Name: Darcy , Byrne

Project Title: Walking Gaits for the NUgus Platform

Supervisor: Dr Joel Ferguson

Project description: Develop walking algorithms for use on the NUgus platform and developing an interface to run open-loop trajectories from MatLab on the NUgus platform.

Description details:

NUbots are trying to develop a reliable gait for the NUgus Platform. Despite prior work and hardware changes to the NUgus platform, there is still no reliable walking gait. Additionally, there is no solution to run open-loop trajectories from MatLab on the NUgus hardware, which makes developing and deploying a walking gait a slow process.
I will be working on two Kinematic Models, a 2D biped and a 3D biped, to develop walking gait solutions using MatLab. Subsequently I will develop an interface to run open-loop trajectories from MatLab in Gazebo and on the NUgus platform.
Beginning with a thorough revision of kinematics and vector calculus, I will build the models, and included overlooked features such as the toe and heel. Once built I will start with Quasi-Static Locomotion before exploring Zero-Moment Point (ZMP) dynamic walking.
This work will provide NUbots with a reliable walking gait and an interface to accelerate its implementation on the platform.