How to Integrate a Model into the AMT

Hot Topic 8

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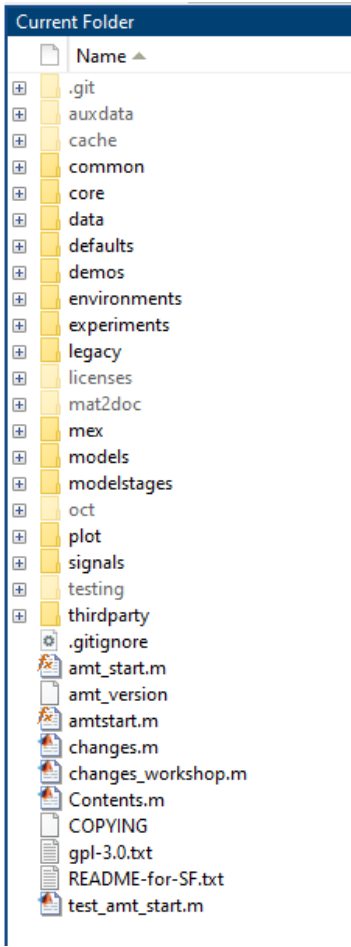
Content

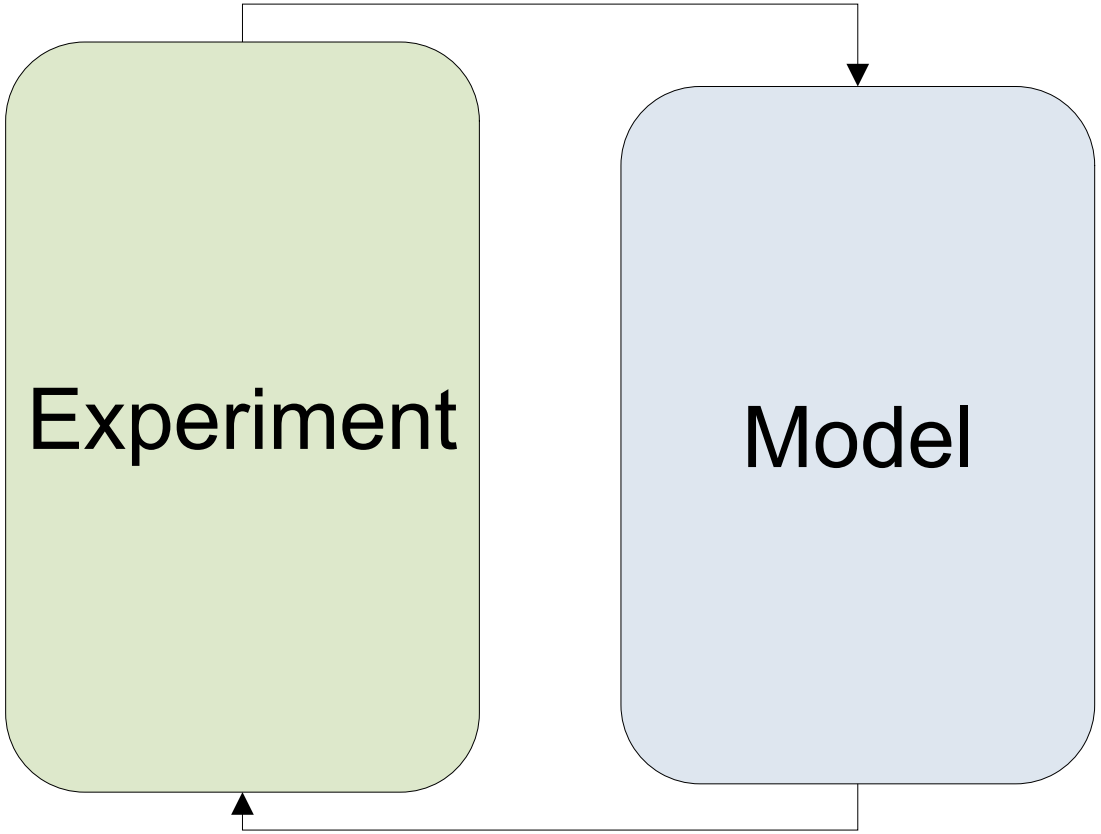
- Question: How do I integrate my experiments or models into the AMT?
- We will cover:
  - AMT's folder structure
  - Model's anatomy
  - Coding conventions and guidelines within the AMT

