



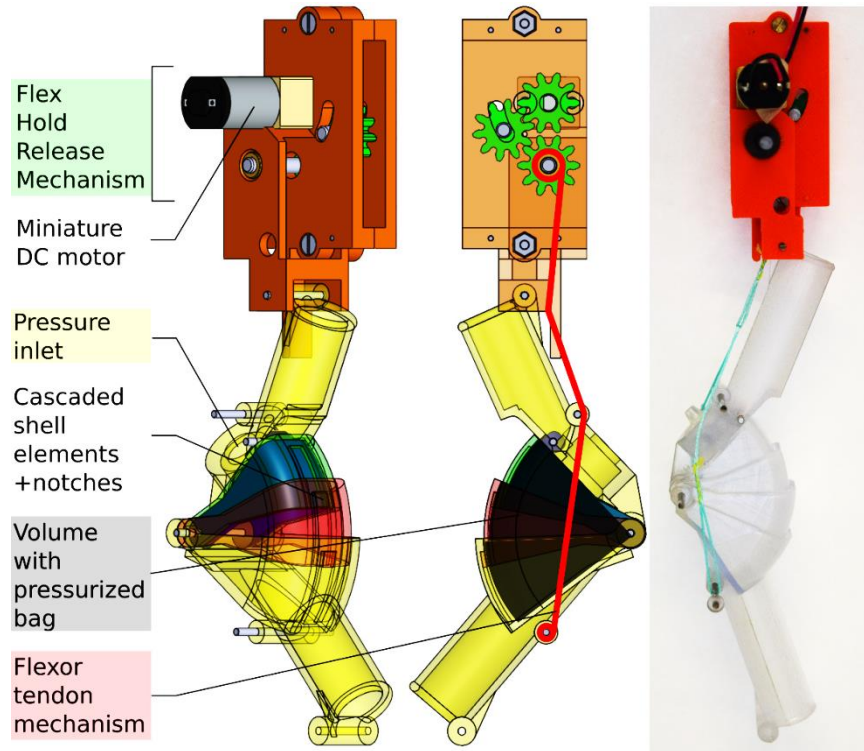
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P O R T F O L I O

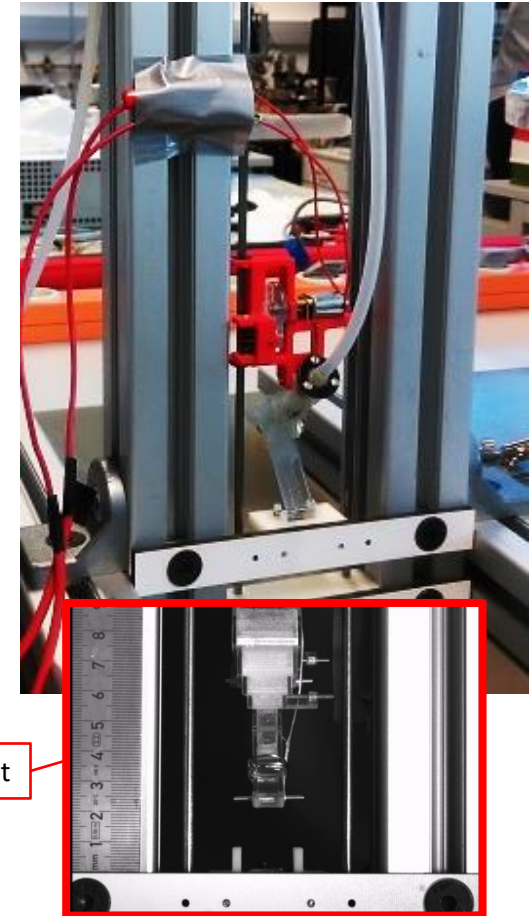
Spider Inspired Robotic Joint

ICRA 2017 Published Conference Paper

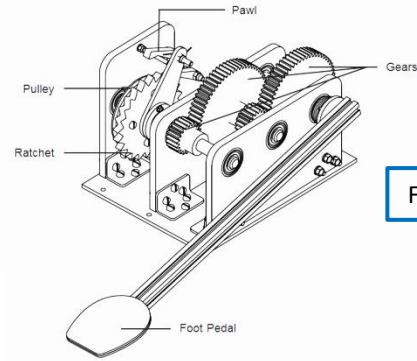


*Designed spider inspired pneumatic and cable driven robotic joint actuator
Fabricated it using 3D printing, laser cutting and rubber molding
Built two experiments for its characterization under static and dynamic conditions*

