**Office Activity Recognition in First-person Vision**

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Requested citation acknowledgement when using this software:

Girmaw Abebe, Andrea Cavallaro and Xavier Parra, "**Robust multi-dimensional motion features for first-person vision activity recognition**", Computer Vision and Image Understanding, Vol. 149, 2016, pp. 229-248.

Girmaw Abebe and Andrea Cavallaro, "**Hierarchical modeling for first-person vision activity recognition**", Neurocomputing, Vol. 267, 2017, pp. 362-377 .

1. Introduction

A bit of introduction here

The source code contains MATLAB files and clear instructions are given below to run these scripts. These MATLAB scripts are necessary to compute optical flow and centroid velocity, extract motion features and train and test classifiers.

1. How to run the MATLAB software?

* The software has been tested on MATLAB 8.4.0.150421 (R2014b) on a PC (UBUNTU 14.04 LTS) with specifications: Intel (R) Core (TM) i7-4770 CPU @ 3.40 GHz, 16.0 GB RAM,64-bit). The Bioinformatics Toolbox and Neural Network Toolbox must be installed and licensed.
* Set path of MATLAB to <./PATH TO CODE>.
* Download the supporting\_data and unzip it in ./PATH/ directory to replicate the results and use input examples,

1. MATLAB files:

* *office\_activities\_classification\_Mach\_2019.m* – Main script that extracts/load two types of motion features from first-person videos of office activities.

NB: Running the software clears the MATLAB workspace and closes the already opened figure(s).

Warning: You might run out of memory if you do not have at least 8GB RAM.

* *GOF\_computation\_office.m* – Function that computes grid optical flow vectors from videos
* *goff\_feature\_extraction.m* – Function that extract multiple optical-flow based features, both in time and frequency domains.
* *centroid\_computation\_office.m* – Function that compute the intensity centroid per each frame
* *image\_moments.m* – Function that computes the first-order image moments that are necessary to find the intensity centroid per each frame.
* *virtual\_inertial\_feature\_extraction.m* – Function that extracts virtual inertial features from the displacement of intensity centroid across frames in a video.
* *arrange\_train\_test\_office.m*– Function that takes the available data, apply train-test split, train and test two classifiers (SVM and KNN), and return the results.

1. License

This software is provided under the terms and conditions of the creative commons public license. Please refer to the file

<./ License.doc> for more information.

1. Contact

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Thanks for your interest,

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