# LUCAS RENCKER

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## EXPERIENCE

**PhD candidate/Marie Curie Early-Stage Researcher**                    October 15 - Present
*Centre for Vision, Speech and Signal Processing (CVSSP)*, *University of Surrey*, Guidford, UK
*Machine Sensing Training Network (MacSeNet) - Marie Skłodowska-Curie Inovative 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**                    October 15 - 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
*International Audiolabs, Fraunhofer IIS*, Erlangen, Germany
Topic: Impulsive noise detection and reduction for speech enhancement
Supervisor: Prof. Emanuël 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

**Masters degree in Signal and Image Processing**                    September 15
*Ecole Centrale de 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 de 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 & coding theory, queueing theory, radar & 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

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

## TEACHING

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

## PUBLICATIONS

- 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*
  Submitted to the 2018 Latent Variable Analysis/Independent Component Analysis (LVA/ICA)
  conference

- Consistent dictionary learning from nonlinear noninvertible measurements,
  *L. Rencker, F. Bach, W. Wang and M. D. Plumbley*
  To be submitted to IEEE Transactions on Signal Processing

## INTERESTS

Music, photography, cinema, travelling