# Maja **Taseska**

**Current position:** Postdoctoral researcher at KU Leuven / FWO Postdoctoral Fellow

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**Date of birth** 28.05.1988
**Place of birth** Ohrid, Macedonia
**Nationality** German

## Education

### Doctor of Engineering (summa cum laude)
*Erlangen, Germany*

Friedrich-Alexander Universtät Erlangen-Nürnberg (FAU) - International Audio Laboratories
*May 2017*

- *Thesis title:* Informed spatial filters for speech enhancement
- *Advisor:* Prof. Dr. ir. Emanuël A. P. Habets

### Master of Science (summa cum laude)
*Erlangen, Germany*

Friedrich-Alexander Universtät Erlangen-Nürnberg (FAU)
*Sep. 2010 - Sep. 2012*

- *Program:* Systems of information and multimedia technology
- *Master thesis:* Minimum mean-squared error-based informed spatial filtering

### Bachelor of Science
*Bremen, Germany*

Jacobs University Bremen
*Sep. 2007 - Jun. 2010*

- *Program:* Electrical and computer engineering
- *Bachelor thesis:* Peak-to-average ratio reduction in broadcast MIMO OFDM Systems

## Work experience

### KU Leuven, Department of Electrical Engineering (ESAT)
*Leuven, Belgium*

Postdoctoral researcher
*Jan. 2018 - to date*

- ***Expertise:*** microphone array signal processing, machine learning for source localization, acoustic measurements
- ***Main tasks:*** principal investigator of a postdoctoral project, co-supervisor of PhD and Master students
- ***Teaching:*** Signals and Systems (lecturer), Calculus (assistant)

### Microsoft Corporation, Applied Sciences Lab
*Redmond, WA, USA*

Research internship
*Aug. 2017 - Nov. 2017*

- Design and development of a source localization algorithm for a device-specific acoustic front-end

### International Audio Laboratories, Erlangen
*Erlangen, Germany*

Research associate
*Dec. 2012 - May. 2017*

- ***Expertise:*** speech enhancement, adaptive filtering, blind source separation, source localization
- ***Main tasks:*** algorithm design and development, design of measurements and experiments, research dissemination
- ***Patents:*** close cooperation with patent lawyers for drafting patent applications
- ***Teaching:*** supervision of Master students, course tutoring, design of laboratory exercises and seminars in speech enhancement

### Fraunhofer IIS, Department of Audio and Multimedia
*Erlangen, Germany*

Student research assistant

- ***Apr. 2012 - Oct. 2012***, research on antenna modeling using vector spherical harmonics
- ***Jul. 2010 - Feb. 2012***, research and software prototyping for spatial audio acquisition
- ***Jun. 2008 - Aug. 2008***, algorithm development for blind calibration of microphone arrays

### German Research Center for Artificial Intelligence, Department of Robotics
*Bremen, Germany*

Student research assistant
*Feb. 2010 - May 2010*

- Programming a low-level driver for a servo-based pan-tilt unit (in C programming language)

**Jacobs University Bremen, Department of Electrical Engineering** — *Bremen, Germany*

Teaching assistant (Lectures: Computer Architecture; C Programming) — *Sep. 2008 - Dec. 2009*

## Awards & Grants

**Postdoctoral Research Fellowship (3 years, 300 kEur)** — *Leuven, Belgium*

Grant awarded by the Research Foundation Flanders (FWO-Vlaanderen) — *Oct. 2018-to date*

**Doctoral Thesis Award** — *Erlangen, Germany*

The price recognizes outstanding scientific achievements of a doctoral thesis, awarded by the Freundeskreis der Technischen Fakultät, FAU — *Nov. 2018*

**Short-Term Research Grant from Minerva Stiftung (2 months)** — *Munich, Germany*

Based on scientific excellence and innovative research topics, granted for a research visit at the Technion - Israel Institute of Technology — *Jul. 2016*

**Best Student Paper Award** — *Erlangen, Germany*

11-th ITG Conference on Speech Communication, Erlangen — *Sep. 2014*

**Best Student Paper Award** — *New Paltz, NY, USA*

IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) — *Oct. 2013*

**Luise-Prell Award** — *Erlangen, Germany*

The price recognizes outstanding Master thesis research, awarded by the Luise-Prell Foundation — *Jul. 2013*

