

APEX workshop: Flowrunner

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APEX Flowrunner: why?

Solve cumbersome experiment workflow with APEX:

1. Open...: **search for right (random) experiment file**
2. Fill in **interactive parameters** (e.g., SNR, subject ID, ...)
3. Perform experiment
4. Save: **choose a nice name and save** the experiment
5. REPEAT steps 1 to 4



APEX Flowrunner: what?

Simplified workflow:

1. Open flowrunner file **ONCE**
2. Fill in interactive parameters (e.g., SNR, subject ID, ...) **ONCE**
 - The flowrunner gives a (randomized) **list of all experiments** that you want to conduct.
 - The flowrunner **keeps track** of the experiments that have **already been conducted**.
3. Perform experiment
 - After finishing, you return to the list of all experiments.
 - The flowrunner **automatically saves** the result-file with a pre-defined name.
4. **REPEAT** step 3



APEX Flowrunner: how?

main_experiment **template:**

```
var main_experiment = {  
  title : "Title of the experiment",  
  experiments : [],  
  randomized : true/false,  
  blind : true/false,  
  form : [],  
  params : {}  
};  
  
function setMainParameters(experiment) {}  
function setExperimentParameters(experiment) {}
```



APEX Flowrunner: how?

main_experiment **template:**

```
var main_experiment = {  
  title : "Title of the experiment",  
  experiments : [],  
  randomized : true/false,  
  blind : true/false,  
  form : [],  
  params : {}  
};
```

```
function setMainParameters(experiment) {}  
function setExperimentParameters(experiment) {}
```



APEX Flowrunner: how?

experiments array:

```
experiments : [  
  {  
    title : "Title",  
    file: "file.apx",  
    expressions : { ... },  
    resultfile: "result.apr"  
  },  
  { ... },  
  ...  
  { ... }  
]
```



APEX Flowrunner: how?

expressions **object**:

```
expressions : {  
    "apex:apex/results/subject" : "Piet Snot"  
}
```



APEX Flowrunner: how?

experiments array can also contain another "nested" array:

```
experiments : [  
  {  
    title : "Title of group of experiments",  
    description: "Here is a group of experiments",  
    experiments : [ ... ],  
    randomized : true/false,  
    blind : true/false  
  },  
  { ... },  
  ...  
  { ... }  
]
```




APEX Flowrunner: how?

experiments array example:

```
experiments : [  
  { title : "Training story", file : "story.apx" },  
  {  
    title : "SPIN",  
    experiments : [ ... ],  
    randomized : true  
  },  
  {  
    title : "Localization",  
    experiments : [ ... ]  
  },  
  randomized: false;  
]
```



APEX Flowrunner: how?

main_experiment **template:**

```
var main_experiment = {  
  title : "Title of the experiment",  
  experiments : [],  
  randomized : true/false,  
  blind : true/false,  
  form : [],  
  params : {}  
};  
  
function setMainParameters(experiment) {}  
function setExperimentParameters(experiment) {}
```



APEX Flowrunner: how?

form array example "input":

```
form : [  
  {  
    tag_name : "input",  
    id : "subject",  
    type : "text",  
    placeholder: "Name subject"  
  }  
]
```



APEX Flowrunner: how?

form array example "input":

```
form : [  
  {  
    tag_name : "input",  
    id : "subject",  
    type : "text",  
    placeholder: "Name subject"  
  }  
]
```

will be saved in `main_experiment.params.subject`



APEX Flowrunner: how?

main_experiment **template:**

```
var main_experiment = {  
  title : "Title of the experiment",  
  experiments : [],  
  randomized : true/false,  
  blind : true/false,  
  form : [],  
  params : {}  
};
```

```
function setMainParameters(experiment) {}  
function setExperimentParameters(experiment) {}
```



APEX Flowrunner: how?

setExperimentParameters **example:**

```
function setExperimentParameters(experiment) {  
    experiment.resultfile = experiment.title + '_' +  
        experiment.params.subject + '.apr';  
  
    experiment.expressions = {  
        "apex:apex/results/subject" : experiment.params.subject  
    }  
}
```

example of resultfile: SPIN_Benjamin.apr (in the folder of the .apx file!)



APEX Flowrunner: how?

Other stuff that is possible with `setExperimentParameters`:

- mute some channels based on experiment title
- choose a random experiment file from a pre-defined list
- choose different wav-files based on title
- ...



APEX Flowrunner: try it yourself!

Make a flowrunner for your own experiment, or:

Try to adapt `apex/examples/flowrunner/generic-runner.apf` such that:

- the form asks for an age category: young/middle-aged/old
- results are saved in (make folders beforehand):
`apex/examples/flowrunner/results/[age-category]/`
- the name of the result-file contains the title of the experiment
- add an extra experiment "Extra simple adapted", in which "house" is changed into "tone", and "stimuli/sin1000Hz-short.wav" is played instead



APEX Flowrunner: about "working directory"

! experiment.file is relative to the .apf-flowrunner file

! experiment.resultfile is relative to the .apx-experiment file

! APEX cannot save files in folders that do not exist

→ if you want a results-folder, you have to make it yourself first



APEX Flowrunner: about "working directory"

Example

If you have the following folder structure:

```
experiment_X/runner.apf
experiment_X/apx_files/exp1.apx
experiment_X/results/
```

you should specify in the `runner.apf`:

```
experiments : [
  {
    title : "blabla"
    file : "apx_files/exp1.apx",
    resultfile : "../results/result_exp1.apr"
  }
]
```



APEX Flowrunner: troubleshooting

If your flowrunner does not work, e.g.:

- It shows a blank screen without content
- You get an error that you do not understand
- ...

Then: try to validate your javascript: copy all the code from your .apf:

```
var main_experiment = {...};  
function setMainParameters (experiment) {...}  
function setExperimentParameters (experiment) {...}
```

paste it in a validator (e.g., <http://jshint.com/> or google “javascript validator”), and solve the errors based on the output

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