Legged Locomotion Consultant - Request for Quote

Context and aims

An ARIA funded opportunity seed project 'Linkage-leg Principles for 'Better Than Wheels' Functionality' at The Royal Veterinary College (RVC) has bio-inspired leg designs which are predicted to be more efficient than current robot legs. ARIA is seeking to demonstrate in simulation that the legs are indeed more efficient than the current state of the art, quantify the benefit, and understand any trade-offs or limitations.
More broadly, we may have future requests regarding legged locomotion.

Proposed work plan for initial project

(subject to development after discussions with RVC and ARIA)

- Work with the project lead, Jim Usherwood, to understand his "linkage-legs" designs.
- In a suitable simulation environment, implement a model of one or more existing commercial quadruped robots, e.g. Anybotics' Anymal and/or Boston Dynamics' Spot.
- In the same simulator, design a quadruped robot using Jim Usherwood's leg designs, which is otherwise as similar as possible to a commercial comparator in size, mass, actuators etc.
- Use reinforcement learning to train all models to locomote:
    - At a range of target speeds
    - Over a range of surfaces, including uneven ones or ones with obstacles
    - With a reward function that promotes energy efficiency
- Compare the performance of the different quadrupeds on the following metrics:
    - Robustness (not falling over)
    - Speed (for a range of target speeds)
    - Efficiency (power consumption)
    - Performance on varied terrain (steps, uneven ground, rubble, etc.)
    - Performance under varied load carrying scenarios
- Prepare a report documenting the above, including videos, in whatever format is most appropriate (e.g. Jupyter notebook)
- Liaise with ARIA / Jim Usherwood as required throughout the duration of the project.

The consultant should use their expertise to propose any modifications to this work plan that they think will improve the value of the work. We will expect the consultant to meet with Jim Usherwood immediately on starting, and let ARIA know of any modifications to the above plan.

We anticipate this work to take around 3 months total. Requiring around 1 month to set up the basic simulations, 1 month to train the models with a variety of reward functions and environments, and 1 month to write the report. More rapid completion would be beneficial.

IP

ARIA will have ownership of all IP created by the consultant. The Royal Veterinary College retains ownership of all IP related to the linkage-leg designs. To protect this, the consultant will need to sign an NDA with the RVC before seeing Jim's designs. All code will be made available to ARIA and to Jim Usherwood/RVC.

Possible future work

The consultant may be engaged for future work in two key areas, subject to programme needs and direction:

- **Legged Locomotion Simulation Support:** Providing simulation expertise and support to other Smarter Robot Bodies seed projects focused on legged locomotion.
- **Novel Actuator Modeling and Simulation:** Developing efficient, low-runtime computational models for novel actuators in the Robot Dexterity programme. This includes simulating robots incorporating these new actuators to assess and evaluate their performance.

Applicants should submit a maximum 1-page proposal covering:

- Approach: How you would deliver the initial work package, including the choice of simulation environment, use of reinforcement learning, and how performance would be evaluated. Suggestions to improve the indicative work plan are welcome.
- Deliverables: A brief description of expected outputs (e.g. models, results, report format).
- Timeline and Effort: An estimate of the number of days required and any opportunities to accelerate delivery.
- Relevant Experience: Summary of experience in legged locomotion, simulation, and reinforcement learning.
- Commercial Details: Proposed day rate and confirmation of ability to work on a time-and-materials basis, including willingness to sign an NDA and assign IP to ARIA.

Please submit your proposal here, by 23rd Feb 2026 14:00 GMT.