Monash University Malaysia: Embracing challenges and seizing opportunities of the 4th Industrial Revolution

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Monash Malaysia was set up in 1998 as the first Foreign University Branch Campus in Malaysia, and it has 7 Schools and over 8,000 students. It is rated in SETARA Tier 6 in 2017.

Mission statement: Monash Malaysia offers an internationally recognised Australian education, enriching the student experience and employability through educational innovation, high impact research, student mobility, social entrepreneurship and industry engagement.
SELF-ACCREDITING PRIVATE UNIVERSITY

RATED TIER 6
by the Ministry of Higher Education, Malaysia
As the Malaysian campus of a premier research-intensive Australian university, we are *Monash’s platform for scholarly engagement with the Southeast Asian region*. 
School of Engineering

- One of the 7 Schools at Monash Malaysia
- One of the departments in the Faculty of Engineering of Monash University
- Six BEng (Honours) degrees offered, >1500 students
  - Chemical Engineering
  - Civil Engineering
  - Electrical & Computer Systems Engineering
  - Mechanical Engineering
  - Mechatronics Engineering
  - Software Engineering
- Several postgraduate degrees, >110 students
  - Masters of Advanced Engineering (Energy & Sustainability)
  - Masters and PhD by research
4th Industrial Revolution

Opportunities ....... and challenges
Our work

Students
- Explore 4th Ind. Rev. options
- Win-Win situation for all parties
  - Students
  - Companies
  - Nation
Our work
Our work

Malaysian Textile and Apparel Manufacturing Industry

Vision-based inspection systems in textile and apparel manufacturing

As global industry progresses, the needs of modern technology become more acute. One such technology is Vision Systems. Vision systems or sometimes to be referred as machine vision system, is a technology that provides image-based inspection for a variety of industrial and manufacturing applications. Vision systems usually consist of a camera (or multiple cameras), and even video recorded and lighting systems. In addition, there needs to be a computer to process the information. The vision systems could either be 2-dimensional (2D) and 3-dimensional (3D), and they are commonly being used in guidance (for robots and drones), automated inspection (for quality control), surveillance (for traffic, nature) and many more other applications.

Figure 1 shows an example of a visual inspection system in the manufacturing industry, together with its components.
Our work
Our work

- Machine ready
- Machine running
- Stop motion
- Production unit completed
Our work

- Machine ready
- Machine running
- Stop motion
- Production unit completed

- Output
- Efficiency
- Other analytics
Our work

Goal – to create a Smart Factory
Our work

Presentation at Malaysian Investment Development Authority (MIDA) seminar on Smart Manufacturing 2017
Our work

Presentation at ASEAN Federation of Textile Manufacturers Council Meeting 2018
Our work

National Research & Development & Commercialization series on Value-Added Automation for Textiles 2018
Our work

National Research & Development & Commercialization series on Value-Added Automation for Textiles 2018
Our work

Studies on Industry 4.0 for

- Economic Planning Unit (EPU), Prime Minister’s Department
  - Assess impact of technology in various industry sectors

- Selangor State government
  - Identify priority areas for growth

- Malaysian Plastic Manufacturers’ Association
  - Identify required talent

- Asia-Pacific Economic Cooperation
  - Policy, regulatory frameworks for Smart Manufacturing
Our work

Presentation at APEC Seminar on Understanding Impact of Smart Manufacturing in Policy and Regulatory Approaches, 2018
Our work

Contribution to Industry 4WRD: National Policy on Industry 4.0
Shaping The Future Of Industry
Our work

Our philosophy on 4\textsuperscript{th} Industrial Revolution

- Expensive equipment not absolutely necessary
- Can bypass Industrial Revolutions 1 – 3
- Does not necessarily mean displacing jobs/workers
- Small, simple, steps
Future work

- Curriculum changes
  - School of IT: Data Science major

- Infrastructure support
  - Smart Manufacturing Lab
  - IoT Lab
  - Deep Learning Lab
Harnessing the future through mechatronics

As companies scramble to keep up with Industry 4.0 and its technological developments, educational institutions like Monash University are doing their part to help these companies, including SMEs, stay ahead.

