

## Part One. Individual Abstract

The robotic gripper is a very popular and promising option to carry out different industrial tasks like object retrieving, transporting and assembly. Weight, shape, roughness and compliance of the object play important roles to affect the gripper performance. Currently, the soft gripper are new possibilities for drug delivery, remote surgery, and greatly enhanced the performance in wrapping, flexibility and grasping strength by curlable fingers. However, with the increasing weight and size of object, their reliability and performance descend significantly. In addition, the singularity of specification hinders them from fulfilling demands in the underwater environment. In this project, we propose a customized gecko-adhesion starfish-based soft gripper that will be able to operate underwater, sense the property of the object surface and pick them up with better adhesion force and less energy. Then we present software and hardware integration details for the gripper units. Finally, we present comparison of performance between conventional soft gripper and gecko-adhesive gripper with newly add-in features in the underwater environment. Such a device, we believe, would encourage the wider application of soft gripper to fulfill more variety of demands under harsher environment.

## Part Two. Individual Contribution

My contribution will be control and path planning. For example, how our gripper approach the object and how it grip the object with minimum error.