

# Deep Learning-Based Gait Recognition Using Smartphones in the Wild

- **Description:** Studying gait recognition using accelerometer and gyroscope data from smartphones. The proposed method collects inertial gait data under unconstrained conditions without knowing when, where, and how the user walks.
- **Primary objective:** To obtain good person identification and authentication performance using deep-learning techniques that learn and model the gait biometrics based on walking data.
- **Possible further applications (significance & impact):** Health Sciences - to detect early-stages of motor-neuron diseases, Sports industry, Intoxication detection.

# Specific References

1. The original paper was presented in the IEEE Transactions On Information Forensics And Security, Vol. 15, 2020
2. [Datasets](#): This project comprises of 8 sets of data. Datasets 1 to 6 are used for Person Identification and Authentication, and datasets 7 and 8 are for Gait data segmentation. The dataset is available for download on github.
3. System Requirements: Data Collection - Android Smartphone, Training Network - PyTorch 0.4.0, Python 3.6, CUDA 8.0, Intel Core Xeon E5-2630@2.3GHz, 64GB RAM and two GeForce GTX TITAN-X GPUs.
4. [Code](#): The code is mostly written in python. The gait data extraction is done using tensorflow.

## Justification for chosen Reference

- **Venue of Publication:** This paper was published in the IEEE Transactions on Information Forensics and Security, Vol. 15, in 2020.
- The work for this project involves the literature review of papers published in the International Joint Conference on Biometrics, IEEE Transactions on Systems, Man, and Cybernetics, European Conference on Computer Vision and Pattern Recognition, etc.
- **Comprehensive results and discussions:** The model effectively performed segmentation between walking and non-walking data with an accuracy of 90.22%

Assignment 3 Team Final project - problem definition

Team #18

Student name: Aniruddha Anand Damle	worked on literature	worked on implementation (data, platform, test run, debug, compatibility...)	generated results (run results, result data processing, presenting results)	wrote report (Intro, method, result, discussions, ...)	other significant contributions	peer approval 1	peer approval 2	peer approval 3
specific & detailed evidence is required to support claims of contributions (make reference to specific paragraphs, equation #, figure #, code line #'s sections, etc...)	1. Knowledge-Guided Deep Fractal Neural Networks for Human Pose Estimation 2. FAST-Dynamic-Vision: Detection and Tracking Dynamic Objects with Event and Depth Sensing	N/A	N/A	Slide 1	Presented ideas base on fractal inspired neural networks and their usage in development of a neural network architecture	N/A	Approved	Approved

  

Student name: Prakriti Biswas	worked on literature	worked on implementation (data, platform, test run, debug, compatibility...)	generated results (run results, result data processing, presenting results)	wrote report (Intro, method, result, discussions, ...)	other significant contributions	peer approval 1	peer approval 2	peer approval 3
specific & detailed evidence is required to support claims of contributions (make reference to specific paragraphs, equation #, figure #, code line #'s sections, etc...)	1. Presented Numerical solution of fractal-fractional Mittag-Leffler differential 2. Presented paper on Dynamic Object Tracking and Masking for Visual SLAM	N/A	N/A	Slide 2	1. Presented possible projects based on fractals and the Kalmann filter 2. Studied the datasets and system requirement for the main project	Approved	N/A	Approved

  

Student name: Aditya Kaduskar	worked on literature	worked on implementation (data, platform, test run, debug, compatibility...)	generated results (run results, result data processing, presenting results)	wrote report (Intro, method, result, discussions, ...)	other significant contributions	peer approval 1	peer approval 2	peer approval 3
specific & detailed evidence is required to support claims of contributions (make reference to specific paragraphs, equation #, figure #, code line #'s sections, etc...)	1.Deep learning based Gait Recognition using Smartphones in the wild (Selected)	N/A	N/A	Slide 3	Presented the reference I individually researched to other team members, in an attempt to convince them to use this paper for the study.	Approved	Approved	N/A