

HP-NTU Corporate Lab Showcases R&D Innovations; Announces Digital Manufacturing Skills Development



Researchers from global technology leader HP Inc. and Nanyang Technological University, Singapore (NTU Singapore) in the HP-NTU Digital Manufacturing Corporate Lab today showcased digital manufacturing technologies set to make manufacturing and supply chain operations more efficient, cost-effective and sustainable. Among them are intelligent design software tools that automate advanced customisation, as well as supply chain models that enable faster time to market while lowering carbon footprint.

The lab also unveiled a new skills development programme aimed at helping Singapore train and upskill its talents in additive manufacturing and digital design – from fundamentals of additive manufacturing and digital product designs to data management and automation, under the SkillsFuture programme.

With the intelligent design software tools being developed by the lab, engineers can customise and optimise their materials' mechanical properties more effectively. The automated tools let designers achieve designs that have the best combination of properties to achieve the desired strength, flexibility, and weight. Imagine a customised, lightweight 3D-printed plastic cast aimed at giving patients greater comfort and fit.

Another research project is the design and optimisation of end-to-end supply chain operations. Mass customisation requires state-of-the-art supply chain design for digital factories. With advanced business models and analytics to model supply chains, manufacturers will be able to decrease the time required to identify parts suitable for 3D printing production as well as to measure the impact on carbon footprint.

As a result, manufacturers will be able to scale production of customised goods quickly during periods of high demand, reduce time to market while improving sustainability at the same time.

These proofs-of-concept and technology demonstrations were showcased at the official opening of the HP-NTU Digital Manufacturing Corporate Lab today. The event was also part of HP's 50th Anniversary celebration of its presence in Singapore. HP started with a small assembly factory in Singapore in 1970. Today's HP's Singapore footprint includes its Greater Asia region headquarters, global supply chain control towers, print R&D centres of excellence, as well as manufacturing facilities.

The research partnership between NTU Singapore, HP Inc. and the National Research Foundation Singapore (NRF), was first announced in October 2018.

With its team of more than 60 scientists, researchers and engineers tackling some of the key challenges in the world of digital manufacturing, from 3D printing, cybersecurity and new applications to the impact of artificial intelligence and machine learning, the Corporate Lab is on track to developing key innovations in this space.

NTU Senior Vice President (Research) Professor Lam Khin Yong said, "The advanced technologies and automation solutions jointly developed by NTU and HP are expected to impact businesses in Singapore and beyond, as these innovations are geared towards efficiency, productivity and most importantly, sustainability. "Over the last year, we are able to see the first fruits of the collaboration, which combines NTU's deep capabilities in machine learning, data science, AI and additive manufacturing, with HP's expertise in innovation and technology solutions. Technologies developed at the Corporate Lab can then be test-bedded on the NTU Smart Campus, a microcosm of an urban city.

"The new SkillsFuture courses developed jointly with HP also bring valuable industrial perspectives to help upskill and train a critical talent pool for Singapore. This will support the country's drive towards becoming a smart

nation as it faces the challenges of the 4th Industrial Revolution.”

As HP’s first university laboratory collaboration in Asia and its largest university collaboration worldwide, the Corporate Lab will drive innovation, technology, skills and economic development critical for the advancement of the 4th Industrial Revolution.

“HP’s passion for innovation, together with NTU’s world-class research capabilities, allow us to achieve new breakthroughs and unlock new solutions for both business and society,” said Shane Wall, Chief Technology Officer and Head of HP Labs, HP Inc.

“Our joint work in 3D printing, AI, machine learning, security and sustainability will produce disruptive technologies that define the future of manufacturing. Working together, we can create the workforce of the future and ensure the 4th Industrial Revolution is also a sustainable revolution.”

A workforce equipped with new design, thinking and technical skills is critical to unleashing the potential of digital manufacturing.

At today’s event, six new SkillsFuture short courses related to 3D printing were also launched, to help Singapore train and upskill its talents in additive manufacturing and digital design.

The Corporate Lab aims to train some 120 working professionals per year through the new skills development programme, which includes the fundamentals of Additive Manufacturing, digital product designs, data management, automation, user experience and business models. The new short courses are payable with SkillsFuture credits and are open for registration.