21M.380 Music and Technology
Sound Design

Final project, part 3 (FP3)
Method selection and implementation

Due: Wednesday, April 27, 2016, 9:30am
Submit to: MIT Learning Modules ▸ Assignments
5% of total grade

1 Instructions

Select suitable synthesis methods for your final project. Using those methods, implement in Pd a first draft of your project's model, which you have created for the FP2 assignment. Be prepared to present the results in class on Wednesday, April 27, 2016.

2 Context

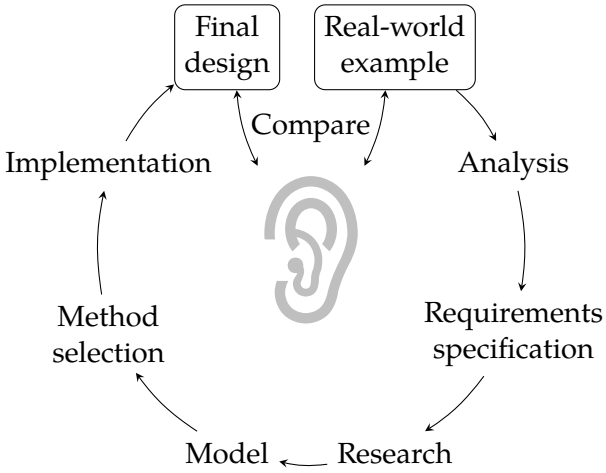

Figure 1. Stages of the sound design process (after Farnell 2010, figs. 16.7, 16.1)

We have been following Andy Farnell's methodology for a systematic approach to the sound design process (cf., figure 1). So far, you have completed the analysis and requirements specification stages of this process for your FP1 assignment, and the research and model making stages for your FP2 assignment. The objective of this assignment is now to complete the method selection stage and to complete a first draft of your final project's implementation in Pd.

3 Guidelines

Farnell (2010, secs. 16.7, 16.8, 16.9) discusses the method selection and implementation stages of the sound design process in some detail. Start your work on this assignment by reading these four pages in the book (plus section 16.2, if you haven't read it alreay).[1] Farnell also provides practical examples of many specific sound design problems,[2] and chances are that some of them relate directly to your own project. Browse the book's table of contents and identify and study chapters that might be relevant to your work.

[1] Figures 16.5 and 16.6 from the book are particularly informative.

[2] Farnell 2010, chs. 23 ff.

3.1 Method selection

To choose suitable methods for implementing your project, you can review the synthesis techniques we have discussed.[3] Farnell's book also discusses their respective strengths and weaknesses,[4] and we have covered some basic sound shaping techniques earlier in the course that might be useful.[5]

[3] Ibid., chs. 17–21.

[4] Ibid., sec. 16.7.

[5] Ibid., ch. 13.

3.2 Implementation

Remember that "good design is done top down, then implemented bottom up" (ibid., p. 239). The first part of your work in Pd for this assignment, however, still belongs to the design rather than the implementation phase. What follows is a suggestion on how to approach this process.

- Start by designing the overall structure of your final Pd project, defining all abstractions and subpatches that are required, including their creation arguments, inlets, and outlets.
- Create the actual abstractions as `.pd` files and provide them with the required `[inlet]` and `[outlet]` objects, even though they are not yet connected to anything. Include a detailed description of what the abstraction will eventually be doing as a comment, listing all creation argument and dependencies (other abstractions required to run the current one). You can use the `driveby~.pd` patch from the EX3 assignment instructions as a guideline.
- Create the `main.pd` patch, add your 'dummy abstractions' to its canvas, and connect them as required.
- Complete the user interface in `main.pd`, including any sliders, radio buttons, number and message boxes that the user will eventually control your patch with. At this stage, the `main.pd` patch should look like it will once your project is completed.

- Now you can 'fill in the blanks' and start to implement the actual abstractions bottom-up.

Your submission does not yet have to be a fully working implementation of your final project. However, it should represent a functioning patch that can be meaningfully tested to evaluate your progress. Leave placeholders for parts that are not yet fully implemented. For example (and this is really just an example), if audio in your patch flows through a `[doppler~]` effect that you have not yet implemented, you could connect the `[inlet~]` of the `[doppler~]` abstraction to its `[outlet~]`s, so at least *some* sound will be heard at the final output, and the other components of your patch can be meaningfully tested without having to repatch anything. Include comments with TODO notes that clearly indicate which aspects of the patch still require what kind of work, and which problems need to be overcome before.

4 Assessment criteria

Functionality and documentation Have you submitted a functioning patch that allows the user to quickly identify and test the working parts of your project, as well as identify and evaluate those parts that still need completion?

Project structure Does your patch provide a clear structure of your final project by meaningfully encapsulating subproblems into abstractions and subpatches?

Abstraction design Have you designed your abstractions well, such that code duplication is avoided and that your abstractions could easily be re-used in other projects? The `driveby~.pd` patch from the EX3 assignment instructions—along with the abstractions that it depends on—provides a useful guideline in this respect. Re-usability of an abstraction is also determined by the language you use to determine the abstraction's name and how you document it through comments in the code (try to avoid references to your specific project).

5 Submission format

Submit a single `.zip` archive that contains all `.pd` patches and any other files that are required to run your final project's draft implementation. *Name the patch that needs to be started to test your assignment* `main.pd`. Unzipping your archive and running `main.pd`

should result in a working example; don't expect the user to move files around before running your example. Make sure to test this on your own machine before submission!

References and useful resources

Farnell, Andy (2010). *Designing Sound*. Cambridge, MA and London: MIT Press. 688 pp. ISBN: 978-0-262-01441-0. MIT LIBRARY: 001782567. Hardcopy and electronic resource.

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