HAPTICS

Uncrewed ground vehicles get touchy-feely

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The successful operation of uncrewed ground vehicles (UGVs) requires the remote operator to possess a clear sense of the environment and the state of the robot. Typically, the state of the UGV and its surroundings are probed using only visual and audio channels. However, audio and visual information may not be sufficient in unstructured or dynamic environments. Rute Luz and colleagues have now augmented a UGV with haptic feedback that provides the operator with a greater awareness of the traction state of the UGV.

The researchers — who are based at the Instituto Superior Técnico, Instituto Universitário de Lisboa and the University of Lille — employed a multimodal haptic

tablet called E-Vita in their UGV control system. The tablet can be used to control the robot and, by transmitting different textures to the tablet display, allows the operator to sense its traction state. In the UGV's normal state the haptic tablet exhibits no friction, in a stuck state the texture of the haptic surface becomes rough, and in a sliding state the texture becomes ridge-like. In user studies, Luz and colleagues found that their haptic feedback approach reduced the time the UGV exists in a state with lost traction.

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