Chassis Design for a Modular, Low-Cost 6-Legged Robot Platform for Dynamics and Control Experiments (FastAnt).

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Introduction

FastAnt is a dynamically running robot that takes inspiration from the RHex [1] and is within the BigAnt family that will integrate a spring steel leg design

Inspiration





The BigAnt robot is a hexapedal robot with 1-DoF leg that can perform many kinds of gaits and travel on outdoor uneven terrain despite its low fabrication cost.

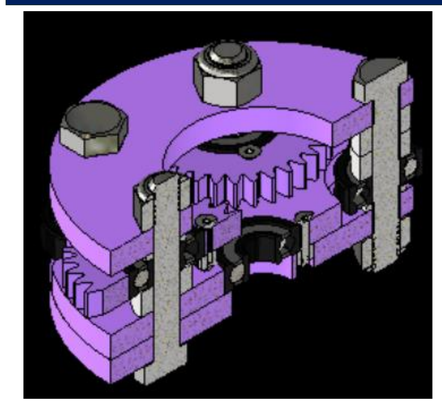
Another member of the hexapod family of robot platforms is the power autonomous legged vehicle, RHex. This robot is a power autonomous, compliant-legged robot that has six actuators, one located at each hip. This vehicle was designed by Uluc Saranli, Martin Buehler, and Daniel Koditschek at the University of Michigan in 2001.

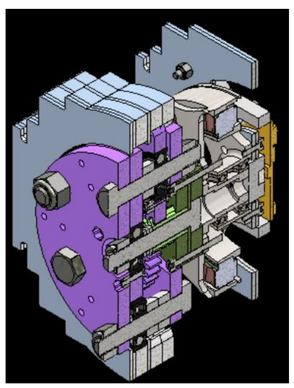
Introduction

The FastAnt is manufactured from foam core, laser cut ABS, aluminum strips, and tape that handle loads applied to it. This design minimizes the number of materials necessary to assemble the chassis

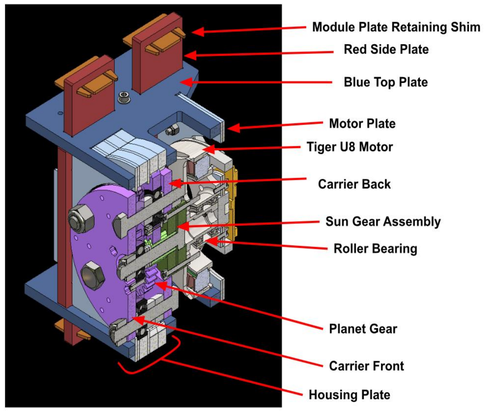
Modular design that would allow for easy access to drivetrain modules

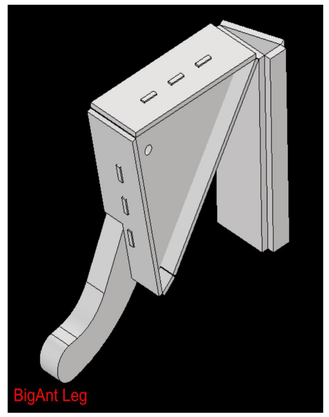
Drivetrain Module v2.4



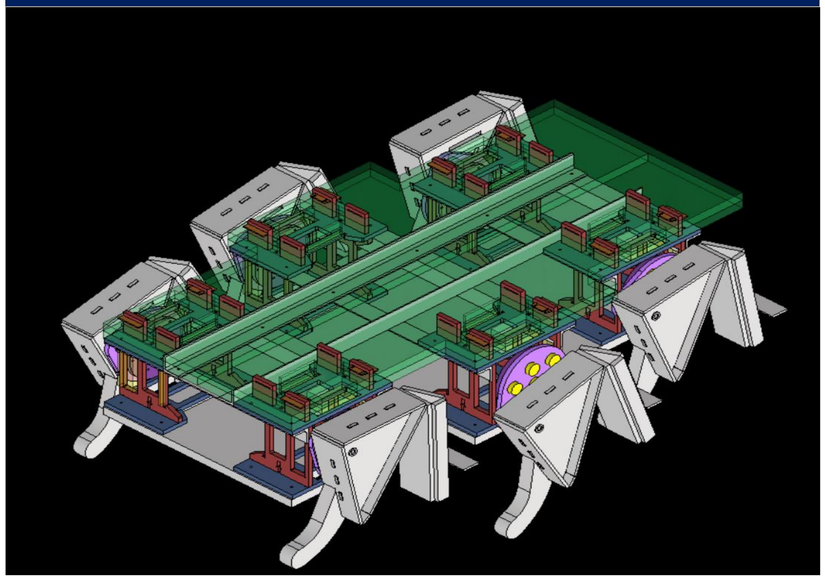


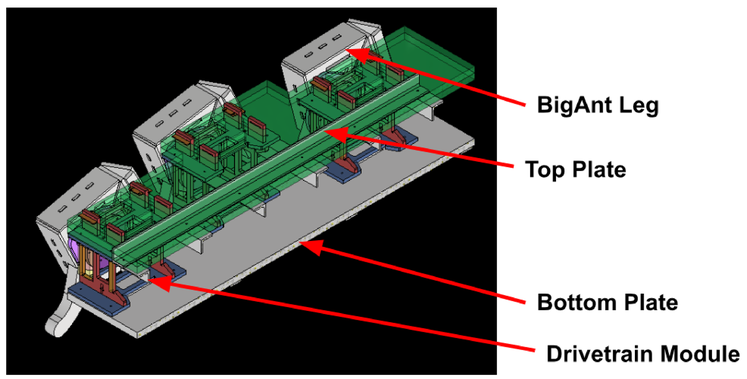
Integrated Components





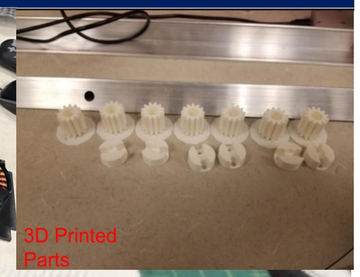
FastAnt Chassis v1.0

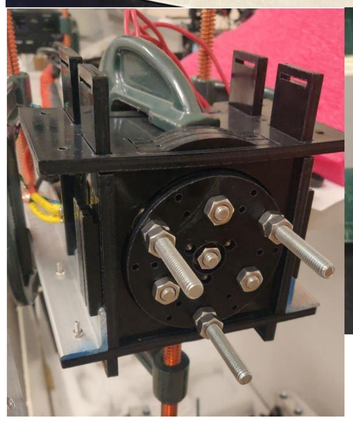




Manufactured Component









The parts are primarily manufactured either by the use of a laser cutter or by 3D printing

Future Steps

- A spring steel leg will be integrated onto the FastAnt
- Variations of FastAnt will be created to explore different topics similar to the BigAnt variations

Acknowledgements

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References

[1] Saranli, Uluc ; Buehler, Martin ; Koditschek, Daniel E., “RHex: A Simple and Highly Mobile Hexapod Robot,” *The International journal of robotics research*, vol. 20, no. 7. London: SAGE Publications, pp. 616–631, 2001.