The crucial role of mechatronics

Monash University is already training students for Industry 4.0.
Staying positive amid uncertainties

APPROXIMATELY 67% of business leaders in the country are optimistic that the business environment will improve over the next 12 months following greater stability in the global economic environment, the Malaysian Business Sentiment Survey 2018/2019 reveals.

However, the increased rhetoric of a trade war between the United States and its leading trading partners remains a concern among business firms in Malaysia and the region.

Despite growing concerns, the spirit of the local business community remains optimistic with 73% confident about their business prospects. This optimism is partly due to increased infrastructure investment along with greater adoption of Industry 4.0 technologies.

The biggest issue that concerns the local market is the increasing cost of doing business, which will have an impact on the bottom line. The weakening Malaysian currency will also severely impact firms that are dependent on imported goods in their production process.

The Malaysian Business Sentiment Survey 2018/2019, conducted by Monash University Malaysia in collaboration with CPA Australia and Global Asia in the 21st Century research platform, gathers the opinions and feelings of the country’s business leaders.

“The Malaysian Business Sentiment Survey helps measure the confidence of local business leaders across key macroeconomic areas and provides them with a platform to voice their sentiments and estimations about the business environment in the country,” says Prof Mahendhiran Nair, chief executive officer of Monash Malaysia Research and Development and vice-president (R&D) of Monash University Malaysia.

“The primary objective of the survey is to enable decision makers, business leaders and key stakeholders to undertake proactive measures to improve the local business environment and build a competitive advantage among firms in the country.”

He adds, “One of the key discoveries from the survey is that global markets have become more stabilised and economic growth numbers in many of the economies are on an upward trend. This has had a positive impact on the Malaysian economy.

“However, potential full-blown trade wars between the US and its trading partners may adversely impact the growth trajectories of major economies in the world. Business sentiment across the globe and growth potential of firms in Malaysia.

“[To mitigate these economic risks, firms are intensifying their market opportunities within the domestic economy and expanding their operations in Asian and other Asia-Pacific markets.”

According to Prof Pervaiz K. Ahmed, co-director of Global Asia in the 21st Century and deputy head of school (research) at Monash University Malaysia’s School of Business, “CEOs and senior managers are of the view that for firms to be competitive, they will have to embrace the digital economy and Industry 4.0, which will enable them to extend their reach for talent, resources, market intelligence, networks and markets.”

“[The top digital technology identified as important to remain competitive by respondents is mobile technology for customer engagement, which stands at 30%. This is followed by digital payment technology at 34% and social media enabled business processes at 28%.”

CEOs and senior managers also highlighted the importance of universities nurturing talent that will enable firms to enhance their innovative capacity, process improvement and product development.

They believe that the top three primary focus areas of universities should be to collaborate with industry (33%), ensure that the R&D initiatives undertaken meet the needs of industry (30%), and develop training programmes that are relevant and beneficial to industry (30%).

“Monash Malaysia continues to work closely with businesses and industries in nurturing creative talent for the innovation-driven economy as we recognise the importance of guiding graduates to improve their employment opportunity,” says Prof Mahendhiran.

The Malaysian Business Sentiment Survey 2018/2019 consisted of four phases. Phase 1 was a scoping and content analysis of information from press releases, media reports and commentaries from stakeholders. Phase 2 involved face-to-face and in-depth interviews with CEOs and senior managers.

Phase 3 was an online survey involving randomly selected CEOs and senior managers across a wide spectrum of industries, and Phase 4 was validating results with industry captains via roundtable discussions based on patterns in the data.

For more information about research at Monash University Malaysia, visit www.monash.edu.my/research
Media exposure

Interview on national radio - *The Adoption of Industry 4.0*

https://www.bfm.my/ent-tt-the-adoption-of-industry-4-prof-edwin-tan-chee-monash-university-malaysia
THANK YOU