

Science and Engineering Research Program 2020 Project Proposal

Hochschulbüro für
Internationales /
International Office

Uta Knoche/ Kristina Schmidt

Tel +49 511 762 2549
Fax
Uta.knoche@zuv.
uni-hannover.de

Kristina.Schmidt@zuv.uni-
hannover.de

institute: Institute of Assembly Technology (match)

project title: Design and characterization of a jamming based
soft robot

project description: Soft material robotics relies on compliant and soft components such as silicones and plastics. Soft and compliant robots could work side by side with humans, for example in assembly. The stiffness of the new robot structures lies in the order of that of human tissue. Their compliance leads to increased safety in contact with humans. This significantly reduces the risk of injury in the interaction between human and robot. In addition to human-robot collaboration, other potential fields of application are shape invariant gripping, medical technology or exploratory robotics.

One field in soft robotics is concerned with variable stiffness actuators. These actuators are soft when moving through space but can increase their stiffness when needed. For example to apply force for grasping or withstand external loads. Granular or layer jamming are two of these variable stiffness approaches.

In this project we aim at a trunk like manipulator that is able to "swing" into a certain configuration and then rapidly change stiffness to stay in this configuration. Interns will be working on the design and the characterization of a (granular) jamming based soft actuator.

required skills: Applicants should enjoy doing research and become acquainted with new tasks. Experience in working with MATLAB, Abaqus and Solid-Works is helpful but not explicitly required.

contact/ supervisor: Mats Wiese, wiese@match.uni-hannover.de



Leibniz
Universität
Hannover