Under)



MONASH University



Landmass:
7,617,930 km²
Population:
25 million



Monash
University



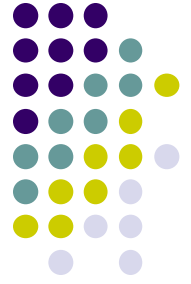
MONASH University

Monash University



- **One of the Group of Eight in Australia:**
 - Monash University
 - The University of Sydney
 - The University of Queensland
 - The University of Western Australia
 - The University of Melbourne
 - The University of New South Wales
 - The University of Adelaide
 - The Australian National University
- **Ranking position in the world**
 - Times Higher Education World University Rankings: 44
 - Engineering: 44
 - QS Rankings: 42
 - Mechanical Engineering: 59
 - Shanghai ARWU: 75
- **An internationally focused university**
 - Oversea campuses (Malaysia, South Africa, Italy, India and China)
 - IITB-Monash Research Academy, Bombay, India
 - Southeast University-Monash University Joint Graduate School (Suzhou)
- **Monash University's motto: 'I am still learning'**

Faculties at Monash University



- **Art, Design and Architecture**
- **Arts**
- **Business and Economics**
- **Education**
- **Engineering**
- **Information Technology**
- **Law**
- **Medicine, Nursing and Health Sciences**
- **Pharmacy and Pharmaceutical Sciences**
- **Science**



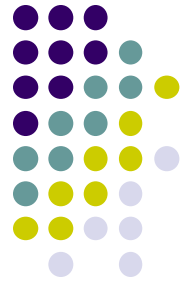
MONASH University



Faculty of Engineering

- Department of Mechanical & Aerospace Engineering
- Department of Civil Engineering
- Department of Materials Science and Engineering
- Department of Chemical and Biological Engineering
- Department of Computing System and Electric Engineering





My Research Background

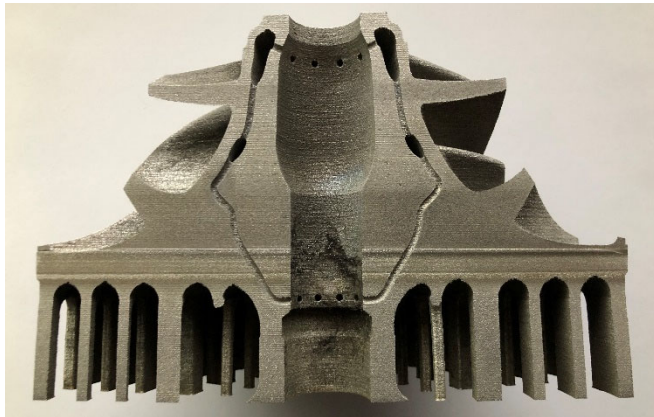
- **Research area**
 - Deformation and failure of materials and structures
- **Theories**
 - Solid mechanics, contact mechanics, fracture mechanics, damage mechanics and fatigue
- **Research methods**
 - Theoretical analysis, experimental test and numerical modeling





My current research areas

- Additive manufacturing
 - Design optimization and process simulation



3D printed impeller with optimized voids and passage way

- Railway Engineering



Supervised PhD studies to completion in railway engineering (co-supervised with Peter Mutton)



1. Jerome Pun: Plastic deformation behaviour of high strength rail steels in heavy haul railway systems (2015)
2. Hang Su: Plastic deformation of flash butt welds in high strength rail steels in heavy haul railway systems (2020)
3. Soumyajit Mojumder: Investigation on reverse detail fracture in high rails on curved tracks (2022)
4. *Quan Lai: Development of a novel wheel-rail maintenance strategy utilizing laser cladding technology (2018)
5. Taposh Roy: Evaluation of mechanical performance of laser Cladded Rail Steels for Repairing Railway Rails (2019)



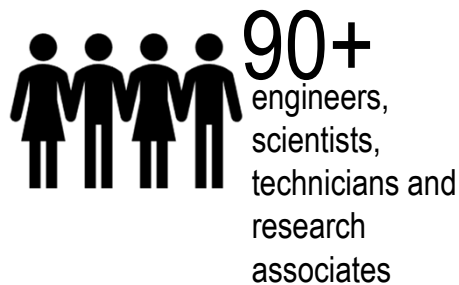
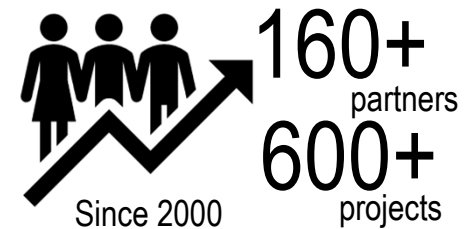
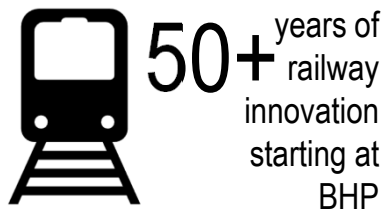
Current PhD studies in railway engineering



1. *Panahsadat Fashi: Improving wear and RCF performance of railway rails using friction modifiers and laser cladding
2. *Olivia Kendall: Microstructure, residual stresses and mechanical properties of laser clad rail components
3. Alivin Hiew: Wear performance of laser clad flange tip lift crossings in tramlines
4. Yifei Li: Effect of residual stress on the ratchetting performance of railway rails
5. Enhui Zhang: Wear performance and design optimization of swing nose crossings in heavy haul railways
6. Hanlei Wang: Design optimization of railway catenary-pantograph systems
7. Sheng Zhang: Data-driven approaches in in-train force prediction
8. Yiping Wu: Experimental and numerical studies on RCF cracks in rail welds



Monash Institute of Railway Technology (IRT)



World first technologies

- Asymmetric wheel-rail profiles
- Instrumented Ore Car
- Phased array



National and international recognition for staff and projects