## Computer skills

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|---|---|
| **Programming** | MATLAB (proficient), Python (proficient), C/C++ (beginner), Swift (beginner) |
| **Tools/Other** | Git, Jupyter, LaTeX, Keras and Tensorflow (beginner), iOS and Android App development (beginner) |
| **Platforms** | Windows, Linux, MacOS |

## Languages

**English** (fluent) · **German** (fluent) · **Macedonian** (native) · **Spanish** (conversational)

## Hobbies

cycling · swimming · running · playing the piano

## Publication list

### Patents

1. E.A.P. Habets, O. Thiergart, S. Braun, and M. Taseska, *Filter and method for informed spatial filtering using multiple instantaneous direction-of-arrival estimates*, WO/2014/095250, Jun. 2014.
2. E.A.P. Habets and M. Taseska, *Apparatus and method for providing an informed multichannel speech presence probability estimation*, WO/2014/032738, Mar. 2014.

### Peer-reviewed journal papers

1. M. Taseska, T. van Waterschoot, E.A.P. Habets, and R. Talmon *Nonlinear Filtering with Variable-Bandwidth Exponential Kernels*, IEEE Transactions on Signal Processing, 2019, under review.
2. M. Taseska and E.A.P. Habets, *Blind source separation of moving sources using sparsity-based source detection and tracking*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 26, Issue 3, pp. 657-670, Mar. 2018.
3. M. Taseska and E.A.P. Habets, *DOA-informed source extraction in the presence of competing talkers and background noise*, EURASIP Journal on Advances in Signal Processing, Vol. 2017, Issue 1, Dec. 2017
4. M. Taseska and E.A.P. Habets, *Non-Stationary Noise PSD Matrix Estimation for Multi-Channel Blind Speech Extraction*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 25, Issue 11, pp. 2223 - 2236, Nov. 2017.
5. M. Taseska and E.A.P. Habets, *Spotforming: Spatial filtering with distributed arrays for position-selective sound acquisition*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 24, Issue 7, pp. 1291-1304, Jul. 2016.
6. K. Kowalczyk, O. Thiergart, M. Taseska, G. Del Galdo, V. Pulkki and E.A.P. Habets, *Parametric spatial sound processing: A flexible and efficient solution to sound scene acquisition, modification and reproduction*, IEEE Signal Processing Magazine, Vol. 32, Issue 2, pp. 31-42, Mar. 2015.
7. O. Thiergart, M. Taseska and E.A.P. Habets, *An informed parametric spatial filter based on instantaneous direction-of-arrival estimates*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 22, Issue 12, pp. 2182-2196, Dec. 2014.
8. M. Taseska and E.A.P. Habets, *Informed spatial filtering for sound extraction using distributed microphone arrays*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 22, Issue 7, pp. 1195-1207, Jul. 2014.
9. D.P. Jarrett, M. Taseska, E.A.P. Habets and P.A. Naylor *Noise reduction in the spherical harmonic domain using a tradeoff beamformer and narrowband DOA estimates*, IEEE/ACM Transactions on Audio, Speech and Language Processing, Vol. 22, Issue 5, pp. 967-978, 2014.
10. O. Thiergart, G. Del Galdo, M. Taseska and E.A.P. Habets *Geometry-based spatial sound acquisition using distributed microphone arrays*, IEEE Transactions on Audio, Speech and Language Processing, Vol. 21, Issue 12, pp. 2583-2594, Dec. 2013.
11. G. Del Galdo, M.Taseska, O.Thiergart, J. Ahonen and V. Pulkki, *The diffuse sound field in energetic analysis*, Journal of the Acoustical Society of America, Vol. 131, Issue 3, pp. 2141-2151, Mar. 2012.

### Peer-reviewed conference papers

1. D. Tang, M. Taseska and T. van Waterschoot, *Supervised contrastive embeddings for binaural source localization*, Proc. of the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), 2019, under review.
2. M. Taseska and T. van Waterschoot, *On spectral embeddings for supervised binaural source localization*, Proc. of the European Signal Processing Conference (EUSIPCO), 2019.
3. R. Varzandeh, M. Taseska and E.A.P. Habets, *An iterative multichannel subspace-based covariance subtraction method for relative transfer function estimation*, Proc. of the Joint Workshop on Hands-free Speech Communication and Microphone Arrays (HSCMA), San Francisco, USA, 2017.

