Curriculum Vitae

Fernando Díaz-de-María

Personal Data

Full Name: Fernando Díaz-de-María

Higher Education: Telecommunication Engineering and Ph.D. in Telecommunication Engineering
Language skills: Spanish: mother tongue
                     English: Proficient User (Understanding and Writing); Independent User
                     (Spoken interaction)

Current Professional Position

Position: Professor & Head of the Multimedia Processing Group
             Department of Signal Theory and Communication
             Universidad Carlos III de Madrid
Address: Avda. de la Universidad, 30; 28911, Leganés, Madrid, SPAIN
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Current Research Interests

– Computer vision
– Image and video processing

Academic Activities

Degrees

– Telecommunication Engineering, Universidad Politécnica de Madrid, Spain, 1991
– Ph.D. in Telecommunication Engineering, Universidad Politécnica de Madrid, Spain, 1996

Positions

– Oct. 1991 – Sep. 1995: Assistant Professor, Universidad de Cantabria, Santander, Spain
– Oct. 1995 – Sep. 1996: Assistant Professor, Universidad Politécnica de Madrid, Spain
– Oct. 1996 – Dec. 2017: Associate Professor, Universidad Carlos III de Madrid, Spain
– Dec. 2017 – Today: Professor, Universidad Carlos III de Madrid, Spain

Academic Offices

– Apr. 2018 – Today: Director of the Bachelor's Degree in Data Science and Engineering,
                       UC3M
– Jun. 2016 – Today: Director of the Master in Telecommunication Engineering, UC3M

- Jul. 2012 – Sep. 2014: Director of the Dept. of Signal Theory and Communications, UC3M
- Jul. 2007 – Aug. 2007: Subdirector of the Dept. of Signal Theory and Communications, UC3M
- May 2007 – Jun 2007: Acting Director of the Dept. of Signal Theory and Comms., UC3M
- Oct. 2006 – Apr. 2007: Subdirector of the Dept. of Signal Theory and Communications, UC3M
- Oct. 2005 – Sep. 2006: Director of the Ph.D. Program for Telecomm. Technologies, UC3M
- Nov. 2004 – Sep. 2005: Acting Director of the Dept. of Signal Theory and Comms., UC3M
- Jun. 2000 – Nov. 2002: Assistant Head of the School of Engineering for Telecommunication Engineering, Universidad Carlos III de Madrid
- Oct. 1997 – Sep. 2003: Director of the Ph.D. Program for Telecommunication Technologies, Universidad Carlos III de Madrid

Courses

Telecommunication Engineering Degree
Since 1991 till today, he has given an average of 120 hours per year on signal processing courses. In particular:
- Discrete-Time Signal Processing
- Signal and Systems
- Speech, Audio, Image and Video Processing

Master Degree
- Since 1997 till today, he has given an average of 20 hours per year on Speech, Audio, Image and Video Processing.

Specific Seminars for Enterprises
- Lecturer of more than fifteen courses for bachelors and enterprises
- Creator, supervisor and lecturer of four "ad hoc" courses on speech processing for bachelors

Supervision of Ph.D. Thesis

1. "*Automatic Speech Recognition by Transparameterization: a Robust Alternative for Mobile and IP Environments*", Carmen Peláez-Moreno, UC3M, Feb. 2002

2. "*A Semantic Model for Integrated Continuous Speech Recognition*", Francisco José Valverde Albacete, UC3M, Feb. 2002

3. "*Contributions to Robust Speech Recognition*", Jesús de-Vicente-Peña, UC3M. Dec. 2007.

4. "*Similarity Measures for Clustering Sequences and Sets of Data*"; D. García-García; Co-Director: Dr. E. Parrado-Hernández; UC3M. Apr. 2011.

5. "*Generative Models for Image Segmentation and Representation*"; I. González-Díaz; UC3M. Jul. 2011.

6. "*A Rate Control Algorithm for Scalable Video Coding*"; S. Sanz-Rodríguez-Escalona; UC3M. Sep. 2011.

7. "*Support Vectort Machines for Robust Speech Recognition*"; R. Solera-Ureña; Co-Director: M. Martínez-Ramón; UC3M. Sep. 2011.

8. "Contributions to Robust *Speech Recognition by means of Transparameterization in Communication Networks*"; D. Ferney-Gómez-Cajas; Co-Director: C. Peláez-Moreno; UC3M. Jan. 2012.

9. "Contributions to Reconfigurable Video Coding and Low Bit Rate Video Coding"; M. de-Frutos-López; UC3M. Oct. 2012.

10. "Lifting Transforms on Graphs and Their Application to Video Coding"; E. Martínez-Enríquez; Co-Director: Antonio Ortega; UC3M. Dic. 2013.

11. "Contributions to the Solution of the Rate-Distortion Optimization Problem in Video Coding"; José Luis González de Suso Molinero; Co-Director: E. Martínez-Enríquez; UC3M; Jul. 2016.

