RECOGNITION OF POSTURES AND FOG ON PARKINSON'S DISEASE PATIENTS USING MICROSOFT KINECT SENSOR

Amin Amini Maghsoud Bigy

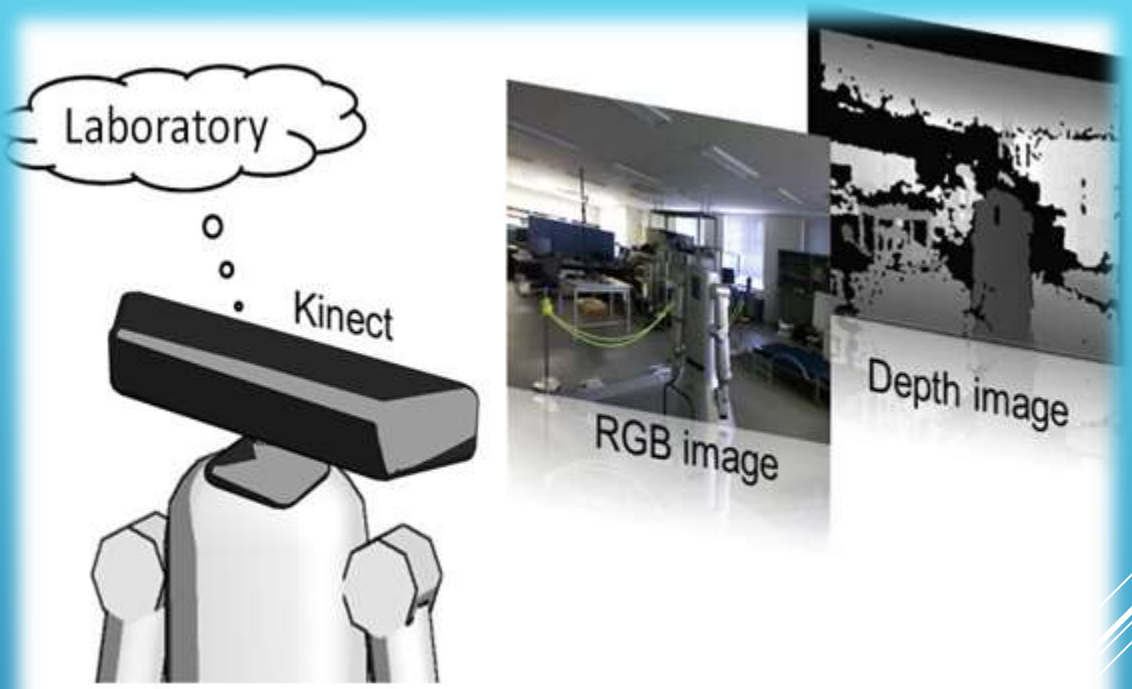
Supervisor: Dr. Konstantinos Banitsas

AIMS AND OBJECTIVES

- To Be Able to Detect Parkinson's Disease Symptoms
- To Help Improving Patients' Mobility Using Visual Cues

