**DGMD S-14 Wearable Devices and Computer Vision**

**Project Proposal**

1. **Team Name**

Walking Stride Classification

**2. Team Members and Roles**

Edgardo Rafael Hernandez

Martin Stack

(We are a small team and we will divide all tasks evenly)

**3. Goal of the Project**

Is intuitive to all of us that having a correct gait is very important.

A small problem in the feet, might change the way a person walks. Even subtle changes in the stride, can cause a chain reaction of adjustments of posture, and walking mechanics. These changes can put stress on the leg muscles, and body joints. Long walks and running, with a faulty stride, increase the risk of developing complications which may lead to more serious problems. That is why gait analysis is very important.

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Gait analysis is the assessment of the way a person walks. Usually it is done, using video analysis, by a highly skilled specialist who does the interpretation. Beside the observation analysis, the commonly used tool is pressure plate analysis. Which provides an idea of how the weight is distributed on the feet soles.

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While the analysis of the stride is a dynamic problem. Current method of diagnosis is not based on movement, it is mainly observational by an expert, and mostly based on weight distribution on a sensing surface.

Using the ST SensorTile fixed to the shoe, we propose that you can detect whether or not your stride is pronating or supinating. The main set of the sensors that we will use for this project are the gyro, the accelerometer, and the compass.

**4. Software and Developing tools**

1. **GitHub repository**

[Walking-Stride-Classification](https://github.com/rafah1/Walking-Stride-Classification)

(<https://github.com/rafah1/Walking-Stride-Classification>)

1. **Development tools**

IDE: STM32CubeIDE

Languages: Python 3.6, C/C++

1. **Other tools**

Google Docs

Google Collaboratory

Edge Impulse

**5. Hardware**

Mac PowerBook Pro

iPhone or Android Device

1 or 2 ST SensorTile Kit

ST Nucleo-64

**6. Team Meeting Schedule**

2-3 Times/week, on Mon, Wed, Sat

**7. List of Milestones, week by week**

Week 1:

* Environment set up
* Preliminary Data Collection
* Data Analysis, Final Architecture, and Model Determination

Week 2:

* Data Gathering and Data Wrangling
* Model Training
* Model Deployment
* Prepare presentation

**8. Other comments**