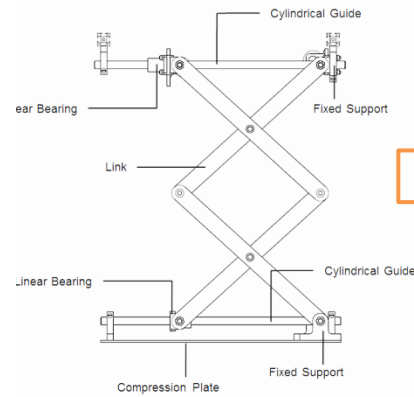
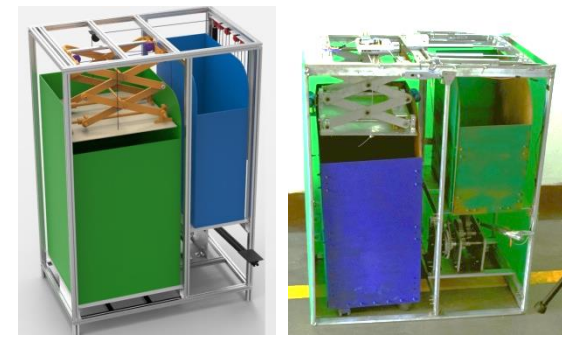
Testing Apparatus



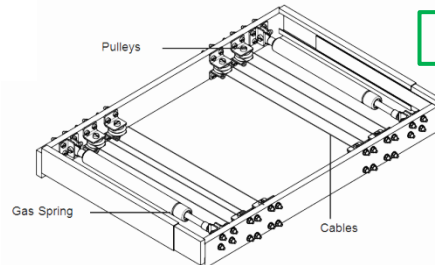
SqueezeBin



Force Input Unit

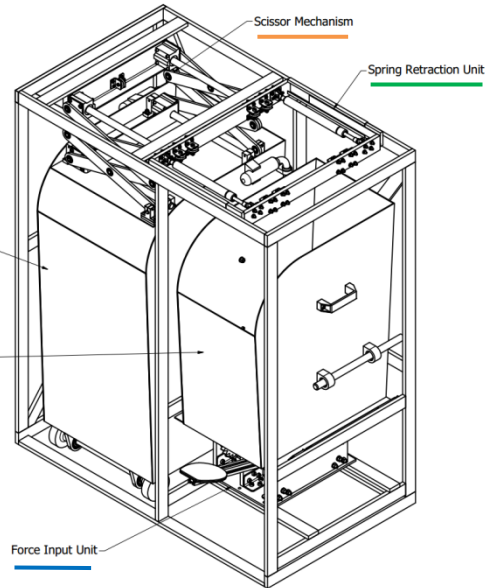


Scissor Mechanism



Spring Retraction Unit

A trash-can capable of reducing regular municipal, residential and commercial garbage to less than one-third of its volume. Designed to be inexpensive and robust for use in Indian public spots
Awarded best Senior-year project



Robocon 2015: Robominton

BADMINTON PLAYING ROBOTS

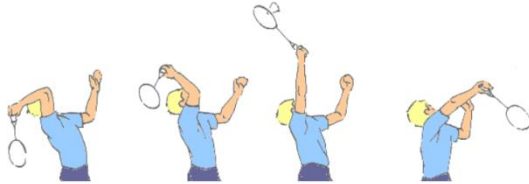


Built two robots to play badminton doubles game on an actual-size court against robots from other universities in a knock-out tournament

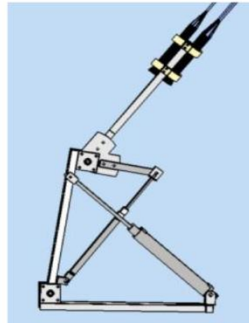
Role: Senior Member/ Mechanical Lead (Racket actuation and Chassis Drive)

Designed and fabricated racket actuation mechanisms mimicking real badminton strokes used by human players during a match

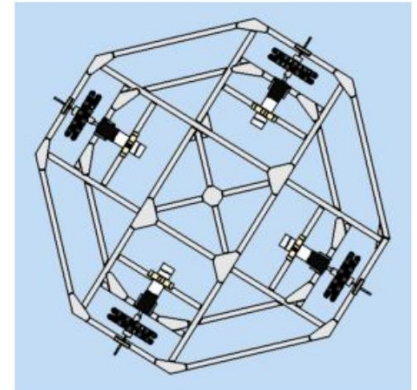
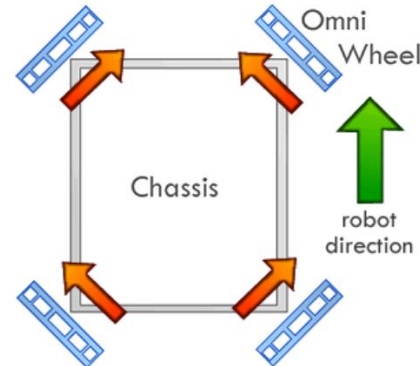
Devised holonomic drive mechanism for enhanced mobility of robots