12. "Algorithms for complexity management in video coding"; Amaya Jiménez Moreno; Co-Director: E. Martínez-Enríquez; UC3M; Sep. 2016.

Other academic merits
– Supervision of more than 50 Bachelor & Master Thesis

Awards

– Outstanding Doctorate Award 2013/2014 for the PhD Thesis: "Lifting Transforms on Graphs and Their Application to Video Coding"; E. Martínez-Enríquez; Co-Directors: Antonio Ortega and Fernando Díaz-de-María; Universidad Carlos III de Madrid. Dic. 2013.

– Best Paper in an International Journal 2012, Spanish Network on Speech Technology: R. Solera-Ureña, A.I. García-Moral, C. Peláez-Moreno, M. Martínez-Ramón, and F. Díaz-de-María, "Real-time Robust Automatic Speech Recognition Using Compact Support Vector Machines"; IEEE Transactions on Audio, Speech and Language Processing; Vol. 20; Nº 4; pp. 1347-1361; May. 2012; USA.

– Best Paper Award, International Conference on Image Processing (ICIP) 2011, September 11-14, 2011, Brussels, Belgium.

– 2nd Prize "Aula Uni 2" for the Jounal Paper: C. Peláez Moreno, A. Gallardo Antolín and F. Díaz de María, "Recognizing Voice Over IP: A Robust Front-End for Speech Recognition on the World Wide Web", IEEE Transactions on Multimedia, Vol. 3, No. 2, pp. 209-218, June 2001.

– Best Ph,D. Dissertation in GSM Applications, Official Telecommunication Engineer Association and Airtel Fundation, 1996.

Selected Research Projects and Contracts (5 last years)

Contracts

– Leader of the contract "Extension of the AZOR application. Supported by Laboratorio Hipermedia. Ene. 2018-Feb. 2018.

– Leader of the contract "Development of an application for video capture, tagging and viewing". Supported by Laboratorio Hipermedia. Oct. 2016-Feb. 2017

– Researcher of the contract "Context-aware Automatic Speech Recognition under Cognitive Stress Aided by Multimodal Biometric Detection". Supported by CASSIDIAN (Division of EADS CONSTRUCCIONES AERONÁUTICAS, S.A.U.). Dec. 2014-Nov.2017.

– Leader of the contract "Provision of Image Analysis Software for Recordings of the Driver Machine Interface". Supported by "Centro de Estudios y Experimentación de Obras Públicas (CEDEX)". Mar.-May. 2014

– Leader of the contract "*Computer Vision Techniques for In-Flight Refuelling*" within the framework of research project on Advanced Systems for a more Eco-Efficient Airplane. Supported by EADS

CONSTRUCCIONES AERONAUTICAS S.A.U. Jan. 2010-Dec. 2011.

- Leader of the contract "*Consultancy and Algorithmic for Video Coding*". Supported by PRODYS S.L. Feb. 2012 – Nov. 2012.

- Leader of the contract "*Consultancy and Algorithmic Design for Video Coding*". Supported by PRODYS S.L. Feb. 2009 – Jan. 2012.

Projects

- Researcher of the project "Saliency and Attention: rePresentation, Interpretation, EmergeNce (SAPIENS)". Spanish Ministry of Economy and Competitiveness. Ref. TEC2017-84395-P. Jan. 2018 – Dec. 2020. Leaded by C. Peláez Moreno and A. Gallardo Antolín.

- Leader of the project "Interactive Touristic Showcase" (ESITUR). Spanish Ministry of Economy and Competitiveness. Ref. RTC-2016-5305-7. Sep. 2016 – Dec. 2018.

- Researcher of the project "Saliency and Attention: Multimodality, context-awareness, self-Adaptation and bio-Inspiration". Spanish Ministry of Economy and Competitiveness. Ref. TEC2014-53390-P. Jan. 2015 – Dec. 2017. Leaded by C. Peláez Moreno and A. Gallardo Antolín.

- Leader of the project "Robust Computer Vision Techniques and its Application to the Intelligent Transport Systems for improving Road Safety, Mobility and Traffic Management". DGT (Spanish Ministry of Home Affaris). Ref.: SPIP20141507. Oct. 2014- Oct. 2015.

- Leader of the project "*Annotation, Indexing and Coding of User Generated Content*". Ref.: TEC2011-26807. Spanish Ministry of Science and Innovation. Jan. 2012 – Dec. 2014.

Selected Publications (5 last years)

Journals

- A. Gallardo-Antolín, A.I. García-Moral, Y. Pereiro-Estevan, and F. Díaz-de-María, "Design of an Embedded Speech Centric Interface for Applications in Handheld Terminals"; IEEE Aerospace and Electronic Systems Magazine; Vol.28; Nº2; pp.24-33, Feb.2013.

- A. Jiménez-Moreno, E. Martínez-Enríquez and F. Díaz-de-María, "Mode Decision-based Algorithm for Complexity Control in H.264/AVC"; IEEE Transactions on Multimedia; Vol. 15; Nº 5; pp. 1094 – 1109. Aug. 2013.

