Thibaud Necciari

Ph.D.

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Keywords: sound perception, auditory modeling, masking, psychophysics, sampling, time-frequency analysis, filter banks, sound synthesis.

Education

2010	**Ph.D. in Acoustics**, *Aix-Marseille I University*, France, Passed with distinction.
Thesis	*Auditory time-frequency masking: Psychoacoustical measures and application to the analysis-synthesis of sound signals.*
Supervisors	Richard Kronland-Martinet, Ph.D., and Sophie Savel, Ph.D.
2006	**M.Res. in Signal Processing**, *Toulon-Var University*, France, Magna cum laude.
Thesis	*Design of an analysis-synthesis interface of impact sounds based on physical and perceptual attributes of real sounds.*
Supervisor	Mitsuko Aramaki, Ph.D.
2006	**Electrical Engineer's degree**, *ISEN Engineering College*, Toulon.
2003	**A.S. in Electronics and Computer Science**, *Montpellier II University*, France.

Current Situation, Research Interests

Since Fall 2010	**Postdoctoral Researcher**, *Acoustics Research Institute*, Vienna, Austria. Research groups: Mathematics and Signal Processing in Acoustics, Psychoacoustics and Experimental Audiology.
Interests	Analysis, processing and synthesis of audio signals, time-frequency and sparse representations, audio coding, auditory masking, sound localization, modeling of peripheral and neuronal auditory processing.

Funding and Grants

2013	**Project coordinator**, secured funding for the joint French-Austrian research project PO-TION conducted between the Laboratory for Mechanics and Acoustics (Marseille) and the Acoustics Research Institute (Vienna), € 400 000. Duration: 3 years. Jointly funded by the Agence Nationale de la Recherche (ANR, France) and Fonds zur Förderung der wissenschaftlichen Forschung (FWF, Austria).
2012	Secured € 450 from the French Society of Acoustics to attend the 16th International Symposium on Hearing, Cambridge, UK.
2006	Secured a doctoral grant from the French Ministry of Research.

Teaching Experience

2015-2016	**Supervisor**, *J. Ziegler*, University of Music and Performing Arts Vienna, M.A. student. Thesis: *Simulations and measurements of auditory time-frequency masking kernels for various masker frequencies and levels.*
2014-2015	**Supervisor**, *L. Leucke*, Graz University of Technology, B.Sci. student. Title: *Estimating the basilar membrane input-output function using fixed-duration masking curves.*

2006–2008 **Instructor**, *Aix-Marseille II University*, Marseille, France.
Supervised and taught practical courses in signal processing to undergraduate students in Communications and Information Technology. Composed exams and graded all written work.

Publications

Journal Articles

T. Necciari, B. Laback, S. Savel, S. Ystad, P. Balazs, S. Meunier, and R. Kronland-Martinet. Auditory time-frequency masking for spectrally and temporally maximally-compact stimuli. *PLOS ONE*, 11(11):1–23, 11 2016.

H. Tabuchi, B. Laback, **T. Necciari**, and P. Majdak. The role of compression in the simultaneous masker phase effect. *The Journal of the Acoustical Society of America*, 140(4):2680–2694, 2016.

B. Laback, **T. Necciari**, P. Balazs, S. Savel, and S. Ystad. Simultaneous masking additivity for short Gaussian-shaped tones: Spectral effects. *The Journal of the Acoustical Society of America*, 134(2):1160–1171, August 2013.

B. Laback, P. Balazs, **T. Necciari**, S. Savel, S. Meunier, S. Ystad, and R. Kronland-Martinet. Additivity of nonsimultaneous masking for short Gaussian-shaped sinusoids. *The Journal of the Acoustical Society of America*, 129(2):888–897, February 2011.

Book chapters

Peter Balazs, Nicki Holighaus, **T. Necciari**, and Diana Stoeva. *Excursions in Harmonic Analysis*, volume 5 of *Applied and Numerical Harmonic Analysis*, chapter Frame Theory for Signal Processing in Psychoacoustics. Springer, 2017. In press.

T. Necciari, P. Balazs, R. Kronland-Martinet, S. Ystad, B. Laback, S. Savel, and S. Meunier. *Speech, Sound and Music Processing: Embracing Research in India*, volume 7172 of *Lecture Notes in Computer Science*, chapter Auditory Time-Frequency Masking: Psychoacoustical Data and Application to Audio Representations, pages 146–171. Springer, 2012. Revised Selected Papers from the 8th international Computer Music Modeling and Retrieval symposium (CMMR 2011).

Selected Conference Proceedings

O. Derrien, **T. Necciari**, and P. Balazs. A quasi-orthogonal, invertible, and perceptually relevant time-frequency transform for audio coding. In *Proceedings of EUSIPCO 2015*, pages 804–808, Nice, France, September 2015. IEEE.

T. Necciari and B. Laback. Effect of cueing on stability of behavioral measurements of basilar membrane responses with a precursor. 169th Meeting of the ASA, May 2015.

G. Chardon, **T. Necciari**, and P. Balazs. Perceptual matching pursuit with Gabor dictionaries and time-frequency masking. In *Proceedings of ICASSP 2014*, pages 3126–3130, Florence, Italy, May 2014. IEEE.

T. Necciari, P. Balazs, N. Holighaus, and P. Søndergaard. The ERBlet transform: An auditory-based time-frequency representation with perfect reconstruction. In *Proceedings of ICASSP 2013*, pages 498–502, Vancouver, Canada, May 2013. IEEE.

P. Majdak, R. Baumgartner, **T. Necciari**, and B. Laback. Sound localization in sagittal planes: Modeling the level dependence. 36th MidWinter Meeting of the ARO, Baltimore, MD, USA, February 2013.

T. Necciari, P. Balazs, R. Kronland-Martinet, S. Ystad, B. Laback, S. Savel, and S. Meunier. Perceptual optimization of audio representations based on time-frequency masking data for maximally-compact stimuli. In *Proceedings of the 45th AES conference on Applications of Time-Frequency Processing in Audio*, Helsinki, Finland, March 2012.

Invited Talks

A perfectly invertible and perceptually motivated time-frequency transform for audio representation, analysis and synthesis, December 2012. *ESI12 Workshop on modern methods of time-frequency analysis part II*, Erwin Schroedinger Institute, University of Vienna, Austria.

The ERBlet transform, time-frequency masking and perceptual sparsity, October 2012. *2nd Signal Processing Laboratory Workshop*, Brno University of Technology, Brno, Czech Republic.

Professional Affiliations and Scientific Services

Since 2006	**Member**, French Society of Acoustics.
Since 2011	**Member**, IEEE Signal Processing Society.
Since 2015	**Reviewer** for the IEEE Transactions on Audio, Speech and Language Processing.
Since 2011	**Reviewer** for the International Conference on Digital Audio Effects (DAFx).

Computer Skills

Programming	C, C++, LaTeX	Management	xPlan, Merlin, Microsoft project
Computing	Matlab, Maple, Statistica	Audio	Max/MSP, Audacity, Ableton Live
Platforms	Apple Mac OS X, Linux		

Language Skills

French	Mother tongue.	
English	Fluent.	
German	Proficient.	*Passed B1 ÖSD Zertifikat Deutsch in Jan. 2013 (score: 293/300).*
Chinese	Basic knowledge.	*Currently learning, traveled in China.*

References

Furnished upon request.