PARKINSON'S DISEASE (PD) SYMPTOMS

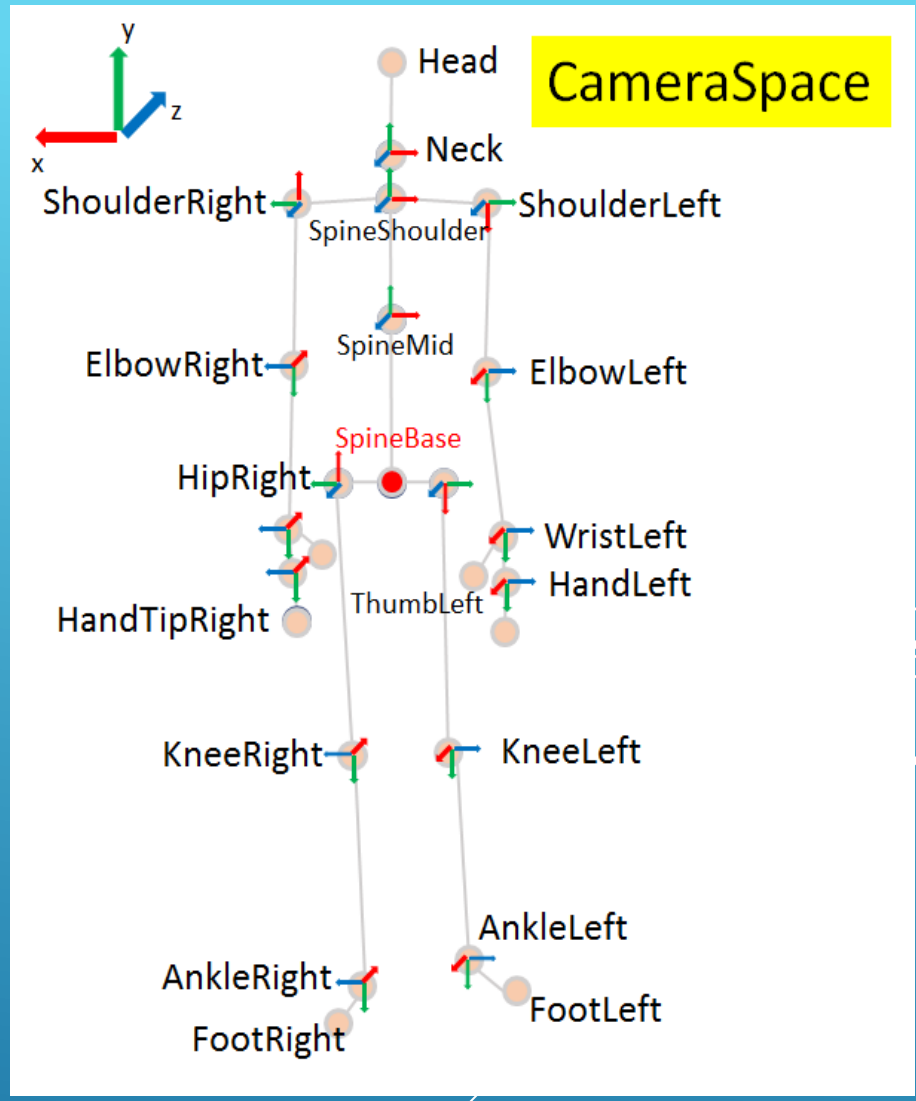
- Freezing of Gait
- Falls
- Tremor

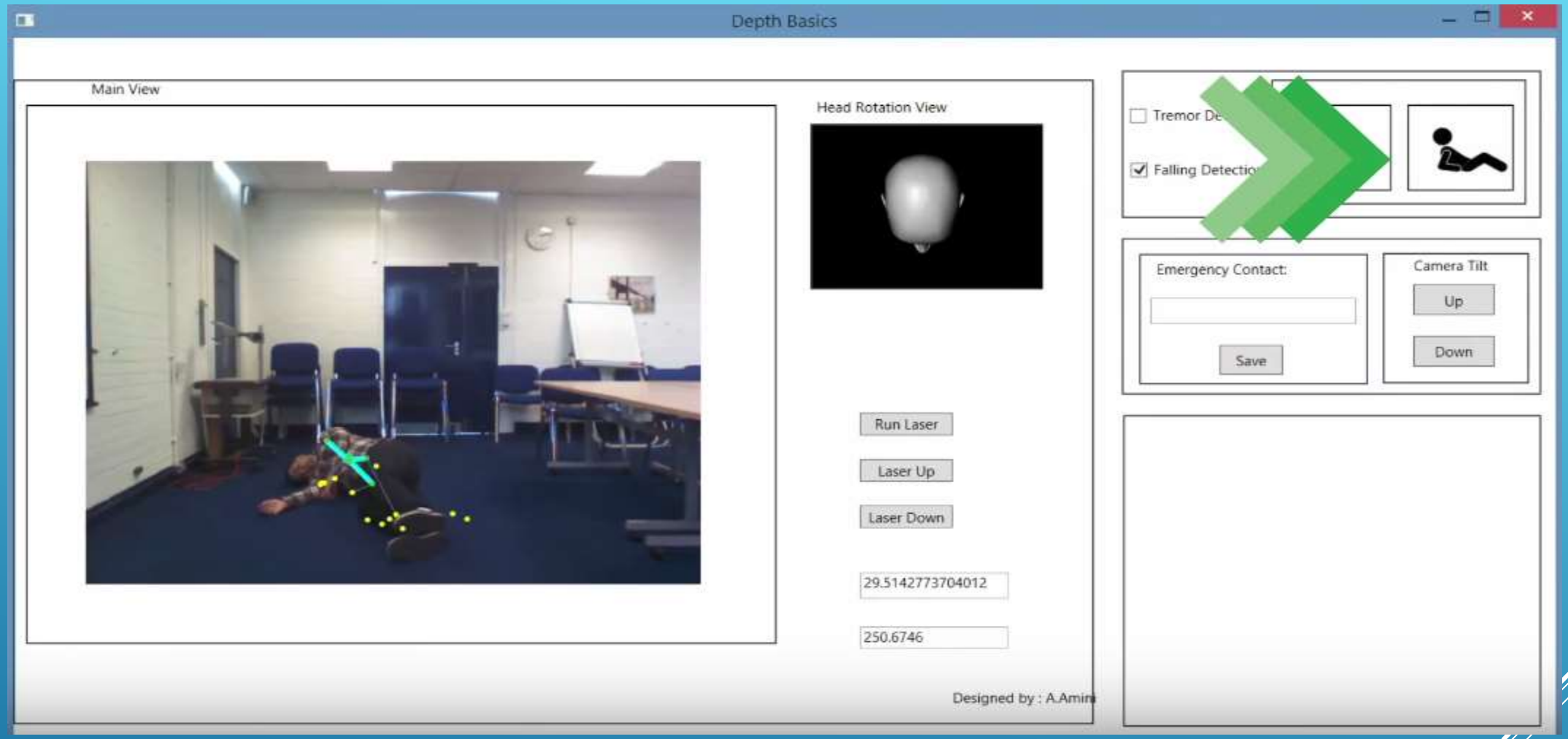


MICROSOFT KINECT (RGB-D) SENSOR

