Z-Lab Automation and Analysis Pipeline User Manual

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**Goal of Document**: Explain to a user the steps under the hood of the Z-Lab Automation Pipeline. No explanation of the code syntax will be provided, instead the just the purpose of the code will be explained.

If you are interested in how to use the tool, I recommend the README on the gitlab link.

**Architecture Overview:** The entire program is run from **JMP\_to\_EpMotion.py**, this file is responsible for sending and obtaining data from the other scripts in the program. The three other scripts which are important are **Convert.py, Epmotion\_GUI.py,** and **Output.py.**

**JMP\_to\_EpMotion.py** calls the **EpMotion\_GUI.py** file to create a GUI to get data from the user including the DOE table and specifications about plates and tubes for the experiment.

**JMP\_to\_EpMotion.py** calls the **Convert.py** file to find out how to dilute the stock concentrations and prepare the factors to be at the level desired, as well as find the commands which would prepare the plates. The goal of this file is to covert the DOE experimental matrix into commands for the EpMotion.

**JMP\_to\_EpMotion.py** calls the **Output.py** file to convert the lists and dataframes to a csv format for the EpMotion. In addition, this file is also responsible for writing up the protocol and the organising the folder structure.

**Outputs:**