

## FTW Telecommunications Research Center Vienna COMET – Competence Centers for Excellent Technologies K1-Centres

### „Leopold“ – The first synthetic voice in Austrian German

The idea of a "speaking computer" is not new. The idea of a computer that is able to speak Austrian German or Austrian dialects is very much so. FTW together with European company partners developed "Leopold", the first synthetic voice speaking Austrian German. This charming Austrian German Standard variety is now featured on websites like "wien.at", where it reads the contents of the website. It is also used by the Austrian postal services and private users, which employ it as screen readers or as system voice on their mobile devices.

#### Research on Austrian language varieties

FTW's research on the synthesis of language varieties was the basis for the development of the synthetic voice "Leopold".

FTW collected speech data for Austrian German and Viennese dialects that were later used to develop the synthetic voice "Leopold".

In subsequent projects we investigated the audio-visual modelling and the transformation of language varieties. These research results will be a valuable source in facial animation for computer games and language learning.

We also have developed algorithms that can continuously switch between two different language varieties, e.g. a Standard and a dialect. With such algorithms customized voice user interfaces can be developed.

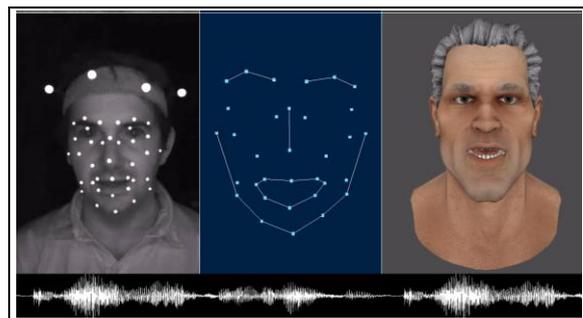


Fig. 1: Recording of audio-visual data for visual synthesis.

#### Synthetic voice "Leopold"

Based on the speech data that were recorded by a professional Austrian radio speaker, FTW and the Scottish company Cereproc developed a synthetic voice for different software platforms. The recording script for this synthetic voice was tailored for Austrian German such that all necessary phone combinations are present in the recordings.

“Leopold” was the first commercially available synthetic voice in Austrian German. Right at the time when the voice development was finished the City of Vienna was looking for such a synthetic voice. “We had already plans to develop a voice – an Austrian one – capable of reading aloud wien.at’s contents. Unfortunately such a voice didn’t exist and its development would have been too expensive”, explained Michael Rederer, head of the MA 53 department in charge of wien.at online. “It was a lucky coincidence that we got to know about FTW’s project. It was precisely what we had been looking for”.



**Fig. 2: The use of local language varieties (dialect, sociolect, and accent) can improve voice services.**

The local customization of voice user interfaces is an important aspect of the persona design of voice based interfaces, since the voice of a person carries a lot of information additional to the pure semantic content. Through the voice we infer gender, age, social and personal traits of the speaker, which are then used to construct a specific persona.

### Impact and effects

Customized voice services that use Austrian German synthetic voices have become very popular in recent years. *Wiener Linien* now have a customized Austrian German voice and also *ÖBB* is in the process of developing an Austrian German synthetic voice based on their corporate voice. This shows that there is a large potential for future synthetic voice development.

Since its release more than 300 desktop licenses of “Leopold” have been sold already.

The voice “Leopold” is for example used

- by the website of the City of Vienna (<https://www.wien.gv.at/>),
- by the Austrian postal services (<https://www.post.at/>),
- by private users, who bought desktop and smartphone versions of the voice (<https://www.cereproc.com/de/slandinge>).

We have also released an open-source version of “Leopold” based on the HTS toolkit (<http://sourceforge.net/projects/at-festival/>), which was already downloaded several hundred times.

This open-source version was integrated into the *ASFINAG unterwegs* mobile application. This integration was part of the COMET project CAMINO where novel user interface paradigms for ITS scenarios were investigated. Within this project we also investigated speech and gesture based multimodal input methods for ITS services.

#### Contact and information

K1-Centre FTW

FTW GmbH in Liquidation  
c/o TU Wien, Karlsplatz 13  
A-1040 Wien  
Tel.: +43 1 505 2830 0  
E: [office@ftw.at](mailto:office@ftw.at), <http://www.ftw.at>

#### Selected related FTW projects:

**AMTV, AVDS, SALB, CAMINO**

#### Contact Person

Prof. Dr. Hans-Peter Schwefel  
[hps@es.aau.dk](mailto:hps@es.aau.dk)

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