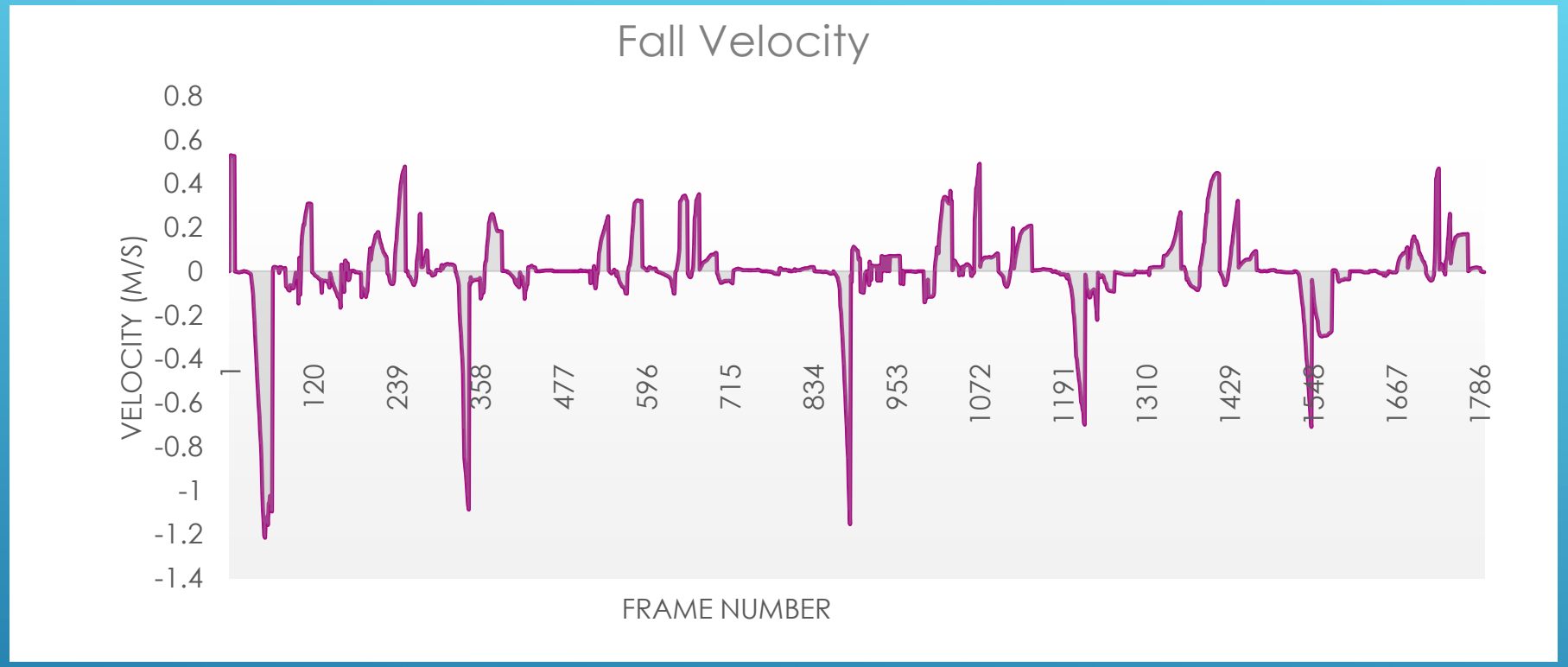
KINECT V2 SKELETAL TRACKING

- 26 joints
- 6 concurrent subjects
- High Definition

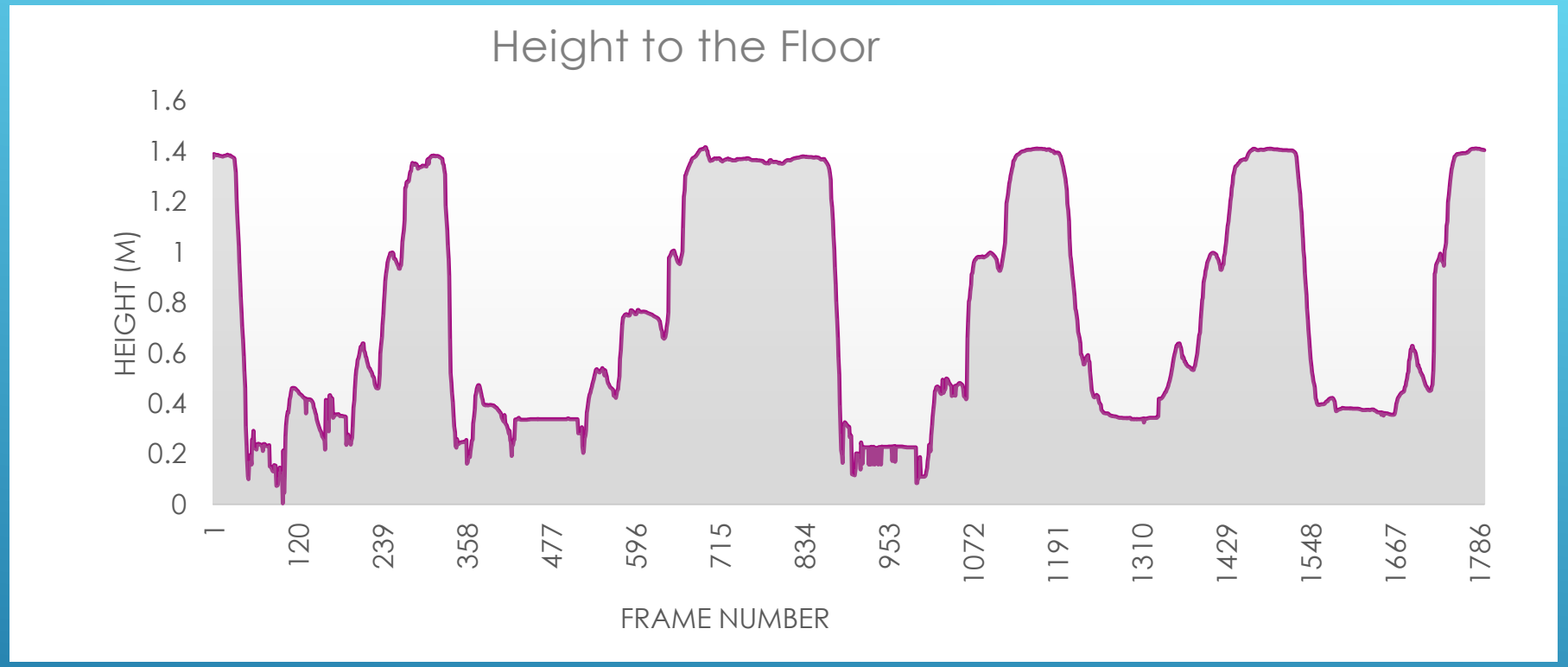




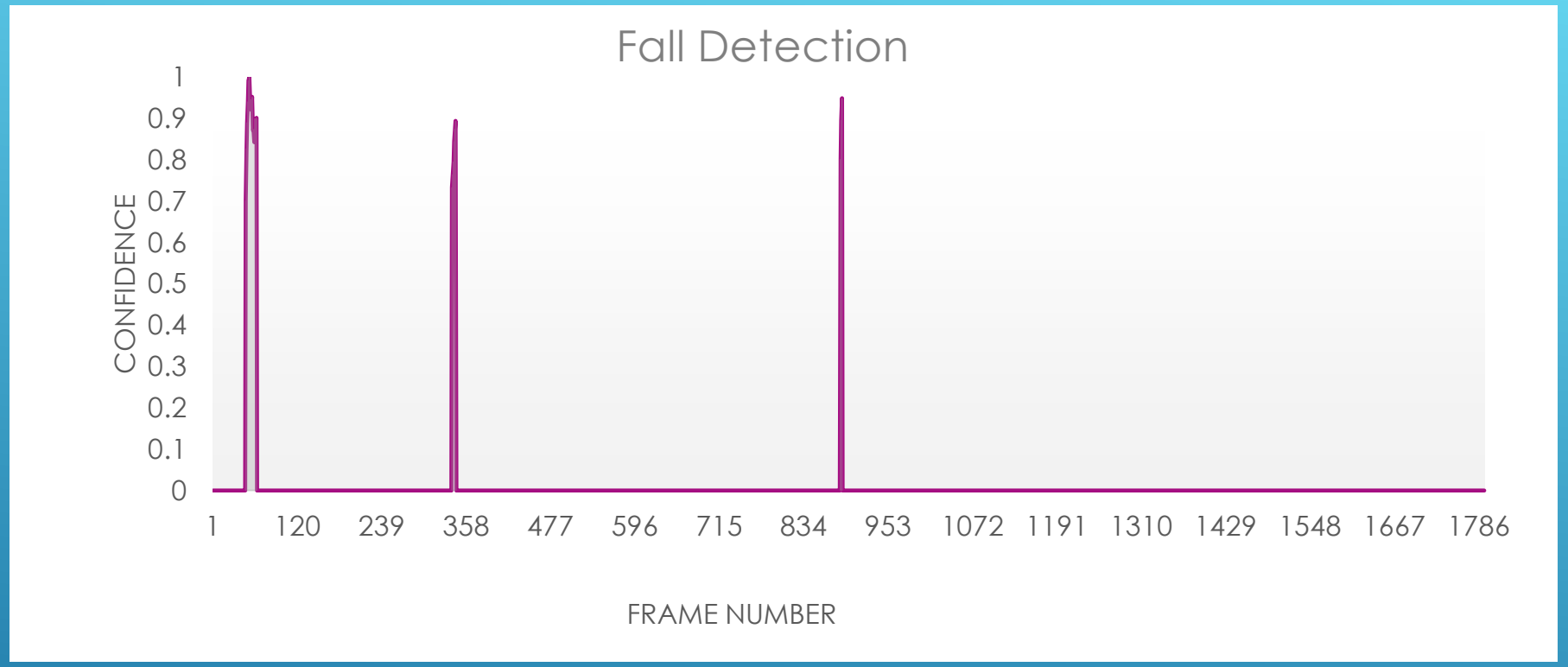
