Dear Colleagues,

your are cordialy invited by Univ Toulon, INP, DYNI LSIS and MADICS CNRS EADM to the conference of Prof. Marie Roch :

"Understanding Bio-Acoustics, from Big Data Perspectives to Insights on Meaningful Call Segmentations"

on friday the 12th of may 2017, 9:00-10:30, Amphi. K20, La Garde[1] (possible streaming, mailto: glotin@univ-tln.fr).

Pr. Roch received her Ph.D. degree from the University of Iowa. Prior to joining San Diego State Univ., she held positions at Florida Int. Univ. and AT&T Bell Laboratories (http://roch.sdsu.edu). Her talk is in two parts.

Part I : " Large Heterogeneous Data From Passive Acoustic Monitoring "

A growing number of passive acoustic monitoring systems have resulted in a wealth of annotation information, or metadata, for recordings. These metadata are semi-structured. Some parameters are essentially mandatory (e.g. time of detection and what was detected) while others are highly dependent upon the question that a researcher is asking. Tethys is a set of structuring rules for acoustic metadata databases and an accompanying scientific workbench/database implementation. The database implementation is designed for large scale use. The largest Tethys server represents 7.3 million marine mammal detections from 177 years of recording effort across multiple ocean basins and a corresponding analysis effort of over 674 years (data analyzed multiple times for different species). It is designed to represent spatial-temporal acoustic metadata in a format that promotes consistency while allowing for novel representations needed to address new questions. The implementation further provides support for analyzing acoustic observations in the context of physical measurements such as sea surface temp., ephemeris, etc. This work is a collaboration of SDSU, Scripps Institution of Oceanography, and the National Oceanographic and Atmospheric Administration, and has been sponsored by the US Office of Naval Research (Mike Weise), Bureau of Ocean Energy Management (Jim Price), Navy Living Marine Resources (Anu Kumar) and National Oceanographic Parternship programs.

Part II : " Towards a Meaningful Segmentation of Non-Human Animal Calls "

Recent work has shown that the human preauditory and/or auditory cortex is likely to play a role in acoustic landmark processing, such as the recognition of syllable and phoneme boundaries. Neurons appear to track acoustic envelopes with neural activity corresponding well with acoustic landmarks. These structures have also been observed in non-human primates, suggesting that acoustic landmark processing could be present in non-human primates and have an evolutionary role. Should landmark processing occur in non-humans, it could provide new methods for approaching animal communication and understanding language evolution. In this work, we use a simplified computer model to examine envelopes of acoustic signals that were filtered through a series of octave spaced band-pass filters. Peaks are detected in the signal envelopes with closely spaced peaks suppressed for a period of time after the first detection. Preliminary work shows an ability to detect human phoneme boundaries with a recall of 45% and a precision of 72% on the TIMIT speech corpus. It contains phoneme-level transcriptions and successful matches were defined as detecting landmarks within 12 ms of the over quarter million TIMIT phoneme boundaries. We also show qualitative results of the system for segmenting non-human primate calls into phone-like units. This work is a collaboration of SDSU, St. Andrews univ, Toulon univ. LSIS DYNI.

1 http://www.univ-tln.fr/IMG/pdf/plan