



Comment

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PhD internships in Manufacturing: Creating practical pathways to Industry 4.0

ENCOMPASSING technologies such as Artificial Intelligence (AI), robotics, 3D printing, automation and predictive analytics, Industry 4.0 has changed how manufacturing industry is operating. Yet, as this rapid transformation in technology gains momentum in Australia, manufacturers are still cautious in taking “the first step” and struggle at times to find the right people to help them begin their Industry 4.0 journey.

Recognising these challenges, IMCRC has partnered with

Australian Mathematical Sciences Institute’s (AMSI) all-sector, all-discipline APR.Intern program to bring unique PhD talent to the manufacturing workplace, putting new Industry 4.0 technologies and digital business models in reach of Australian SMEs.

Over the past year, the partnership has seen students who have just completed their PhD in areas such as computer science and mathematics, as well as specialist technologies like additive manufacturing, gain hands-on industry experience.

More importantly the program gave manufacturers a platform to connect with emerging talent enabling them to jointly explore opportunities, adopt new technologies and streamline processes through short-term, tightly focused projects.

Offering a different perspective

Highly trained in their respective fields, PhD students bring a unique set of problem solving and analytical skills to the manufacturing table. They possess deep knowledge and

sound research capabilities enabling them to approach a task or industry-specific problem from a different angle. This diversity of thinking can be critical to helping businesses make important break throughs in research and development (R&D), planning and execution, leading to innovative outcomes.

When engineering company Varley Group wanted to explore Industry 4.0 technologies for their organisation, they reached out to APR.Intern and IMCRC to help them find the right person to help them



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make this breakthrough. Deakin University PhD student Mojtaba “MJ” Izadi was identified and brought on board with his unique skills and expertise.

Under the supervision of Pierre Sidorow, Varley Group’s business improvement manager, MJ led a project to investigate the impact of virtual reality on manufacturing and how it could potentially be used to improve the efficiency and effectiveness of Varley’s existing manufacturing processes. To exploit the full potential of the technology, MJ also reviewed the suitability of different organisational concepts to establish a more collaborative, co-operative and collective manufacturing environment.

“MJ’s research opened our eyes to the future direction by exploring processes underpinned by the adoption of technology. The research has enormous potential for

advanced manufacturing processes, new materials and significant cost savings,” said Sidorow.

Bringing new thinking

Throughout the internship MJ was supported by his academic mentor Professor Bernard Rolfe of Deakin University. This supervisory support helped stretch MJ’s and the project team’s thinking as well as manage expectations and ensuring that agreed project goals and milestones were met. His direct involvement also provided Varley Group access into the bigger pool of research expertise available at Deakin University which – if and when needed – helped address arising problems.

The direct involvement of a research organisation opens the doors for exciting discussions – especially around Industry 4.0, where the possibilities are endless. By collaborating and tapping into

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researcher’s expertise, manufacturing businesses have a unique opportunity to discover why, how and in what way Industry 4.0 technology can help transform their business.

Varley Group CEO, Jeff Phillips, commented that MJ’s research has been of great value to the business and could help shape the next 20 years of Varley Group’s industrial development, saying, “Varley now has a positive stepping-stone to move towards an improved future – one that embraces Industry 4.0.”

Bridging the gap and accelerating business transformation

Collaboration is one of the most powerful catalysts when it comes to the uptake of Industry 4.0. With new technologies developing at such a rapid rate, bringing in experienced capabilities able to provide a rapid acceleration in thinking has to be a good thing, especially when grant support is available to help reduce

the costs to the business.

“Our partnership with the IMCRC is transforming industry-university engagement in the manufacturing sector. Varley is an inspiring example of a business bringing on PhD-level research expertise to accelerate R&D and deliver manufacturing innovation. Our short-term PhD student internships offer a cost-effective solution for businesses, of all sizes, to experience the benefits of academic collaboration,” said Lisa Farrar, APR. Intern national program manager.

So far, IMCRC collaboration with APR.Intern has proven to be beneficial to both PHD students and the manufacturing businesses that place them. Six PhD students have successfully completed an internship position. Three students were offered full-time employment at the end of the internship – MJ being one of them. Following the internship’s success, Varley Group offered MJ full-time employment in a newly created role of Technology Improvement. **M**

An opportunity not to be missed

Australian Postgraduate Research Intern – APR.Intern - is a non-for-profit, government supported program that connects innovative businesses with Australia’s brightest research talent through short-term PhD student placements. Over three to six months, businesses are able to fill skills gaps and benefit from rapid R&D results while retaining all IP. In addition to an Australian Government 50 per cent rebate, the partnership between APR.Intern and IMCRC offers manufacturers up to \$10,000 in funding support. This brings down the cost of a 3-month PhD student placement to \$5,000 for IMCRC affiliated organisations and \$7,500 for non-IMCRC affiliated organisations.

Business Benefits:

- Rapid Results in 3-6 Months
- Quick outcomes through high-impact research projects
- Access Government Funding
- R&D rebates available through APR.Intern
- Retain Intellectual Property
- All project-related IP remains with the business
- Fill A Skills Gap
- Fast-track innovation with PhD student and mentor expertise
- Minimal Administration
- No HR costs, all facilitation by APR.Intern

The time to tap into PhD expertise to fast-track an Industry 4.0 project and bring their unique skillset to the manufacturing table is now. The APR.Intern offer expires on 31 December 2020.

Find out more at (<https://aprintern.org.au/business-info/costs-rebates/partnerships-imcrc/>)



Industry 4.0 has changed how the manufacturing industry is operating in today’s context.