- APROVIS3D -

Analog PROcessing of bioinspired VIsion Sensors for 3D reconstruction

Document Reference:		
Title: **D0.2.3 Data Management Plan**		
Contractor: **UCA**		
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Document Type: **Deliverable**		
Version: **1**		Pages: **8**
Classification: **External document**		

Document Track

Version	Date	Remarks and Authors
1.0	30/04/2020	First draft (J. Martinet - UCA)
2.0	11/06/2020	Final version (J. Martinet - UCA)

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1 Introduction

During the implementation of the APROVIS3D project, the management process elaborates and implements a plan to collect, store, preserve, and disseminate the data.

1.1 Purpose

This document D0.2.3 deliverable of the APROVIS3D project defines the Data Management Plan (DMP) implemented in the project), and specifies everything about project-generated data (collection methodology, documentation, use, format, storage, confidentiality, and dissemination during and after the project).

Data reusability is one of the main outcomes of the project; hence all datasets and benchmarks created in the project will be handled through the DMP.

2 Documentation

2.1 Applicable and Referenced Documents

#	Id	Description	Identifier (Ed Rev)	Date
AD1	FPP	Full Project Proposal	1.0	15.01.2019

2.2 Glossary and Terminology

Acronym	Definition
DMP	Data Management Plan
WP	Work Package
RGB-D	Red-Green-Blue-Depth
ROS	Robot Operating System
CSV	Comma-Separated Value
UAV	Unmanned Aerial Vehicle

3 Data Management Plan

The DMP distinguishes data that can be made publicly available, and subsets of strategic data that need to be protected.

The consortium will mainly produce three kinds of data:

- Two types of visual data that will be collected by the sensors mounted on the drone: RGB-D and stereo event sensors data. These data are in a resolution that will be determined experimentally (e.g., 1280x720 at 24 fps videos for the RGB-D camera and 128x128 to 256x256 event streams for the event cameras). The RGB-D data also includes 3D information such as point clouds and disparity data. Due to possible drone instability, the visual data may need to be pre-processed to be cleaned. Data will be processed to make it usable in the algorithms, by using image stabilization and noise filtering tools. Therefore, data may include raw and pre-processed/cleaned versions. This data will be stored in HDF5 data format.
- Data collected on the drone motion itself. This will contain the UAV location (coordinate), speed, and all onboard sensor values. The data will be collected with a certain rate during flights, which will allow synchronizing visual data and drone motion data. This data will be stored in CSV format and ROS bag format.
- Algorithms and software pieces related to SNN processing of visual data (INT, UL) and UAV autonomous guidance (NTUA).

The data will be used for training and validation purposes, which will guarantee experimental reproducibility. Some data can also be reused in other contexts such as SLAM or odometry. All data will be stored in local platforms and sent to partners when necessary. We will not have a shared platform for raw data. Most of the experimental data (visual and UAV motion) will be collected by NTUA. Some preliminary visual data will also be created by IMSE as test data collected in the lab during the sensor's development. A dozen flights should produce enough raw data to develop the software. Each flight will last around 15 minutes, which will produce about around 100-200 GB of visual data from all sensors. The data volume collected from the UAV motion will be negligible. This reasonable size dataset will enable the data to be transferred between partners rather easily. We will use the FileSender service, proposed by RENATER the French IT services provider for higher education and research. It will ensure confidentiality in data exchange.

Data collection and processing during the project will not raise ethics issues but some data will need to be well protected in case we decide to patent or make an economic valorisation of some results. The writing of the Consortium Agreement and of the Data Management Plan has been an opportunity to make sure all partners have a similar approach to balance openness to publications and data while retaining the possibility to patent some of the project results.

All datasets and benchmarks produced during APROVIS3D project will be public and archived according to FAIR principles on dedicated European repositories such as EUDAT or Zenodo (these repositories will also reference contents archived on GitHub), and advertised through multiple channels (national and European, academic and industrial). A data availability statement will be written in publications with a link to the related data.

All publications resulting from this project will acknowledge CHIST-ERA, and an electronic copy will be sent to the CHIST-ERA Secretariat. We will upload the camera-ready versions (before editor-version) on national open repositories (e.g. HAL in France). A data paper will be written at the end of the project for description and advertisement purposes.