2018-00647 - PhD Position / Expressive speech synthesis based on deep learning [S]

Niveau de diplôme exigé : Bac + 5 ou équivalent
Fonction : Doctorant

Contexte et atouts du poste

Team:
MULTISPEECH (https://team.inria.fr/multispeech/) - Inria Nancy - Grand-Est

Contacts:
Denis Jouvet (denis.jouvet@loria.fr; https://members.loria.fr/DJouvet/)
Vincent Colotte (Vincent.colotte@loria.fr; https://members.loria.fr/VColotte/)

Mission confiée

Scientific Context

Over the last decades, text-to-speech synthesis (TTS) has reached good quality and intelligibility, and is now commonly used in information delivery services, as for example in call center automation, in navigation systems, and in voice assistants. In the past, the main goal when developing TTS systems was to achieve high intelligibility. The speech style was then typically a “reading style”, which resulted from the style of the speech data used to develop TTS systems (reading of a large set of sentences). Although a reading style is acceptable for occasional interactions, TTS systems should benefit from more variability and expressivity in the generated synthetic speech, for example, for lengthy interactions between machines and humans, or for entertainment applications. This is the goal of recent or emerging research on expressive speech synthesis. Contrary to neutral speech, which is typically read speech without conveying any particular emotion, expressive speech can be defined as speech carrying an emotion, or spoken as in spontaneous speech, or also as speech with emphasis set on some words.

Principales activités

Missions

Deep learning approaches leads to good speech synthesis quality, however the main scientific and technological barrier remains the necessity of having a speech corpora corresponding to the speaker and the target style conditions, here expressive speech. This thesis aims at investigating approaches to overcome this barrier. More precisely, the objective is to propose and investigate approaches allowing expressive speech synthesis for a given speaker voice, using both the neutral speech data of that speaker, or the corresponding neutral speech model, and expressive speech data from other speakers. This will avoid lengthy and costly recording of specific ad hoc expressive speech corpora (e.g., emotional speech data from the target voice speaker).

Let recall that three main steps are involved in parametric speech synthesis: the generation of sequences of basic units (phonemes, pauses, etc.) from the source text; the generation of prosody parameters (durations of sounds, pitch values, etc.); and finally the generation of acoustic parameters, which leads to the synthetic speech signal. All the levels are involved in expressive speech synthesis: alteration of pronunciations and presence of pauses, modification of prosody correlates and modification of the spectral characteristics.
The thesis will essentially focus on the two last points, i.e., a correct prediction of prosody and spectral characteristics to produced expressive speech through deep learning-based approaches. Some aspects to be investigated include the combined used of only the neutral speech data of the target voice speaker and expressive speech of other speakers in the training process, or in an adaptation process, as well as data augmentation processes.

The baseline experiments will rely on neutral speech corpora and expressive speech corpora previously collected for speech synthesis in the Multispeech team. Further experiments will consider using other expressive speech data, possibly extracted from audiobooks.

Bibliography


Compétences

Required qualifications

Master in automatic language processing or in computer science

Skills and profile

Background in statistics, and in deep learning
Experience with deep learning tools
Good computer skills (preferably in Python)
Experience in speech synthesis is a plus

Avantages sociaux

- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- French courses

Rémunération

Gross Salary per month: 1982€ brut per month (year 1 & 2) and 2085€ brut/month (year 3)

Informations générales

- Ville : Villers-lès-Nancy
- Centre Inria : CRI Nancy - Grand Est
- Date de prise de fonction souhaitée : 01-10-2018
- Durée de contrat : 3 ans
- Date limite pour postuler : 01-05-2018
Contacts

- **Equipe Inria**: MULTISPEECH
- **Recruteur**: Jouvet Denis / denis.jouvet@inria.fr

L'essentiel pour réussir

**Application deadline**

May 1st, 2018 (Midnight Paris time)

**How to apply**

Upload your file on [jobs.inria.fr](http://jobs.inria.fr) in a single pdf or zip file, and send it as well by email to denis.jouvet@inria.fr. Your file should contain the following documents:

- Your CV.
- A cover/motivation letter describing your interest in this topic.
- A short (max one page) description of your Master thesis (or equivalent) or of the work in progress if not yet completed.
- Your degree certificates and transcripts for Bachelor and Master (or the last 5 years).
- Master thesis (or equivalent) if it is already completed and publications if any (it is not expected that you have any). Only the web links to these documents are preferable, if possible.

In addition, one recommendation letter from the person who supervises(d) your Master thesis (or research project or internship) should be sent directly by his/her author to denis.jouvet@inria.fr.

Applications are to be sent as soon as possible.

**Conditions pour postuler**

**Sécurité défense** :

Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

**Politique de recrutement** :

Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

**Attention**: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.