4. O. Schwartz, Y. Dorfan, M. Taseska, E.A.P. Habets and S. Gannot, *DOA estimation in noisy environment with unknown noise power using the EM algorithm*, Proc. of the Joint Workshop on Hands-free Speech Communication and Microphone Arrays (HSCMA), San Francisco, USA, 2017.
5. M. Taseska, R. Varzandeh and E.A.P. Habets, *Recursive implementations of informed spatial filters*, Proc. of the International Workshop on Acoustic Signal Enhancement (IWAENC), China, 2016.
6. M. Taseska, G. Lamani and E.A.P. Habets, *Online clustering of narrowband position estimates with application to multi-speaker detection and tracking*, Proc. of the International Conference on Machine learning and Signal Processing (MALSIP), Malaysia, 2015.
7. M. Taseska and E.A.P. Habets, *Relative transfer function estimation exploiting instantaneous signals and the signal subspace*, Proc. of the European Signal Processing Conference (EUSIPCO), France, 2015.
8. A.H. Khan, M. Taseska and E.A.P. Habets, *A geometrically constrained independent vector analysis algorithm for online source extraction*, Proc. 12th International Conference on Latent Variable Analysis and Signal Separation, Liberec, Czech Republic, Aug. 25-28, 2015.
9. M. Taseska and E.A.P. Habets, *Minimum Bayes risk signal detection for speech enhancement based on a narrowband DOA model*, Proc. of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brisbane, Australia, 2015.
10. M. Taseska and E.A.P. Habets, *A subspace-based perspective on spatial filtering performance with distributed and co-located microphone arrays*, Proc. of the ITG Conference on Speech Communication, 2014.
11. M. Taseska, S. Markovich-Golan, E.A.P. Habets and S. Gannot, *Near-field source extraction using speech presence probabilities for ad hoc microphone arrays*, Proc. of the International Workshop on Acoustic Signal Enhancement (IWAENC), 2014.
12. M. Taseska, A.H. Khan and E.A.P. Habets, *Speech enhancement with a low-complexity online source number estimator using distributed arrays*, Proc. of the European Signal Processing Conference (EUSIPCO), 2014.
13. S. Chakrabarty, K. Kowalczyk, M. Taseska and E.A.P. Habets, *Extended Kalman filter with probabilistic data association for multiple non-concurrent speaker localization in reverberant environments*, Proc. of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Florence, Italy, May 4-9, 2014.
14. M. Taseska and E.A.P. Habets, *Spotforming using distributed microphone arrays*, Proc. of the IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA), New Paltz, USA, Oct. 20-23, 2013.
15. M. Taseska and E.A.P. Habets, *An online EM algorithm for source extraction using distributed microphone arrays*, Proc. of the 21th European Signal Processing Conference (EUSIPCO), Marrakech, Morocco, Sep. 2013.
16. M. Taseska and E.A.P. Habets *MMSE-based source extraction using position-based posterior probabilities*, Proc. of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Vancouver, Canada, May 2013.
17. M. Taseska and E.A.P. Habets, *MMSE-based blind source extraction in diffuse noise fields using a complex coherence-based a priori SAP estimator*, Proc. of the International Workshop on Acoustic Signal Enhancement (IWAENC), Aachen, Germany Sep. 2012.
18. W. Henkel, A. Wakeel and M. Taseska, *Peak-to-average ratio reduction with tone reservation in multi-user and MIMO OFDM*, Proc. 1st IEEE Intl. Conf. on Communications in China, Beijing, China, Aug. 2012.
19. O. Thiergart, G. Del Galdo, M. Taseska, J. A. P. Pardo and F. Küch, *In situ microphone array calibration for parameter estimation in directional audio coding*, 128th Convention of the Audio Engineering Society, London, UK., May 2010.
20. G. Del Galdo, O. Thiergart, F. Küch, M. Taseska and D. Sishtla, *Optimized parameter estimation in directional audio coding using nested microphone arrays*, 127th Convention of the Audio Engineering Society, NY, USA, Oct. 2009.