

Design of electroadhesion pad for improving grasping friction of soft robotic glove

Abstract

A soft wearable robotic glove was developed to provide grasping assistance to patients with neuromuscular impairment. Sufficient friction forces is required in grasping objects as lack of friction between the glove and the surface of the object will result in slippage. In this paper, the application of electroadhesion in order to increase the frictional force for wearable robotic gloves is presented. The characteristics of the proposed electroadhesion pad is lightweight, thin, and easy to be operated by the patients. The work involves designing and fabricating soft electroadhesive pad and embedding them to the robotic glove. The electroadhesion pad was supplied with voltage lower than 400V for safety purposes. Experimental results verified that the proposed design of electroadhesion pad can increase the friction force when grasping various objects. Experimental results shows that the higher the contact area of electroadhesion applied, the higher the resulted frictional forces. Moreover, it can be noted that higher contact area of electroadhesion requires a higher voltage input to produce electroadhesive force.