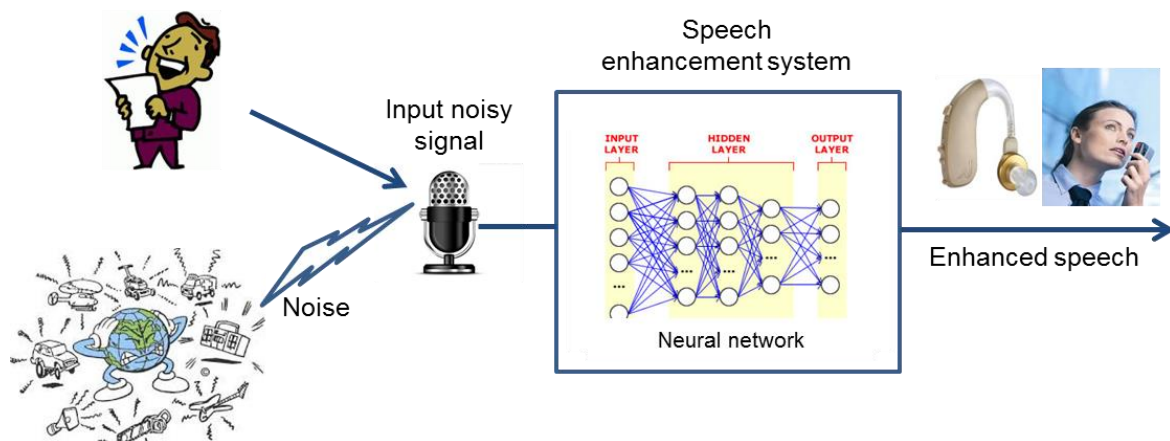## Title of internship

Speech enhancement using deep neural networks

Summary of the internship

Speech enhancement aims at improving the intelligibility and/or overall perceptual quality of noisy speech signals. It is a key element in a wide range of applications in daily communication systems and robotics. Numerous approaches have been proposed in the literature exploiting different audio signal processing techniques. This challenging internship aims at exploiting an emerging framework based on deep neural networks (DNN), which has recently gained great success in different tasks in audio, image and language processing. Some recent studies [1,2] have shown the potential of this DNN-based approach for speech enhancement.

The intern will conduct both research and algorithm implemention while investigating the use of deep neural network for speech enhancement. Depending on obtained results, this work may lead to a patent submission and a research publication in an international conference.

REFERENCE:

[1] Y. Xu, J. Du, L. Dai, and C. Lee, "*An Experimental Study on Speech Enhancement Based on Deep Neural Networks*," IEEE Signal Processing Letter, Vol. 21, No. 1, 2014.

[2] D. Liu, P. Smaragdis, and M. Kim, "*Experiments on Deep Learning for Speech Denoising*," in Proceedings of the annual conference of the International Speech Communication Association (INTERSPEECH), 2014.

Keywords

Audio signal processing, speech enhancement, deep neural networks.

Working environment

Technicolor is an industry leader in the production of video content for movies, TV, advertising, games and more. The company provides production, postproduction, and distribution services to content creators, network service providers and broadcasters. Technicolor Research Rennes is the largest Technicolor Research Center conducting research in various domains applying to the creation, management and delivery of digital content. For more information on Technicolor R&I Rennes:
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Internship proposal for 2015
Proposal ref: (completed by HR)

The internship will be hosted in Imaging Science Lab (ISL) within Technicolor R&I Rennes. More specifically, he/she will join the "Image & Vision" team composing of more than twenty researchers and engineers coming from many different countries. One major goal of the team is to conduct the research towards describing and searching for contents from large data collections as well as enhancing and adapting these contents to any devices.

Desired profile of the applicant
3th year of engineering school ("école d'ingénieurs") or M.Sc. ("master recherche")
Specialized in signal processing and / or applied mathematics
Programming skills (Matlab, Python and C++ may also be needed)
Strong interest in research
Ease of adaptation, good communication skills and good teamwork spirit
Fluent English

Internship period & duration
Minimum 6 months (from February 2015 to August 2015)

Salary: 1200 euros / month (brut)

Internship supervisor & contact
Ngoc Q. K. Duong and Alexey Ozerov
E-mail : quang-khanh-ngoc.duong@technicolor.com / alexey.ozerov@technicolor.com