==========👩‍🎤WELCOME🤗==========

💜 This folder contains a set of R source code that can be easily executed from the terminal using specific commands on an macOS🍎 system.

💜 This document provides a brief overview of its contents and instructions on how to run the commands.

💜 For a more detailed explanation of each R source code and commands, please refer to the Appendix.

————————————————————————————Files———————————————————————————

This directory contains three types of files:

🔍 .R: These are R files which contain the source code of the project.

🔍 .sh: These are bash script files. They are used to execute the corresponding .R files in a terminal.

🔍 .rds: These files are R's binary format for storing data. They serve as both the output of some scripts and the input for others.

❗ The .rds files are separately stored in three different folders. The output files from one stage serve as the input for the next stage:

🔅 data_two_sample_null: This folder contains simulated data under the null hypothesis.

🔅 data_two_sample_power: This folder contains calculated power data.

🔅 plots_two_sample_power: This folder contains all the generated plots.

————————————————————Manipulations————————————————————

1️⃣ First, you'll need to install R on your macOS system.

2️⃣ Navigate to this directory by using the cd command in your Terminal.

3️⃣ Next, simulate data under the null hypothesis using the script_null_all.sh script:

🔺 Make the script executable by typing chmod +x script_two_sample_null.sh in the Terminal.

🔺 Run the script using the command ./script_two_sample_null.sh.

🔺 As the script runs, you'll see messages like “Iteration number: …” in the Terminal. These indicate that the program is executing as expected.

🔺 The script will generate .rds files, which will be saved in the same directory as the script.

4️⃣ Once all the .rds files have been generated, execute the script_power_all.sh script to calculate power:

🔺 Just as before, make the script executable by typing chmod +x script_two_sample_power.sh in the Terminal.

🔺 Run the script using the command ./script_two_sample_power.sh.

🔺 The script will use the .rds files as input and save the results in the same directory.

5️⃣ Finally, after all power data have been collected, execute and run the script_two_sample_plot.sh to generate plots:

🔺 chmod +x script_two_sample_plot.sh

🔺 ./script_two_sample_plot.sh

==========THANK YOU❤️==========

Appendix A Commands

📖 “script_two_sample_null.sh”

- ✏️ The first argument represent the smallest sample size.
- ✏️ The second argument represent the increment by which the sample size increases.
- ✏️ The third argument represent the maximum sample size.

📖 “script_two_sample_power.sh” and “script_two_sample_plot.sh”

- ✏️ The first argument represent the depth type:
  - 1."Mahalanobis"; 2."spatial"; 3."projection"; 4."Mahalanobis_Robust";
  - 5."betaSkeleton"; 6."L2", 7."qhpeeling"; 8."simplicial"; 9."zonoid".
- ✏️ The second argument is the sample size:
  - “same": equal sample size (m: from 100-1000, step 100; n=m) ;
  - “different”: different sample size (m: from 100-1000, step 100; n=m/2)
- ✏️ The third specifies the parameters:
  - “variance”: Same mean (0 and 0); Different variance (I and 1.5I);
  - “location”: Different mean (0 and 0.35); Same variance (I and I);
  - “both”: Different mean (0 and 0.3); Different variance (I and 1.4I).