Folder structure

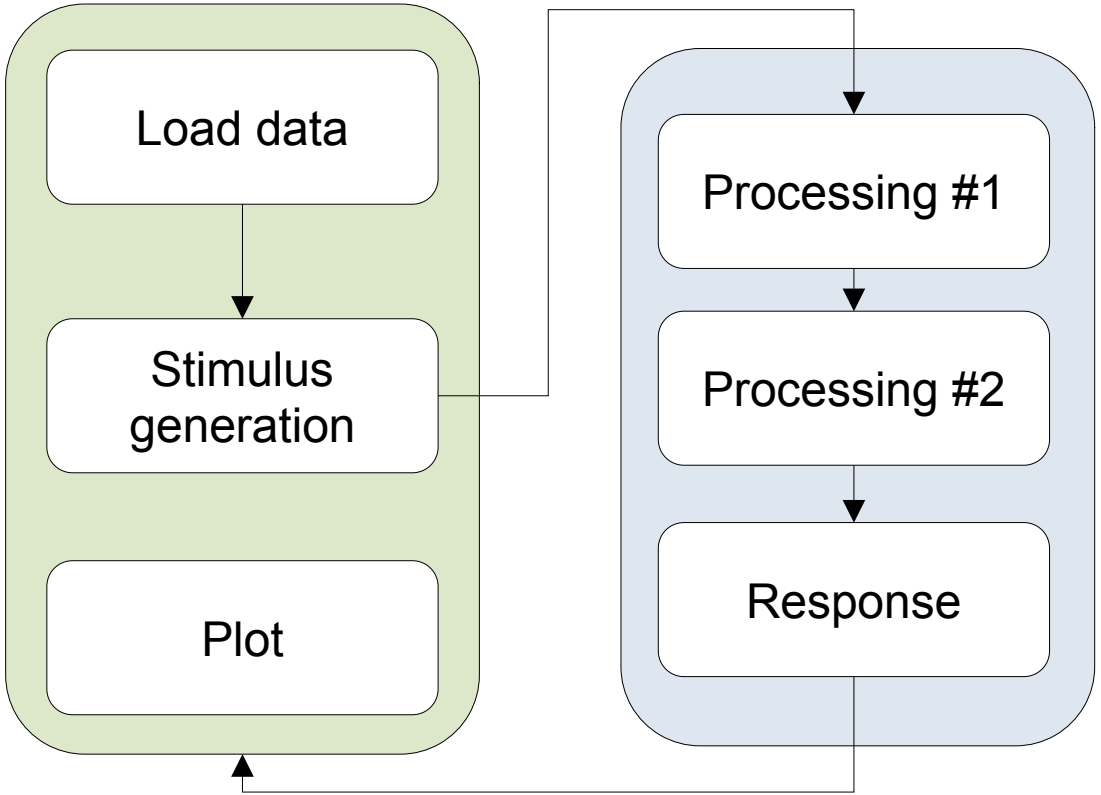
- **common**: useful functions for hearing related computations.
- **data**: experimental data from several studies.
- **defaults:** definition of parameters and flags an their default values.
- **demos**: scripts show-casing the basic functionalities of a model.
- **experiments**: code to compute model's results that made it into a paper.
- **models**: here we have the models!
- **modelstages:** models may contain multiple processing steps. This folder is dedicated to break down the structure in separate scripts.
- **plots:** code to generate complex visualizations.
- **signals: s**cripts to generate generic or specific signals.
- **thirdparty:** external toolboxes like SOFA API or LTFAT.



