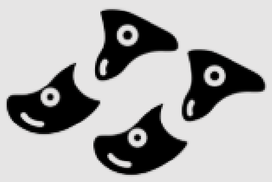
The AnnieThing

An anemone-inspired gripping device to grasp irregular shaped objects

1) Problem & Context



What?

Handling heavy and irregular boulder-holds at height

Who?

Route-setters in boulder halls

Why?

Route-setting is unsafe and time-consuming

2) First concepts

Plan A

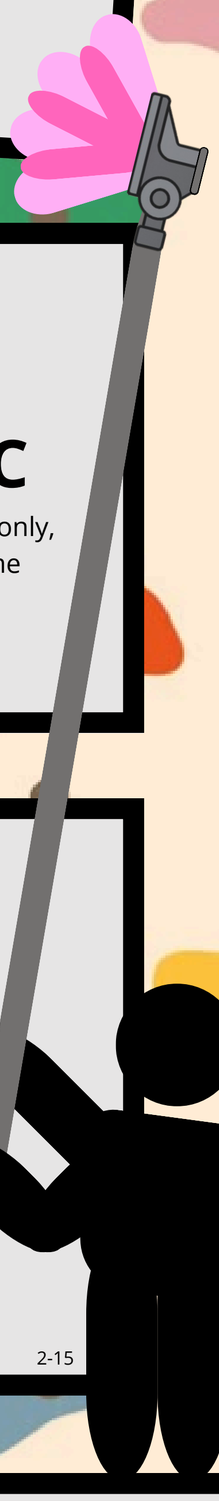
Wall climbing robot with gripping device

Plan B

Pole mounted gripping device

Plan C

Gripping device only, if short on time

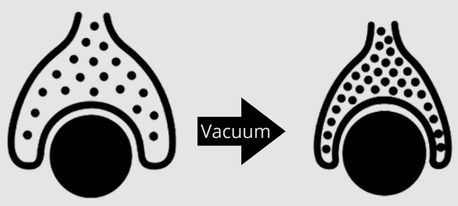


3) Bioinspiration & technical concept

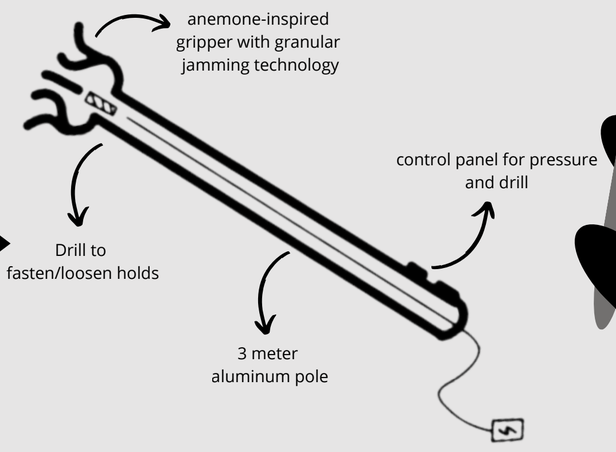
Sea-anemone (*Actiniaria*)

Many tentacles allows grip on irregular objects

Granular jamming inspired by hydrostatic skeleton



Biomimetic design



4) Design Evolution and timeline

September

Start of project

First project concept:
Wall climbing Robot

Biomimicry Inspiration:
Anemone gripping techniques

Granular jamming:
Discovered a gripping technique akin to anemones

Review Focus:
Focus on gripping device, robot is secondary

Testing and Designing:
Creating and testing various shapes, molds and membranes.

Future steps

Currently:
Developing gripper system

Coming Days:
Pouring silicone molds to create custom membranes

Coming weeks:
Designing and creating a pole and conduct gripping tests

Coming Months:
Assembling final product with drill device and testing capabilities

January:
Final touches and improvements

5) Candidate stakeholders

Boulder halls and any situation where gripping of irregular objects is required

BE BOULDER

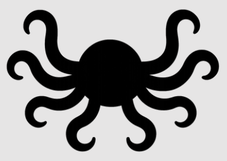
USC

ACASA
AMSTERDAM CENTRE FOR ANCIENT STUDIES & ARCHAEOLOGY

BEEST BOULDERS

NSAC

6) Current challenges

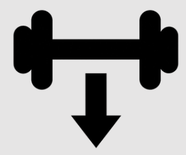


Membrane

Strong but flexible while thin enough to conform to any shape

Handle

Usable at multiple heights whilst withstanding torque



Low Weight

While containing heavy components like drill and vacuum pump

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