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Sensory gloves lighten the load of everyday work in logistics

BMBF SensHand project completed

In spite of advances in automation, many items in warehouses are moved still by hand. Even for lightweight stock of fewer than 12 kilograms, the physical strain on warehouse operatives gives rise to health problems such as back pain. As part of the SensHand project sponsored by the German Federal Ministry for Education and Research (BMBF), the German Institutes of Textile and Fiber Research Denkendorf (DITF), as well as their research partners, have developed a sensory glove that supports warehouse operatives when they are lifting loads.

Lifting aids are already being used in logistics today. They are however not readily used by employees since they function more slowly than people do, can only be used for items of specific shapes, and are difficult to operate.

Internal freight transportation, in particular, features a range of different packages such as boxes, bags, and bins. They vary significantly concerning weight, feel, and volume. Since it is time-consuming to select and operate a dedicated lifting aid for each shape of the item, warehouse personnel prefer to handle lighter items manually. While staff can take hold of the stock of any form by hand immediately, they nevertheless accept health consequences in doing so.

As part of the SensHand research project, a sensory glove was developed that warehouse operatives can use during loading to intuitively control a derrick. The hand's benefits as a multifaceted and flexible gripping tool remain, but the physical strain of the work is reduced significantly. The warehouse operative wears the sensory glove like a regular work glove. As

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the user loads the items, the glove's pressure and bend sensors register the stress and direct the system crane from these measurements. For more larger boxes, the crane provides more lifting support than for a lighter box. Since the derrick's software is controlled automatically via the sensors in the glove's fingers, the warehouse operative does not need to operate the lifting aid as well but can grasp items with both hands.



Moving heavy loads without physical strain using SensHand. Photo: DITF

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