The anatomy of a model



The anatomy of a model

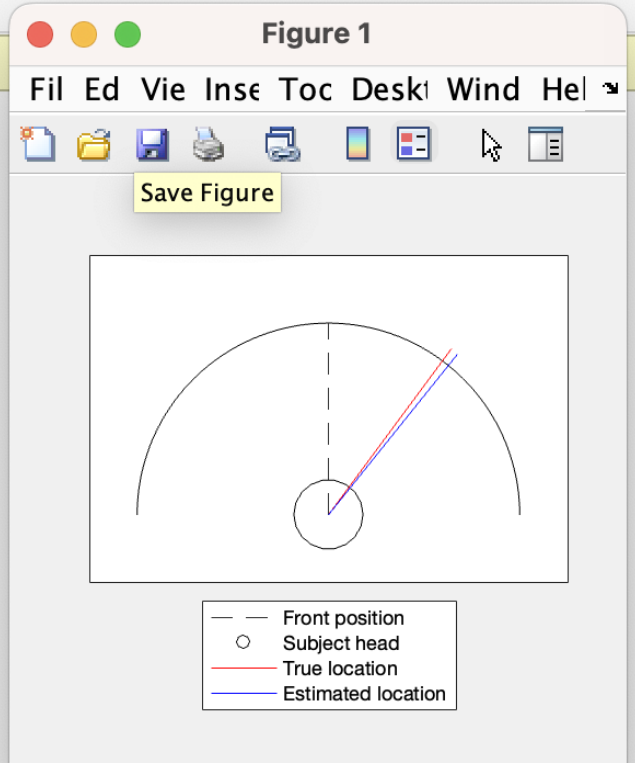


Without the AMT

Command Window

New to MATLAB? See resources for Getting Started.

```
>> exp_workshop2023turin
Perceived ITD: 0.35 ms
True lateral direction: -40.00 deg
Estimated lateral direction: -42.44 deg
>>
```

