

Fourier Intelligence Launches 3D Upper Limb Rehabilitation Robot, ArmMotus™ EMU

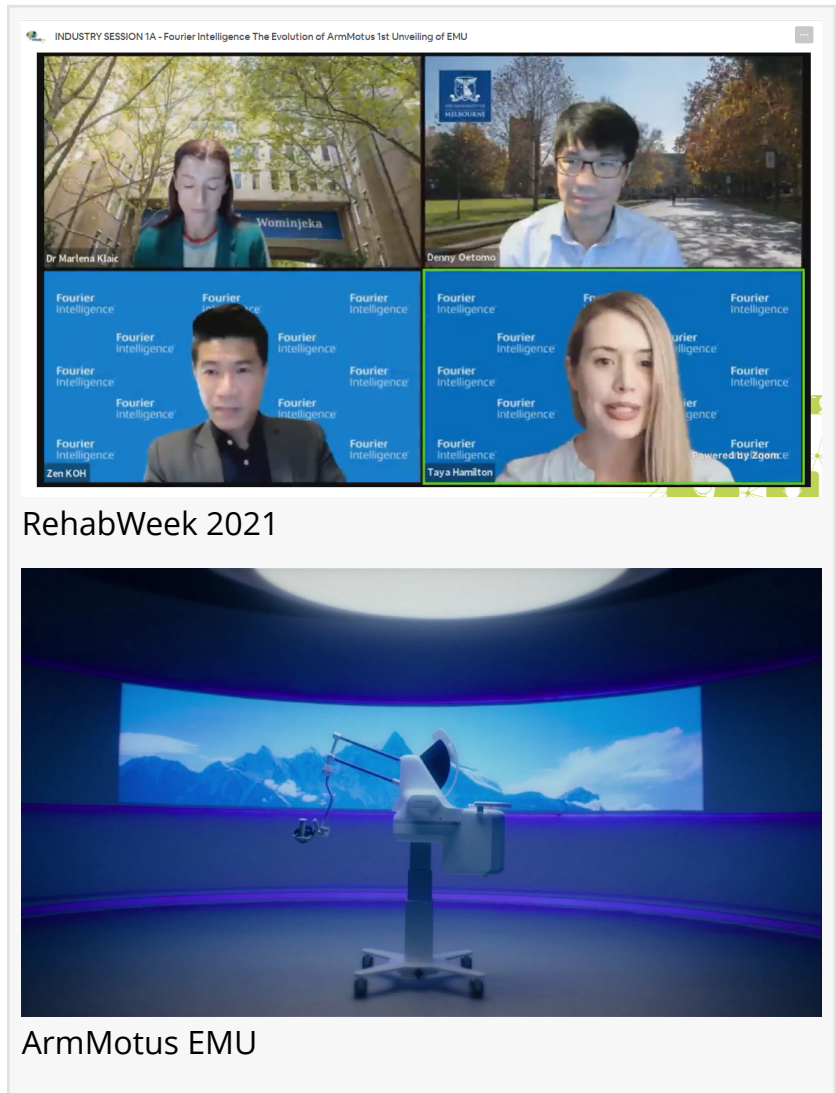
The ArmMotus™ EMU was officially unveiled and launched by Fourier Intelligence during the RehabWeek 2021

SINGAPORE, September 24, 2021 /EINPresswire.com/ -- Fourier Intelligence officially launched the new ArmMotus™ EMU during the [RehabWeek 2021](#) that was held virtually this year from September 23rd to 25th 2021. The launch was attended by clinicians, researchers, engineers, and other stakeholders in the rehabilitation technology field.

The ArmMotus™ EMU is the world's first 3D back-drivable upper limb rehabilitation robot, setting a new benchmark for intelligent rehabilitation devices. With it being a multifunctional, immersive, end-effector based 3D upper limb rehabilitation robot, the ArmMotus™ EMU brings a whole new experience of robotics rehabilitation therapy to the world.

The design of the ArmMotus™ EMU has redefined the human-machine interaction. It is the first of its kind that applies the end-effector based concept into the 3D movement, which makes it multifunctional and transparent. This transparency starts with a cable-driven mechanism, that combines with a 4-linkage structure, which perfectly reduces the friction and inertia during the movement of the system. This design also enables the control system to respond and execute more efficiently.

The ArmMotus™ EMU, which was jointly built by Fourier Intelligence and the University of



RehabWeek 2021

ArmMotus EMU

Melbourne Robotics Laboratory, was a project in the making for the past 2 years that was led by Professor Denny Oetomo. "The robot offers large workspace with very minimal resistance and reflected inertia of the robot on the patient. This would allow the patient to move freely", said Prof. Oetomo.

"Combined with the appropriate gravity compensation of the weight of the arm, patients with weak or little arm function, is able to carry out therapy without exertion.", said Prof. Oetomo.

Another key person to the success of the ArmMotus™ EMU, Dr Marlena Klaic, who is the translational research lead of the Royal Melbourne Hospital, gave some insights to why robotic rehabilitation is important. "There's a large and growing body of evidence suggesting that robotic devices can improve a patient's outcome, including function, strength and ADL".

"This evidence is growing even more rapidly in these pandemic times as more people are exploring digital and remote prevision therapies.", said Dr Marlena.

"We conducted a user-based design study where we build and modify the robot based on the feedback from clinicians. Based on our results, we found that clinicians believe that robotic devices can be helpful in their practice. Patients and junior therapists are more frequently asking for robotic devices as part of their therapy session.", said Dr Marlena.

Aside from exoskeleton and other one-dimension upper limb rehabilitation robots, EMU is based on terminal control and high technical content which is difficult to develop. It is China's first breakthrough in this field. EMU uses the industry-leading force feedback technology platform, which was independently developed by Fourier Intelligence, to simulate the force exerted by a therapist. EMU also provides a large 3D trajectory training space which allows rehabilitation movements to be more realistic and guides users to complete various complex rehabilitation training.

During the product video presentation, EMU can be seen to support dual upper limb cooperative and mirror training, which further enriches the rehabilitation training program. Product director of Fourier Intelligence, Daris Yang also explained the importance of having interactive rehabilitation programmes. "By equipping EMU with games such as table tennis, cooking, and fishing, this would simulate activities of daily living even more", said Yang. "The boring and repetitive training actions in traditional rehabilitation makes it boring for patients to train for a long time. Our EMU game settings have completely rewritten the rehabilitation scene".

Zen Koh, Co-Founder and Global Hub CEO of Fourier Intelligence, believes that the ArmMotus™ EMU is instrumental in changing the future of neurorehabilitation. "Current neurorehabilitation models primarily rely on extended hospital stays or regular therapy sessions which require close physical interactions between rehab professionals and patients. The ongoing COVID-19 pandemic situation has challenged this model and as a result, many neurological patients are not receiving sufficient therapy. There is an urgent need to rethink conventional

neurorehabilitation therapy.”

“The new ArmMotus™ EMU provides that solution. The EMU, equipped with clinical intelligence, provides personalised therapy, technology-based solutions, coaching capabilities and remote monitoring.”, said Zen Koh. “The implementation of fun functional games with embedded artificial intelligence also provides clinically motivating therapy to patients as well as giving caregivers and healthcare practitioners confidence”.

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