Fernando de la Calle Silos

☎ (+34) 677 124 633

✉ fsilos@tsc.uc3m.es

🌐 http://www.tsc.uc3m.es/~fsilos

Education	Ph.D, Multimedia and Communications.	Universidad Carlos III de Madrid

Jun 2013 – Sep 2017

PhD dissertation: *Bio-motivated Features and Deep Learning for Robust Speech Recognition.*

M.Sc, Multimedia and Communications.   Universidad Carlos III de Madrid

Sep 2012 – Jun 2013

B.Sc, Audiovisual System Engineering.   Universidad Carlos III de Madrid

Sep 2008 – Jun 2012

BSc dissertation: *Event Recognition in Crowded Scenes.*

Experience

Data Scientist   Treelogic

Jan 2018 – Present   IDI Department

Deep learning researcher in computer vision related topics, applying convolutional neural networks to object detection and classification in real time. Deep reinforcement learning applied to real environments.

Assistant Professor   Universidad Carlos III de Madrid

Sep 2017 – Present   Signal Theory and Communications Department

I have been teaching subjects such as: Machine learning, Data Processing, Digital Image Processing, Environmental Noise Control, Digital Audio Processing and Algorithms for Information Retrieval.
I have four BSc and MSc students under my supervision doing their final degree projects.

Visiting Researcher   Carnegie Mellon University

Aug 2015 – Jan 2016   Computer Science Department

I collaborated with Prof. Richard Stern to develop signal processing and machine learning algorithms for robust speech recognition.

PhD Candidate   Universidad Carlos III de Madrid

Jun 2013 – Sep 2017   Multimedia Processing Group

My PhD was totally funded by AIRBUS Defense and Space. It was focused on improving the performance of the current speech recognition systems in noisy and stressful environments by employing novel signal processing techniques and machine learning algorithms (mainly deep learning). An automatic speech recognition system was developed and installed in the ground control station providing speech control facilities for unmanned aerial vehicles.

Researcher   Universidad Carlos III de Madrid

Sep 2011 – Jan 2018   Multimedia Processing Group

During my time as a researcher I participated in the following research projects:
- Development of computer vision algorithms for road safety and other applications.
- Context-Aware Automatic Speech Recognition under Cognitive Stress aided by Multimodal Biometric Detection funded by Airbus Defense and Space.
- PROSAVE2-Research project in advanced systems for a more eco-efficient aircraft. funded by the European Aeronautic Defense and Space Company (EADS). Where I worked on the implementation of the tracking algorithm of the aerial refueling boom system of the Airbus A330 MRTT.
- Prospective and algorithms design for video coding funded by Procesamiento Digital y Sistemas S.L. (PRODYS).
- Annotation, indexing and coding of user generated content, funded by the Ministry of Science and Innovation of Spain.

Recognition	**Academic Awards**

Outstanding Thesis Award of year 2017 in the Multimedia and Communications PhD Program, Universidad Carlos III de Madrid, Spain.

Best Academic Record Graduation Award of class 2008-2012 in the BSc of Audiovisual System Engineering, Universidad Carlos III de Madrid, Spain.

Research Awards

Best indexed 2016 JCR journal publication by the Spanish Thematic Network on Speech Technology (RTTH) for the paper *Morphologically-filtered power-normalized cochleograms as robust, biologically inspired features for ASR*.

Best poster presentation of the Spanish Thematic Network on Speech Technology (RTTH) Summer School in 2013 and 2015.

Other Formation

6th Lisbon Machine Learning School. The school covers a range of machine learning topics, from theory to practice, that are important in solving natural language processing problems. *July, 2016*

RTTH Summer Schools: Speech Technology - A Deep Learning Perspective, *July, 2015* and Speech Technology Evaluation, *July, 2013.*

Fundamentals of iOS Programming and Advanced iOS Programming bootcamps taught by Keepcoding. *September and April, 2012.*

Skills

Software Skills: Extensive programming experience in Python and Matlab, working experience in C/C++, Objective-C, Java, iOS and Android app development. Experience in scientific computing in a clustered environment.
Machine learning: Experience with state of the art algorithms, currently focus on deep learning. Knowledge of GPU acceleration for machine learning (CUDA). Advanced user of Tensorflow and Theano. Speech recognition tools: kaldi and sphinx.
Others: Experience in research collaborations between academia and industry.
Multilingual: Fluent in English, Spanish as native language.

Publications

Journal

F. de-la-Calle-Silos and Richard M. Stern. *'Synchrony-Based Feature Extraction for Robust Automatic Speech Recognition,"* in *IEEE Signal Processing Letters, vol. 24, no. 8, pp. 1158, Aug. 2017.*

F. de-la-Calle-Silos, F.J. Valverde-Albacete, A. Gallardo-Antolín, C. Pelaéz-Moreno. *'Morphologically filtered power normalized cochleograms as robust, biologically inspired features for ASR,"* in *IEEE/ACM Transactions on Audio, Speech, and Language Processing, vol. 23, no. 11, pp. 2070-2080, Nov. 2015.*

Selected Conferences

F. de-la-Calle-Silos, A. Gallardo-Antolín, C. Pelaéz-Moreno. *"An Analysis of Deep Neural Networks in Broad Phonetic Classes for Noisy Speech Recognition"*, *Advances in Speech and Language Technologies for Iberian Languages. Communications in Computer and Information Science, Springer 2016.*

F. de-la-Calle-Silos, A. Gallardo-Antolín, C. Pelaéz-Moreno. *"Deep Maxout Networks applied to Noise-Robust Speech Recognition"*, *Advances in Speech and Language Technologies for Iberian Languages. Communications in Computer and Information Science, Springer 2014.*

F. de-la-Calle-Silos, F.J. Valverde-Albacete, A. Gallardo-Antolín, C. Pelaéz-Moreno. *"ASR Feature Extraction with Morphologically-Filtered Power-Normalized Cochleograms"*, *Anual Conference of the International Speech Communication Association (INTERSPEECH)*, Singapore, *September 2014.*

F. de-la-Calle-Silos, I. González-Díaz, F. Díaz-de-María. *"Mid-Level Feature Set for Specific Event and Anomaly Detection in Crowded Scenes"*, *IEEE International Conference of Image Processing (ICIP)*, Melbourne, Australia, *September 2013.*