

On end-to-end 6DOF object pose estimation and robustness to object scale-supplementary

The purpose of this document is to provide detailed instructions for running the experiments reported in the main paper.

Training scripts

Requirements

- Install moai (<https://github.com/ai-in-motion/moai>)
- Download the public dataset.

All the configuration files for conducting the reported experiments are split in unique folders containing all the necessary parts. More specifically each folder contains:

- The *main configuration file* (i.e. `coordinate_regression`)
- The *data configuration file*, unique for each drone
- The *model configuration file* containing model's basic configuration and other auxiliary operations
- The *losses configuration file* where the supervision part of the training is defined
- The *metrics configuration file* related with the validation part
- The *options configuration file* where users are able to define the visualization functions, logging parameters, etc.

Having defined all the above configuration files users need only to run the following command from a Command line, for start the training procedure:

```
(moai) ... moai train coordinate_regression --config-dir . obj_file=D:\Ubuntu\... DJI.obj root=D:\Data\Cle
aned metadata=D:\Data\uava_annotations.txt experiment.batch_size=2 experiment.workers=8
```

moai train	<code>coordinate_regression</code> }	<code>--config-dir .</code>
	<code>obj_file={drone_obj_file}</code>	
	<code>root={data_path}</code>	
	<code>metadata={metadata_path}</code>	

where `{drone_obj_file}` is the location of the 3D drone model, the `{data_path}` is the root path of the data and `={metadata_path}` is the annotations path.

Interactive plots

For several experiments, a tool for easy inspection and filtering across them is a must. To that end, we provide interactive plots (Figure 1) in html format, by leveraging [HiPlot](#).

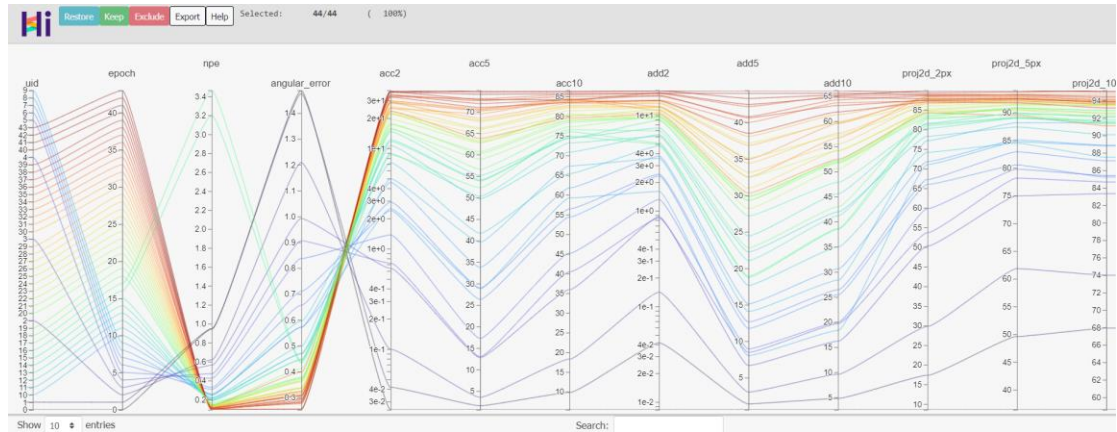


Figure 1: HiPlot screenshot showing the performance of different methods in the validation set

We have generated these plots for both drone models and are available in following folder `".\actions\plot\2021-01-30"`.

However, we provide the source files used for generating these plots and readers will be able to reproduce them by running the below commands:

- **M2ED:**

```
○ moai plot "+experiment.name=m2ed"
"root= .\m2ed_val_files"
"metrics_options.epoch_value=[0,45]"
"monads=false"
```

- **Tello:**

```
○ moai plot "+experiment.name=tello"
"root= .\tello_val_files"
"metrics_options.epoch_value=[0,45]"
"monads=false"
```

Finally, apart from the plots in the validation metrics we present corresponding ones for the test set. The plots for each drone model can be found in the `"\test_set_plots"` folder.