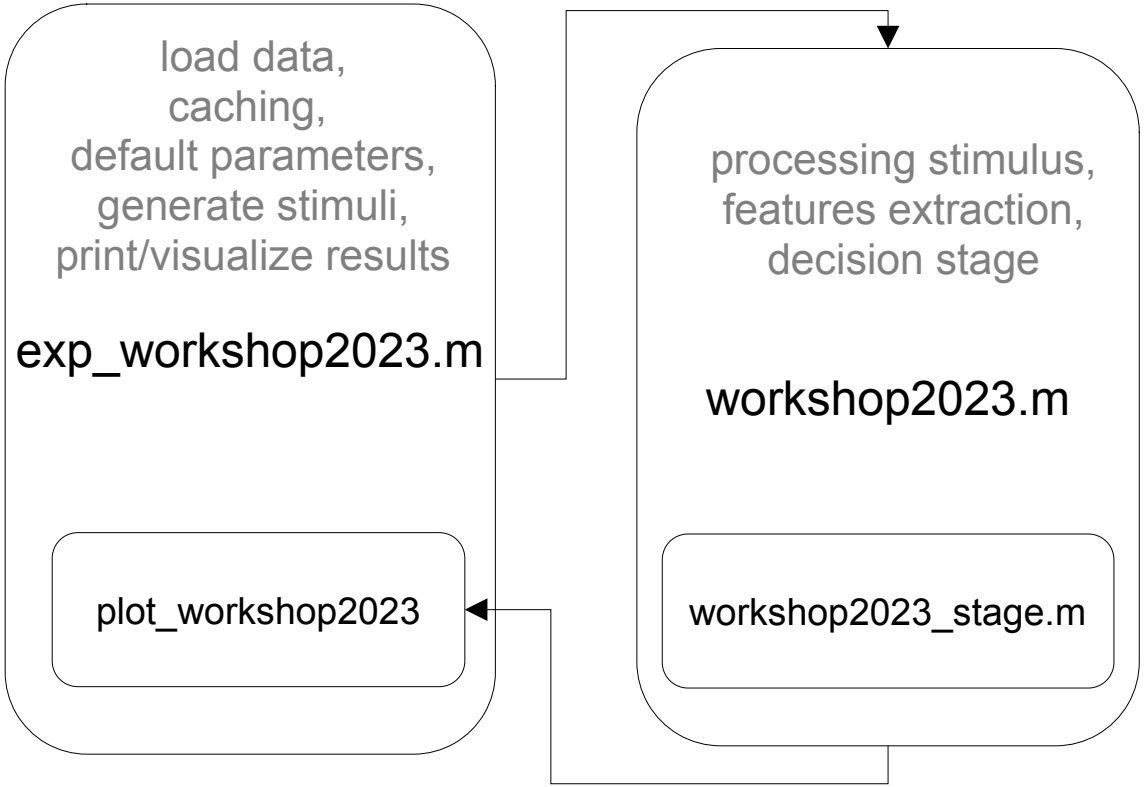


Current Folder

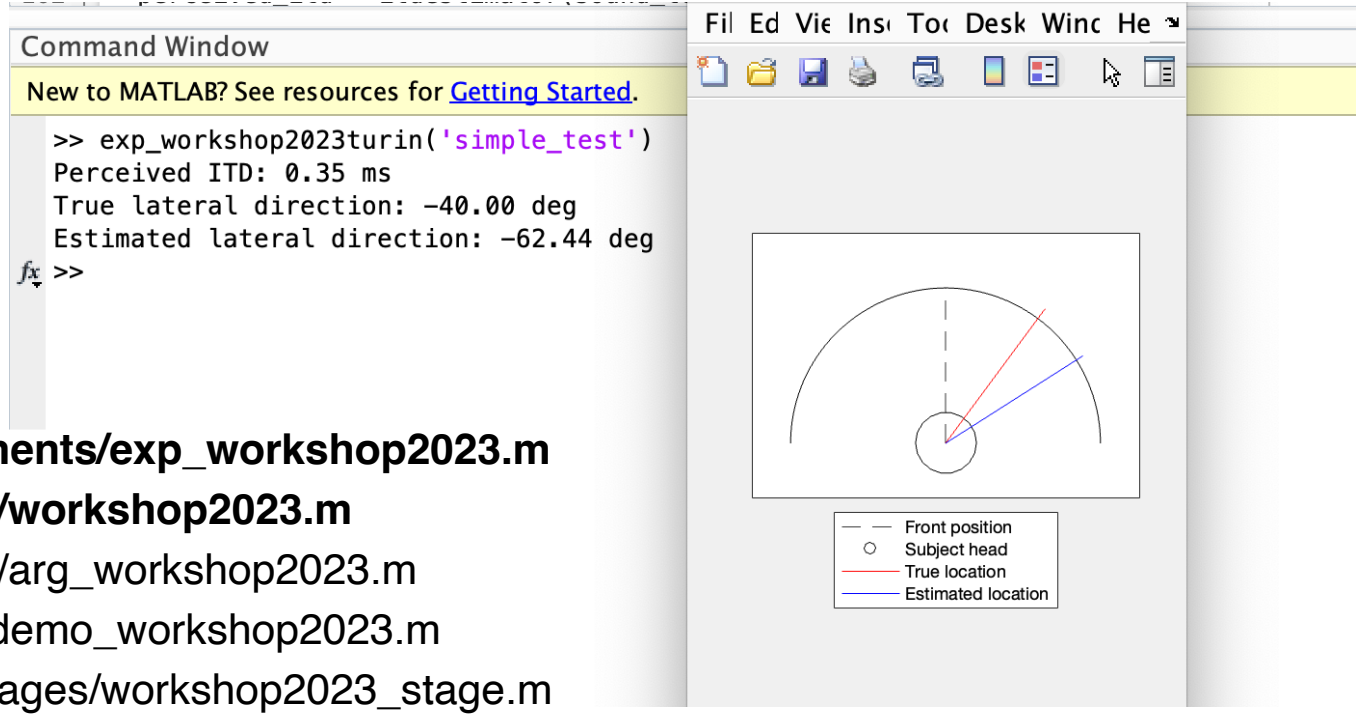
Name

- .git
- auxdata
- cache
- common
- core
- data
- defaults
- demos
- environments
- experiments
- legacy
- licenses
- mat2doc
- mex
- models
- modelstages
- oct
- plot
- signals
- testing
- thirdparty
- .gitignore
- amt_start.m
- amt_version
- amtstart.m
- changes.m
- changes_workshop.m
- Contents.m
- COPYING
- gpl-3.0.txt
- README-for-SF.txt
- test_amt_start.m

With the AMT



With the AMT



./experiments/exp_workshop2023.m

./models/workshop2023.m

./defaults/arg_workshop2023.m

./demos/demo_workshop2023.m

./modelstages/workshop2023_stage.m

./plot/plot_workshop2023.m

How to contribute

- We ask for:
  - Model: <surname><year> (and modelstages…).
  - Experiment: each model needs an experiment file (exp_<surname><year>).
  - Documentation: at the beginning of each script following the conventions.
  - Demo: showcase of the model functionalities (demo_<surname><year>).
- If required:
  - Local functions prefixed with ‘local_’.
  - Long calculations cached with amt_cache.
  - Binary data loaded with amt_load.
  - Text printed with amt_disp.
  - HRTFs stored as SOFA file.

Model's header

```
function [out1, …, outn] = <surname><year>(in1,…, inn, varargin)
%<surname><year> short description
%
%   Usage: out1 = <surname><year>(in1,…, inn);
%      [out1, out2] = <surname><year>(in1,…, inn, varargin);
%
%   Input parameters:
%      in1 : description of input 1
```

Model's header

```
function [out1, …, outN] = <surname><year>(in1,…, inN, varargin)
%<surname><year> short description
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%        in1 : description of input 1
```

Everything matters

The hands-on

- Integrate a sound localization experiment into the AMT
  - Generic script with an experiment provided
  - Integrate the script following the AMT conventions
- At the end of the task:
  - You will understand how to use AMT functionalities to implement your experiments and/or models.
  - You will know how to integrate your code into the AMT.