

Bachelor's Thesis, Term Project

Four Legged Robot: Control, Design and Fabrication

Supervisor (s): (Assist. Prof. Dr. Eng. Amir Roushdy) and (Prof. Dr. Eng. Imam Morgan)

Design, development, and motion planning of a mobile robot are now being investigated as study areas in the field of robotics. Mobile robots offer a wide range of applications in domains such as space exploration, military applications, industrial applications, and many more. The survey in this work focuses on design and development control methodologies for the quadrupedal robot, as well as environment sensing techniques. **There is a Master's student from Mechatronics engineering Department and the Lab Engineer from ARATRONICS, guiding and directing the student with Assist. Prof. Dr. Eng. Amir Roushdy and Prof. Dr. Eng. Imam Morgan**

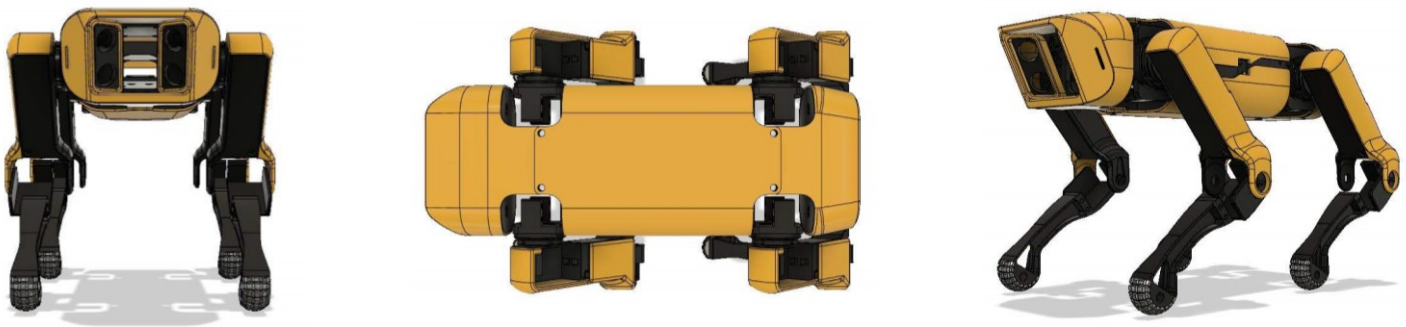
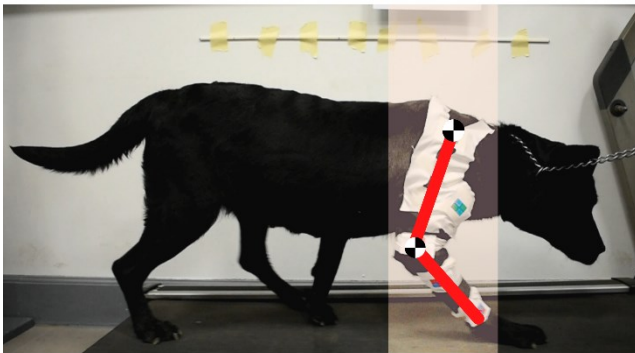


Fig.: Four Legged Robot (front view, top view and isometric view)



Project description and objective:

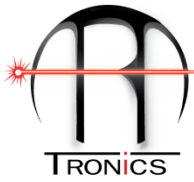
The mechanical, electrical, and control systems of a four-legged robot will be created in this thesis. To grasp the basics of legged robot designs, a literature review of the present state of the art legged robot should be conducted first.

Research focus of this project:

- Literature review on the project should be studied properly.
- Not only, creating a software control system for the project but also the hardware.
- Experiments using the gadget and control system should be built properly.
- The outcomes must be documented.

For more details please contact:

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Requirements:

- Passionate to learn more about robotics, automation and control.
- Prior mechatronic design expertise is desired like “SolidWork”.
- Enthusiasm for completing actual practical work with 3D printing staff (design fabrication and construction).
- A method of working that is both structured and self-contained.

General tasks of the project:

- The complete design for the robot is already exist in the ARATRONICS lab **and we had Master student how did the design and part of the control since several years ago** and the ARATRONICS Lab Engineer will hand it to you from the first day.
- ARATRONICS will support you with the CAD robot design on Solidwork. You, will adjust some parts on the design to fit with the motors and actuators in the local market.
- Fabricate the robot using 3D printer.
- Assembly all parts of the robot.
- Motion control study for the robot.

Other notes:

- A weekly meeting with the advisors will be required for this project, as well as weekly progress updates (*The meeting could be more than once during the week based on your progress and based on your achievements*).
- You should to be in the Lab two days per week (*It could be more than two days based on your progress and based on your achievements*).
- All reports must be prepared in the style of a research paper.
- The outcome of this research will be published in one of the coming international Conferences and , or Journal