FALL DETECTION



FALL VELOCITY OF A SUBJECT



SUBJECT'S HEIGHT-TO -FLOOR DISTANCE



FALL DETECTION CONFIDENCE

- Number of Steps
- Spine Angle in 3D
- Centre of Mass (COM)
- Stride Duration
- Arms Position

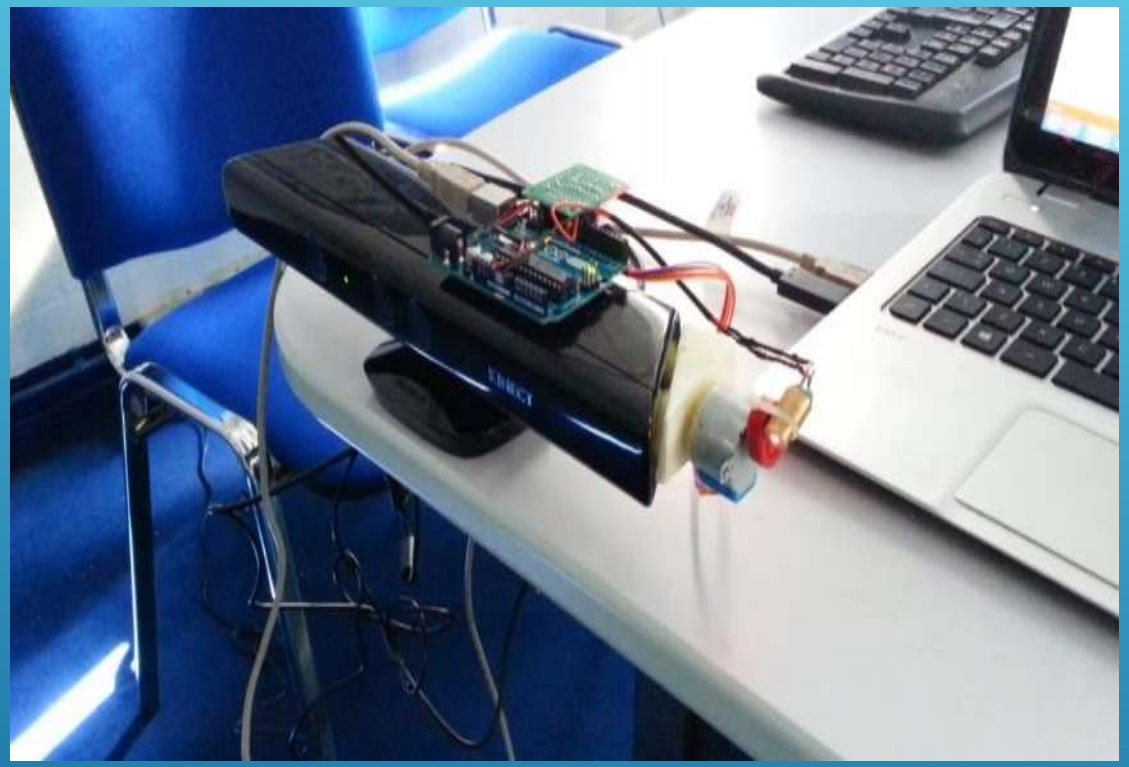
FOG DETECTION

Using visual cues (laser lines) to improve the mobility of Parkinson's disease patients.

VISUAL CUES

Traditional approach: Using on-body sensors and canes

Using visual cues (laser lines) to improve the mobility of Parkinson's disease patients.



VISUAL CUES

Our approach: No sensors to be attached/worn