

Tiny robots turn heads in Las Vegas

Origami-inspired robots developed by EPFL/NCCR Robotics spin-off Foldaway Haptics were the center of attention at the Consumer Electronics Show in Las Vegas. The 33 “bionic flaps,” installed on a concept car, move in response to the driver’s decisions and interact with the public.

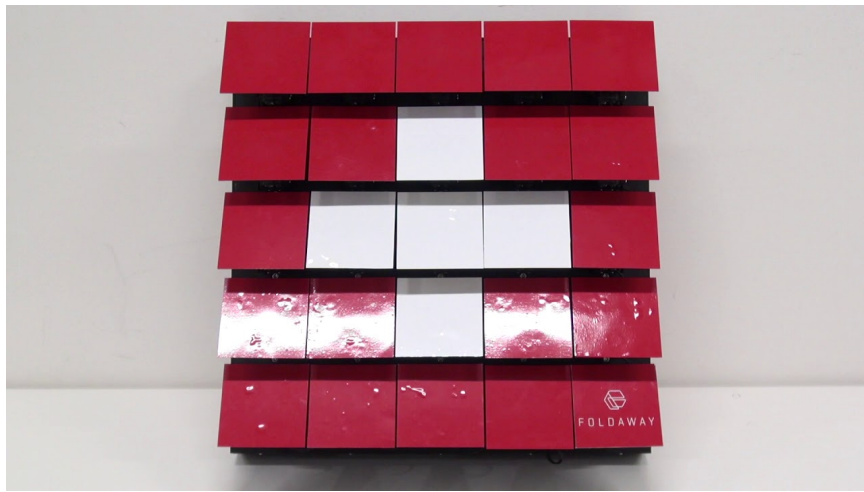


Las Vegas may be no stranger to extravagance, but a Mercedes-Benz concept car fitted with tiny robots developed by EPFL/NCCR Robotics spin-off Foldaway Haptics still managed to turn heads. The remarkable vehicle, dubbed VISION AVTR and inspired by the film Avatar, is designed to showcase the interaction between humans, technology and nature. It features bodywork parts that move as the driver signals, accelerates, brakes and performs other operations. The car was unveiled for the first time at the Consumer Electronics Show (CES) 2020, the world’s largest consumer tech show, which opened on 7 January.

The origami-inspired robot, which folds and unfolds in an instant, can perform multiple movements in next to no time. Designers at Mercedes-Benz were impressed by its maneuverability and ease of installation. The ultralight device goes from flat – less than two millimeters thick – to a three-dimensional moving plate in a fraction of a second. The eye-catching design adds to the effect.

But the tiny robot’s leading feature is the way it is manufactured, through a combination of thin layers of composite materials, each cut to exactly the right size, that make it particularly stable and solid. This layer-by-layer process means that the system can be configured to different sizes. What’s more, there are no restrictions on the shape or design of the topmost, visible layer, allowing for boundless creativity.

A repurposed tactile joystick



The robot is a new version of a fold-up tactile joystick that Foldaway Haptics, supported by the NCCR Robotics spin-fund, began developing in 2017, drawing on research conducted at EPFL's Reconfigurable Robotics Lab (RRL). The joystick's force feedback function brings a sense of touch to mobile devices. "With force feedback, you can feel the texture of an item of clothing before you buy it online, or feel how much an object weighs when you're playing a video game," says Marco Salerno, who co-founded Foldaway Haptics with Stefano Mintchev. Mercedes-Benz reached out to the two entrepreneurs last spring, asking them to develop a version for a new concept car. They quickly accepted the challenge, repurposing the little fold-up joystick and stripping it of its haptic function. Salerno and Mintchev then headed to Mercedes-Benz's head office in Germany, where they ran a series of tests and explained the ins and outs of their technology to the firm's engineers.

The new robots – the result of several months of design and development work – also have applications in advertising and other visual media, where they can create moving images for branding or color effects.

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NCCR Robotics

The Swiss National Center of Competence in Robotics (NCCR Robotics) is a federally funded programme bringing together robotics laboratories from EPFL, ETH Zurich, University of Zurich, IDSIA and UNIBE and EMPA to work on wearable, rescue and educational robots.

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