Getting started with the cochlear implant model version 1.3 17 October 2023

1. Download and install PyCharm Community Edition.
2. Create a new Project. You might do this from the github repository.
3. Add python packages to the Project: numpy, scipy, lmfit
4. Place relevant ImplantModel files in the project if you didn’t clone from github.
5. Open voltage\_calc.py. This script precalculates the table of voltages and activation functions used by the rest of the model.
6. To create a voltage table, edit voltage\_calc.py. Main parameters to review/edit: radius, res\_int, res\_ext, zEval, output\_filename. Running this script will probably take overnight, depending on the machine.
7. Alternatively, use the sample voltage table provided in the repository: ‘SampleVoltageTable.npy’
8. Run the forward model. Open FwdModel4.py. Then edit common\_params.py to set the specific scenario(s) to run. If you want to create a new scenario, you’ll need to edit set\_scenarios.py.
9. Before running the inverse model it's critical to run the 2-dimensional forward model: FwdModel4\_2D.py.
10. Run the inverse model. Add a run configuration to the Project to run InverseModelCombineds.py. Run the file. While it is running you will see the average threshold error in dB scroll in the console.