- I. González-Díaz and F. Díaz-de-María, "A region-centered topic model for object discovery and category-based image segmentation", Pattern Recognition; Vol. 46; Nº 9; pp. 2437–2449, Sep. 2013.

- I. González-Díaz, C.-E. Baz-Hormigos, and F. Díaz-de-María, "A Generative Model for Concurrent Image Retrieval and ROI Segmentation"; IEEE Transactions on Multimedia; Vol. 16; Nº 1; pp. 169 - 183, Jan. 2014.

- J.L. González-de-Suso, A. Jiménez-Moreno, E. Martínez-Enríquez and F. Díaz-de-María, "Improved Method to Select the Lagrange Multiplier for Rate-Distortion Based Motion Estimation in Video Coding", IEEE Transactions on Circuits and Systems for Video Technology. Vol. 24; Nº 3; pp. 452 - 464, March. 2014.

- F. Fernández-Martínez, A. Hernández-García and F. Díaz-de-María, "Succeeding metadata based annotation scheme and visual tips for the automatic assessment of video aesthetic quality in car commercials", Expert Systems with Applications Vol. 42; Nº 1; pp. 293 - 305, Jan. 2015.

- I. González-Díaz, T. Martínez Cortés, A. Gallardo-Antolín, F. Díaz-de-María, "Temporal segmentation and keyframe selection methods for user-generated video search-based Annotation", Expert Systems with Applications Vol. 42; Nº 1; pp. 488 - 502, Jan. 2015.

- A. Jiménez-Moreno, E. Martínez-Enríquez and F. Díaz-de-María, "Standard-Compliant Low-Pass Temporal Filter to Reduce the Perceived Flicker Artifact"; IEEE Transactions on Multimedia; Vol. 16; Nº 7; pp. 1 - 11, Nov. 2014. USA.

- M. de-Frutos-López, J.L. González-de-Suso, S. Sanz-Rodríguez, C. Peláez-Moreno, F. Díaz-de-María, "Two-Level Sliding-Window VBR Control Algorithm for Video on Demand Streaming"; Signal Processing: Image Communication; Vol. 36; pp. 1-13; Aug. 2015.

- A. Jiménez-Moreno, E. Martínez-Enríquez and F. Díaz-de-María, "Complexity Control Based on a Fast Coding Unit Decision Method in the HEVC Video Coding Standard"; IEEE Transactions on Multimedia; Vol. 18; Nº 4; pp. 563 - 575. 2016.

- A. Hernández-García, F. Fernández-Martínez and F. Díaz-de-María, "Comparing visual descriptors and automatic rating strategies for video aesthetics prediction", Signal Processing: Image Communication Vol. 47; pp. 280 - 288. 2016.

- I. González-Díaz, M. Birinci, F. Díaz-de-María, and E.J. Delp, "Neighborhood Matching for Image Retrieval", IEEE Transactions on Multimedia; Vol. 19; Nº 3; pp. 544 - 558. 2016.

- E. Martínez-Enríquez, J. Cid-Sueiro, F. Díaz-de-María, and A. Ortega, "Directional Transforms for Video Coding Based on Lifting on Graphs". IEEE Transactions on Circuits and Systems for Video Technology. Vol. 28; Nº 4; pp. 933-946; 2018.

- A. Jiménez Moreno, E. Martínez-Enríquez and F. Díaz-de-María, "Bayesian Adaptive Algorithm for Fast Coding Unit Decision in the High Efficiency Video Coding (HEVC) Standard" Signal Processing: Image Communication Vol. 56; pp. 1 – 11; Aug. 2017.

- J.L. González-de-Suso, E. Martínez-Enríquez and F. Díaz-de-María, "Adaptive Lagrange Multiplier Estimation Algorithm in HEVC" Signal Processing: Image Communication Vol. 56; pp. 40 - 51; Aug. 2017.

- J. López-Labraca, M.A. Fernández-Torres, I. González-Díaz, F. Díaz-de-María and A. Pizarro, "Enriched Dermoscopic-Structure-Based CAD System for Melanoma Diagnosis", Multimedia Tools and Applications, 2017.

- F. Fernández-Martínez, A. Hernández-García, M.A. Fernández-Torres, I. González-Díaz, A. García-Faura, F. Díaz-de-María, "Exploiting visual saliency for assessing the impact of car commercials upon viewers", Multimedia Tools and Applications, 2017.

- E. Martínez-Enríquez, J. Cid-Sueiro, F. Díaz-de-María, and A. Ortega, "Optimized Update/Prediction Assignment for Lifting Transforms on Graphs". IEEE Transactions on Signal Processing. Vol. 66; Nº 8; pp. 2098 - 2111; Feb. 2018.

Research Stays

- School of Electrical and Computer Engineering - Purdue University
  West Lafayette, IN, U.S.A.
  Sep/2009 – Aug/2010;
  Subject of research: "Image and Video Processing".