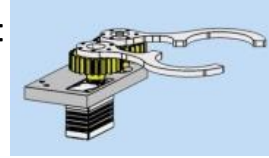
Power Hitting Unit



Holonomic Drive



Shuttle Dropper



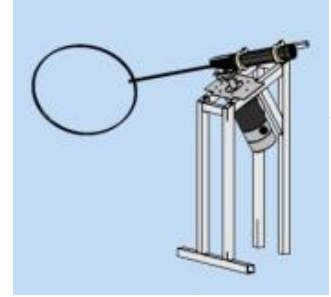
Over-arm Stroke



Under-arm stroke



Service Mechanism

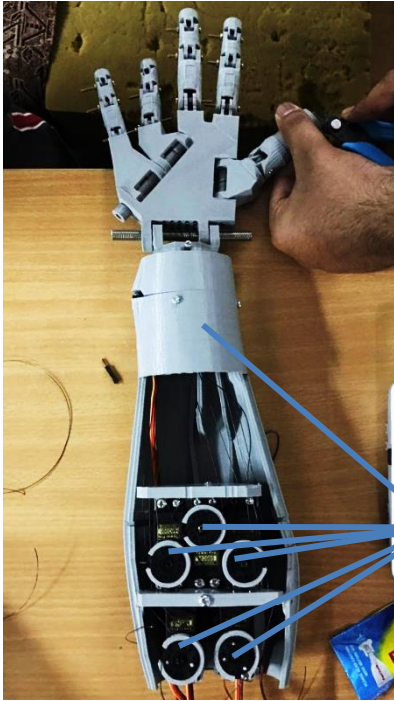


Assembled Robot

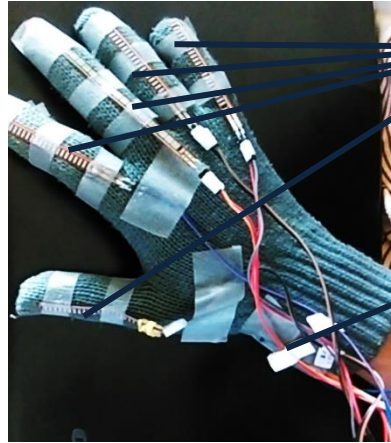




Tele-Operated Mimicking Robot Arm



Robot Arm (Slave)

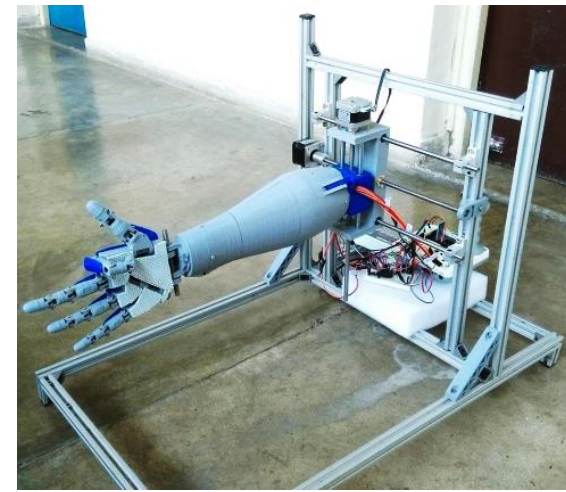


Controller Glove (Master)

Flex Sensors

IMU

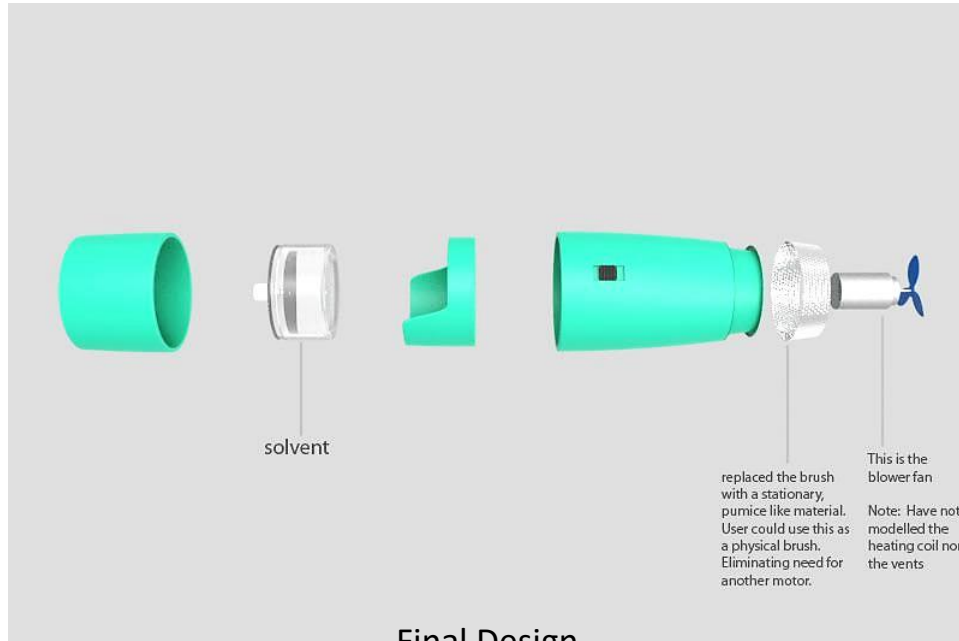
Servo Motors



Recorded user arm movement using a glove equipped with IMU and flex sensors and converted sensor readings to appropriate motion commands for the bionic arm actuated using servo motors



CLEANEASY
PORTABLE DRY CLEANER



Final Design



Initial Design

Miniaturized dry cleaning equipment and built hand-held device capable of removing small stains from clothing
Prototyped using 3D printing and using commercial off-the-shelf components
Finalist in 'Pitch your Product' at Entrepreneurship Summit IITK 2016

