Protocol

Name of student: Peter Goldsborough

Subject of thesis: Developing a Digital Synthesizer in C++

Name of supervisor: Prof. Martin Kastner

Final length of thesis: 63349 characters

Reasons for trespassing of character limit: This thesis was written with the LaTeX document preparation system, which has no built-in features to calculate either the word count nor the character count. The number of characters given above was determined by converting the LaTeX-generated PDF file to a TXT file and then counted using the primitive `wc` UNIX command line utility, which includes all titles, page numbers, captions, citations, equations and other non-content-characters into the character count it outputs. Therefore, it can be said that, were a proper character count possible, it is quite probable that it would approach if not fall below the 60000 character limit. Moreover, it should be mentioned that this thesis initially had over 180000 characters and was thus already reduced dramatically. It is likely that any further deletion of content would hinder the reader's understanding of the topics presented.

Villach, February 15, 2015,

(Peter Goldsborough)

Date	Event
15.11.2013	Finding, formulation and narrowing down of thesis topic. Determined to be related to the creation of a digital synthesizer. At this point in German language.
01.12.2013 + 04.12.2013	E-mail exchange with Martin Kastner. Discussion and revision of the thesis concept.
01.01.2014	Start of C++ synthesizer project.
09.01.2014	E-mail exchange with John Cooper. Discussion of Wavetables and optimal Wavetable size.
13.01.2014	E-mail exchange with John Cooper. Discussion of Wavetable generation methods, optimal Wavetable size and interpolation algorithms.
17.1.2014	E-mail exchange with John Cooper. Discussion of Wavetable size, comparison with direct calculation, performance considerations.
31.1.2014	E-mail exchange with John Cooper. Discussion of WAVE files and implementation.
05.02.2014	E-mail exchange with Martin Kastner. Clarification about citing source code.
05.02.2014	E-mail exchange with Jari Kleimola. Sharing of available DSP and audio programming resources online. Introduction of the concept of Wavetables.
18.02.2014	E-mail exchange with John Cooper. Explanation of current inheritance pattern in implementation. Discussion of WAVE file volume considerations.
10.03.2014	E-mail exchange with Jari Kleimola. Discussion of Wavetable algorithms, optimal Wavetable size, Frequency Modulation Synthesis.
20.05.2014	E-mail exchange with John Cooper. Advice to use the Resource-Acquisition-Is-Initializatoin (RAII) concept and use objects to store pointers rather than working with loose pointers.
28.05.2014	Physical Meeting with Martin Kastner. Finalized decision to switch the thesis' language — from German to English.
10.09.2014	Physical Meeting with Martin Kastner. Update on progress, process and methods.
17.09.2014	Physical meeting with Martin Kastner. Discussion of problems concerning the thesis and synthesizer project.
17.12.2014	Physical meeting with Martin Kastner. Discussion of thesis-related information, such as: APA citing rules, citing rules for online website sources, for online forum sources, for online image sources. Considerations for formatting and content.
20.12.2014	Start of thesis LaTeXproject. Wrote first chapter — From Analog To Digital.
22.12.2014	Finished second chapter — Generating Sound.
24.12.2014	Finished third chapter — Modulating Sound.
25.12.2014	Finished fourth chapter — Crossfading Sound.
27.12.2014	Finished fifth chapter — Filtering Sound.
29.12.2014	Finished sixth chapter — Effects.
30.12.2014	Finished seventh chapter — Synthesizing Sound.
02.01.2015	Finished eighth chapter — Recording Sound — and ninth chapter — Sound output.
04.01.2015	Edited and revised thesis. Final character count of extended version: 181319 characters. Fork of current thesis project to new project for shortened version.
12.01.2015	Removed chapters 4, 6 and 9. Wrote Introduction.
18.01.2015	Removed chapters 5 and 8. Left with chapters 1, 2, 3 and 7. Wrote Conclusion.
21.01.2015	Wrote abstract; edited, revised, formatted.
25.01.2015	Final edits and format improvements.