

STEVIN can Praat

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1. Project goal and background

EXTEND the PRAAT speech processing program with new functionality. PRAAT is an extensive application for language, music and speech research that is used by approximately 15,000 scientists and students around the globe. Some characteristics that explain its success right from the beginning, are the wide range of features, the user-friendliness and the scriptability, i.e. the possibility to create ones own processing for a series of inputs. The other aspect that adds to the enthusiastic and widespread use, is the careful support available. This encompasses user help on diverse levels online, quick response to any questions by email, immediate handling of incidents and solving of problems, and last but not least, an infrastructure for user groups.

The PRAAT software is freely available at <http://www.praat.org> for all current computer platforms like Linux, Windows and Macintosh. Manuals, FAQ and help menu are included in the package.

2. Project deliverables

2.1 Sound-Follows-Mouse

For didactic and demonstration purposes, a straight forward vowel editor of the type *sound-follows-mouse* is needed. By moving around the pointer in the plane formed by the first two formants, a sound with the formant frequencies at the current pointer position will be generated whenever the left mouse button is pressed.

2.2 Software bandfilter analysis

We have implemented representations of sounds as spectrograms on Bark and mel frequency scales by applying software filterbank analysis.

2.3 GNU Scientific Library

We have incorporated the GNU Scientific Library in PRAAT. This library contains high quality elementary scientific functions and is available at <http://www.gnu.org/software/gsl/>.

2.4 Improve formant frequency measurements

We have implemented robust linear prediction analysis. On artificially generated vowels, this method is superior to standard linear prediction when synthesis order and analysis order agree.

2.5 Search and replace with regular expressions

All search and replace functions were extended with regular expression variants.

2.6 Klatt Synthesizer

The Klatt synthesizer is a very high quality formant-based speech synthesizer that is used for generating artificial speech. The synthesis is described by a parameter file in which at regular time intervals the values for, among others, fundamental frequency, formant frequencies and bandwidths are given.

