2 PhD Positions in Phonetics/Speech Sciences at Zurich University (4 years, fully funded)

For a four year research project funded by the *Swiss National Science Foundation* on *The Dynamics of Indexical Information in Speech and its Role in Speech Communication and Speaker Recognition* we are looking for 2 PhD students. You can find a brief summary of some central ideas of the project below (2nd page).

The *Phonetics & Speech Sciences Group* is part of the *Department of Computational Linguistics @ University of Zurich* and is run by a team of enthusiastic academics with interests in a variety of areas in phonetics and speech sciences. We work closely together with researchers from a variety of departments such as Psychology, Comparative Linguistics, Biology and the philologies (German, English, Romance).

Requirements:
- Master (e.g. MA, MSc, MRes, etc.) in Phonetics, Signal Processing, Speech Sciences, Linguistics or related area (e.g. Psychology, Biology).
- Proficient oral and writing skills in English.

You should have an interest (or already experience) in areas like:
- Speech signal processing (e.g. Matlab, Python, Praat, Wavesurfer)
- Behavioral experiments with speech and/or speaker/voice recognition
- Automatic procedures of speaker/voice recognition
- Statistical modelling of speech data

Payment for the position will be between 47-50k CHF/year (depending on year).

To be considered your application must consist of one single PDF file of max. 5 pages with the following structure:
- Max. 2 pages: CV including name and email of two potential referees
- Max. 1.5 pages: Summary of your experiences with speech/speaker recognition/phonetics and why you think you might be the right person for this project (project description below).
- Max. 1.5 pages: Summary of your preferred PhD project.

You will be evaluated based on this document.

Application procedure:
- Send your PDF application by email to the admin office: Ms Tamar Tolcachier (tolcachier@ifi.uzh.ch)
- This application is open until filled. Before preparing your application you may check on the following webpage whether a position is still available: http://pub.cl.uzh.ch/purl/vdellwo
- Starting date of position: on or after 1. September 2019 (negotiable)

Further information and or informal chats about the posts:
- Volker Dellwo; email: volker.dellwo@uzh.ch; webpage: http://pub.cl.uzh.ch/purl/vdellwo

Brief summary of the project:

The project will be about the dynamics of vocal cues to individuality (indexical information). It is well known that humans can control indexical information, e.g. by disguising their voice. We will look at such mechanisms but also at the question of whether humans can control their individuality in speech to increase their recognizability and the reasons for such individuality controls in social settings. In our own previous work, we found that situational voice alterations (e.g. speaking styles) can have an asymmetrical effect on speaker recognition (J. Acoust. Soc. Am., [145, 3], p. 1766). For example, learning a speaker under infant-directed speech (IDS) has advantage for recognition in adult directed conversational speech but not vice versa. It thus seems plausible that a speaking style like IDS evolved a specific combination of indexical cues as a technique for mothers to make themselves better recognizable to their offspring. To date it is unknown, however, how such recognition advantages may be accomplished.

The major theoretical aim of the present project is to understand the dynamics of indexical information by examining speech from human interaction. For this we will investigate how indexical information varies (a) within utterances and (b) within and between speaking styles and (c) what effects this variability has on speaker recognition in humans and computers and (d) how such speaker recognition performance interacts with speech recognition performance. The results will show to what degree speakers have control over indexical information to either reveal or suppress their individuality in speech communication situations. To reach these aims we will…

- … sample a large homogenous population of human voices (~500 speakers) in which individuals will be recorded varying their speaking styles in situations where individuality plays a role (e.g. charismatic, deceptive, clear, or computer directed speech).
- … understand the variability of indexical information between speaking styles in individuals in respect of the population using computer modelling.
- .... test the effects that indexical variability has on the recognizability of speakers' voices and their speech in human and machine voice/speech recognition.

As a PhD student in the project you will carry out tasks such as:
- Designing speech recording procedures and record speakers.
- Editing speech data and compiling databases.
- Processing speech data and carrying out acoustic analysis.
- Designing and carrying out perception experiments to test speech and speaker recognition ability of human listeners.
- Running automatic speech and speaker recognition tasks.

We are aiming at employing one PhD student with stronger background in human testing (behavioral experiments) and the other one in machine testing (automatic speaker/speech recognition). It should be clear from your application in which area you see yourself more.