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HP-NTU Digital Manufacturing Corporate Lab to develop talent and research

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Nanyang Technological University, HP, and the National Research Foundation launched the HP-NTU Digital Manufacturing Corporate Lab today. The Lab is Singapore's newest corporate research lab.

SGD 84 million has been set aside for Singapore's newest corporate research lab, the HP-NTU Corporate Innovation Lab. It was launched today by Nanyang Technological University (NTU), HP, and the National Research Foundation (NRF). In line with NTU's Smart Campus initiative, the Corporate Lab taps on the information technology giant's strong research and manufacturing capabilities.

Specialising in areas of digital manufacturing and 3D printing technologies, the Corporate Lab will also develop complementary technologies such as artificial intelligence and cyber security. The tripartite partnership will be important for Singapore's talent pool development, raising the quality of local academic research, and economic growth.

Further Studies

President of NTU, Professor Subra Suresh said 3D printing is changing the field of material science.

"If you look at the entire field of material science, which is one of the drivers of the Fourth Industrial Revolution, 3D Printing changes the concept of how material science is taught and practiced. So, to the students of today who are learning material science, this is not their father's or mother's or grandparent's material science. It's a completely different way of learning – it's digitised," explained Professor Suresh.

Fifteen new research projects have been launched to understand new materials and applications, artificial intelligence and machine learning, and cybersecurity.

Interesting examples are the use of advanced polymers for manufacturing applications and the development of bioprinting models for printing of viable tissues. Additionally, artificial intelligence and machine learning will be used to help printers autonomously predict and resolve issues. Under the cybersecurity field, research will be conducted on improving end-to-end point security infrastructure and malware mitigation.

In addition to these research projects, a new educational module on digital manufacturing will be rolled out. Partners will collaborate on developing educational curriculum which covers important topics for Industry 4.0. These include data management, security, user experience and business models.

Already, all 23 000 undergraduates at NTU are required to read modules on Digital Literacy. The additional modules to be rolled out will not only benefit the undergraduate population but also postgraduates and NTU alumni. SGD 1600 worth of module credit has been extended to alumni who wish to upskill and upgrade.

The next generation of manufacturing technologies will also be spurred. The Corporate Lab will be co-led by NTU professors and HP scientists. Over a hundred researchers, including postdoctoral fellows, research associates, and students will work together to develop new technologies, solutions and capabilities.

The information technology giant themselves will contribute seven of their latest Jet Fusion 3D Printers to the Lab. Using these, Professor Subra Suresh, said, "[R]esearchers and students [can] reimagine products, develop new materials, leverage new processes."

CEO and President of HP Inc., Dion Weisler said NTU was the preferred partner because of the pragmatic approach it had toward education. Traditional lecture styled classes are giving way to flip classrooms where students take charge of their own learning. E-learning platforms in the Lee Kong Chian School of Medicine for example are powered by data analytics and virtual reality. These complement and supplement teaching and learning pedagogies.

The synergy between the high calibre of students, researchers and the giant's own industry experts will undoubtedly explore new frontiers in digital manufacturing. As knowledge evolves, Weisler thinks the modules will too.

Good for Academia, Good for Business

Corporate laboratories play an integral part of Singapore's strategy. As manufacturing is a key industry which employs over half a million workers in Singapore, R&D partnerships between universities and corporations are critical to growth. The Corporate Lab will strengthen Singapore's position as a hub for innovative digital manufacturing R&D investments, as well as create new higher-value job opportunities.

CEO of the NRF, Professor Low Teck Seng said, "The HP-NTU Digital Manufacturing Corporate Laboratory is significant to our long-term competitiveness in the advanced manufacturing sector, and ensures that we stay relevant in the Fourth Industrial Revolution that is evolving and growing rapidly world-wide. It will also strengthen our capabilities to support multinational companies for expansion from Singapore into the region."

Within a four-year time frame, the partnership is expected to yield fifty filed Technical Disclosures, thirteen patents, thirty-six papers and support the creation of eight new products.