3. Project deliverables example: VowelEditor

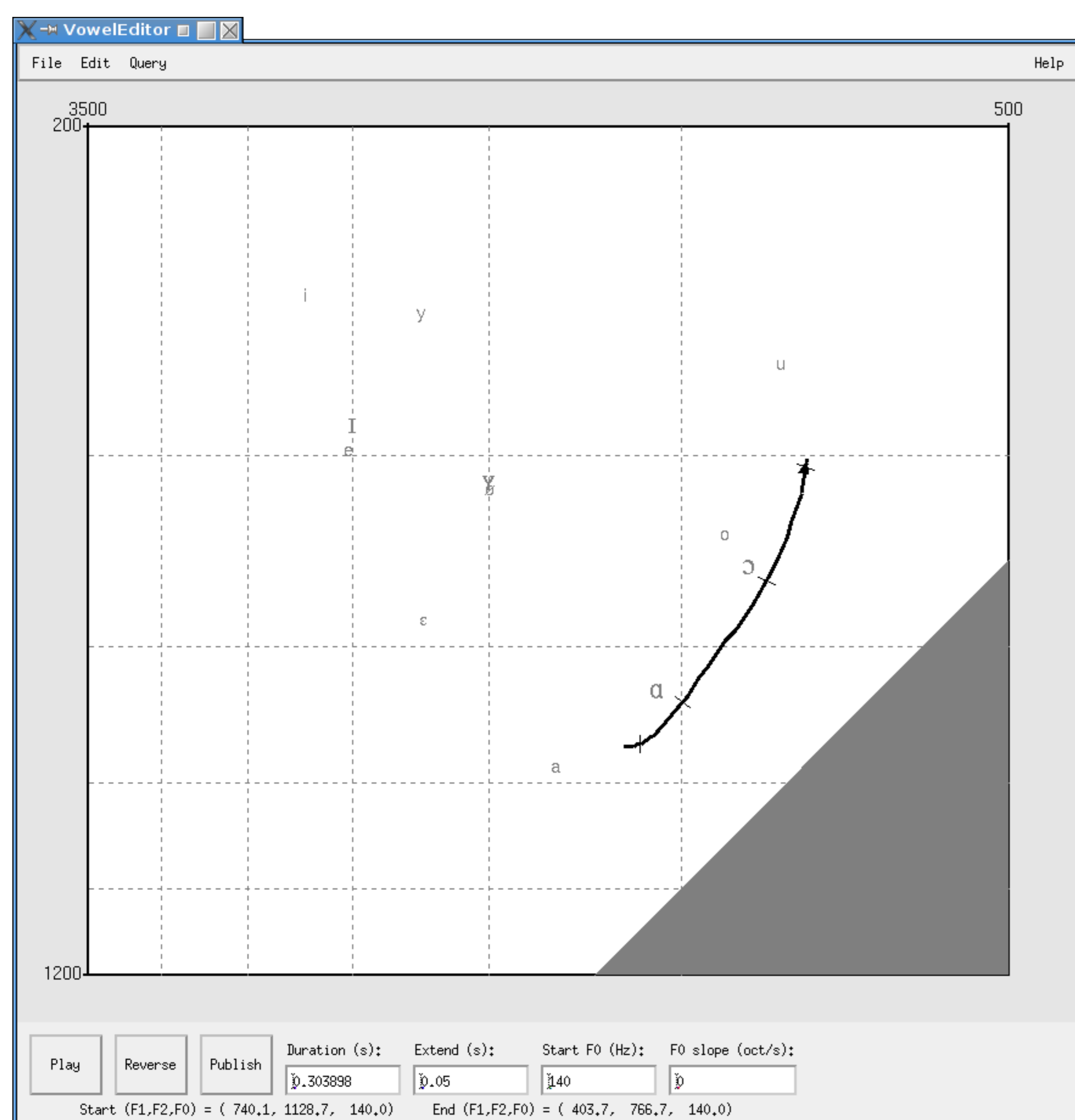


Figure 1: The Sound-Follows-Mouse interface of the vowel editor.

4. Project status

The project time frame: May 1, 2006 – April 30, 2008.

All deliverables have been incorporated in the PRAAT program except for the Klatt synthesizer which will be available in October 2008.

Table 1: Composition and Affiliations of the Research Team.

Name	Affiliation	Function	Email
prof. dr. P. Boersma	1	co-coordinator	paul.boersma@uva.nl
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prof. dr. V. van Heuven	3	adviser	v.j.j.p.van.heuven@let.leidenuniv.nl
dr. H. van den Heuvel	4	adviser	h.vandenheuvel@let.ru.nl
dr. D.J.M. Weenink	1/5	contractor	dweenink@xs4all.nl

1. ACLC/University of Amsterdam
2. Nederlands Kanker Instituut – Anthonie van Leeuwenhoekziekenhuis
3. University of Leiden
4. SPEX: Speech Processing EXpertise centre
5. SpeechMinded, K.v.K. 34176532, Amsterdam

5. STEVIN aspects

5.1 STEVIN Priorities

Speech technology: tools for the development of automatic annotation of corpora, speech synthesis and robust speech recognition.

Area of applications: educational systems.

5.2 IPR and Standards

The license model for the new extensions is the GNU Public License (GPL). All development has taken place in the PRAAT framework which is GPL. This is the best guarantee for the wide availability of the results of this work in a non-discriminative way to the scientific community.

5.3 Economic Aspects

By implementing much sought functionality in PRAAT in a highly user-friendly way and through application of modern technologies, this project provides speech researchers and teachers with powerful new tools. The better the tools in the workbench, the finer the work they may craft.

5.4 Contribution to the STEVIN-programme

The main target of this work is in the areas of applications for speech technology, research and education: PRAAT is already one of the important tools in these areas.