1 User Interface

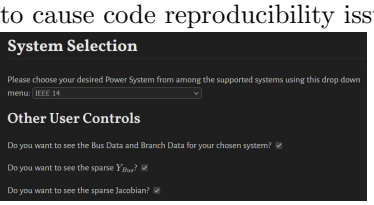
Upon downloading PowerEdu.jl on their machine, the user will interact with the following directory heirarchy. For the sake of clarity, folders pertaining only to the IEEE_14 Bus test case are shown, however, in general, every test case will have its dedicated folders for inputs and outputs.

1.1 Directory Structure

```
root (PowerEdu)
├── data
│   └── IEEE_14
│       └── IEEE_14_Data.txt
├── processedData
│   └── IEEE_14
│       ├── BusDataCard_pu.csv
│       ├── BranchDataCard_pu.csv
│       ├── YBus.csv
│       └── ... (other generated files)
├── src
│   ├── ContinuationPowerFlow.jl
│   ├── IEEE_CDF_Parser.jl
│   ├── OptimalPowerFlow.jl
│   ├── PowerFlow.jl
│   ├── SparsePowerFlow.jl
│   ├── StateEstimation.jl
│   └── ... (other modules)
├── main.jl
├── main_notebook.jl
├── LICENSE
├── Manifest.toml
├── Project.toml
└── README.md
```

1.2 Pluto Interactive Notebook

While users are free to make function calls from PowerEdu.jl within any editor of their choice, we also provide a handy interactive notebook environment for users to quickly get an overiew of the package using already made scripts with easy to manipulate control widgets. We prefer Pluto.jl [1] as the notebook environment instead of other popular notebook environments like Jupyter or Observable for the following reasons. Unlike Observable, Pluto is an open source notebook environment written completely in Julia. Secondly and more importantly, unlike Jupyter, Pluto is a reactive notebook environment, i.e. it does not have any hidden states in the workspace, which have been found out to cause code reproducibility issues [2, 3].



References

[1] "Pluto.jl," Sep. 2023, [Online; accessed 1. Sep. 2023]. [Online]. Available: https://github.com/fonsp/Pluto.jl

[2] J. F. Pimentel, L. Murta, V. Braganholo, and J. Freire, "A Large-Scale Study About Quality and Reproducibility of Jupyter Notebooks," pp. 507–517, May 2019.

[3] J. M. Perkel, "Reactive, reproducible, collaborative: computational notebooks evolve," *Nature*, vol. 593, pp. 156–157, May 2021.