

# LUCAS RENCKER

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## EXPERIENCE

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**PhD candidate/Marie Curie Early-Stage Researcher** October 15 - Present  
*Centre for Vision, Speech and Signal Processing (CVSSP), University of Surrey, Guildford, UK*  
*Machine Sensing Training Network (MacSeNet) - Marie Skłodowska-Curie Innovative Training Network*  
Research topic: Sparse representations for audio restoration and inpainting  
Research interests: sparse decomposition, dictionary learning, matrix factorization, statistical learning, optimization, linear and nonlinear inverse problems (denoising, inpainting, declipping, dequantization)  
Supervisors: Dr. Wenwu Wang, Prof. Mark Plumbley

**Visiting researcher** May 16 - Present  
*Cedar Audio Ltd, Cambridge, UK*  
Visiting researcher (3 days/month), as part of an industrial placement  
Real life applications of signal processing techniques in the industry  
Research topic: Dictionary learning for digital audio restoration  
Supervisor: Dave Betts

**Visiting researcher** April - July 17  
*SIERRA-team, INRIA, Paris, France*  
Research topic: Dictionary learning for signal declipping  
Supervisor: Dr. Francis Bach

**Research student** April - September 15  
*Spatial signal processing group, International Audiolabs, Fraunhofer IIS, Erlangen, Germany*  
Masters thesis: Impulsive noise detection and reduction for speech enhancement  
Supervisor: Prof. Emanuel Habets

**Student Intern** September - January 13  
*Acoustics and Mechanical engineering lab, Ecole Centrale Marseille, France*  
Cross-disciplinary group project with 6 other students (co-supervised by Schlumberger Ltd.)  
Developed a 3D tracking algorithm from a high-frequency camera (in MATLAB), to track the movement of a spinning drill pipe

**Student Intern** August 13  
*Electrical and Electronics lab, SGS CTS, Aix-en-Provence, France*  
Performed quality control on consumer electrical and electronic devices

## EDUCATION

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**Masters degree in Signal and Image Processing** September 15  
*Ecole Centrale Marseille, France*  
Advanced courses in signal and image processing  
Courses: statistical signal processing, information theory, estimation theory, inverse problems, medical imaging, optical imaging

**Masters of Engineering** September 15  
*Ecole Centrale Marseille, France*  
General engineering education (advanced mathematics, electrical/electronic engineering, computer science)

**Academic semester in Telecommunication Engineering**

March - July 14

*Politecnico di Torino*, Turin, Italy

Information &amp; coding theory, queueing theory, radar &amp; remote sensing

**Classe préparatoire aux grandes écoles**

September 10 - August 12

*Institut Sainte-Marie*, Antony, France

2-year intensive maths and physics course, preparing for competitive national exams

**SKILLS**

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*Programming Languages*: MATLAB, Python (advanced level), C/C++ (basic level)*Software*: Unix, Git, LaTeX*Languages*: English, French (fluent), German, Italian (basic level)**TEACHING**

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Year 1 Mathematics for Engineering (one-to-one support)

**PUBLICATIONS**

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- A greedy algorithm with learned statistics for sparse signal reconstruction,  
*L. Rencker, W. Wang and M. D. Plumbley*  
IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (2017)
- Multivariate iterative hard thresholding for sparse decomposition with flexible sparsity patterns,  
*L. Rencker, W. Wang and M. D. Plumbley*  
25th European Signal Processing Conference (EUSIPCO) (2017)
- Consistent dictionary learning for signal declipping,  
*L. Rencker, F. Bach, W. Wang and M. D. Plumbley*  
2018 Latent Variable Analysis/Independent Component Analysis (LVA/ICA) conference,

**INTERESTS**

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Music, photography, cinema, travelling