

PERSONAL INFORMATION

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**CAREER PROFILE: EDUCATION and EMPLOYMENT**

- PhD (Computer Science) University College Dublin (1983-1987).
- M.Sc. (research) University College Dublin (1980-1982).
- B.Sc. (hons) University College Dublin (1976-1980).

- Director, INSIGHT Centre for Data Analytics, Dublin City University (2013-2019)
- Deputy Director, CLARITY Centre for Sensor Web Technologies, Dublin City Univ. (2007-2012)
- Visiting Professor, University College Dublin (2008-2012).
- Head of School of Computing (1999-2002), Dean of Faculty (2000-2002).
- Full Professor, Dublin City University (1997-present).¹
- Visiting Researcher, Université Josef Fourier, Grenoble, France (1995).
- Senior Lecturer, Dublin City University (1992-1997).
- Lecturer, Dublin City University (formerly NIHE, Dublin) 1987-1992.

PUBLICATION SUMMARY

I have more than 630 refereed publications, and over 13,800 citations to my work on Google SCHOLAR (5,910 since 2011), and an h-index of 58 (h-index = 35 since 2011). My i10-index on SCHOLAR is 223.

LEADERSHIP POSITIONS

- Joint (and founding) coordinator of TRECVID – the largest and longest-running annual worldwide benchmarking evaluation on content-based analysis of multimedia (digital video), (2001-present.).
- Chair of ACM SIGMM, the ACM Special Interest Group in Multimedia (2017-)
- **Founding Member**, Editorial Board, *Foundations & Trends in Information Retrieval* (2006-2014).
- **Founding Member**, Editorial Board, *ACM Journal on Computers and Cultural Heritage* (2006-2015).
- **Founding Member**, Editorial Board, *Information Retrieval Journal* (1998-2007).
- Member, Editorial Board, *Information Processing and Management* (2000-).
- Advisory Editor, *Journal on Information Retrieval and Knowledge Management* (2012-).
- Member, Editorial Board, *International Journal on Digital Libraries* (2002-2011).
- Associate Editor, *ACM Transactions on Information Systems* (1996-2004).
- **Member of the Scientific Committee of COST** (*European Cooperation in Science and Technology*), an EU funding program with a budget of €300m in Horizon 2020 and more than 340 running Actions or networking projects, bringing together over 45,000 researchers, engineers and scholars, from academia and from industry, throughout Europe.
- Submission Lead for Insight Centre for Data Analytics, the largest single non-capital research award ever given by a government in Ireland (€88M over 6 years)

¹ At the time I was the youngest Full Professor of Computing in Ireland and remain the 2nd youngest ever appointed.

² ARNETMINER is an automated system which mines deep knowledge from scientific networks and publications. It

- Member of the **International Advisory Committee** (IAC) of the COMmunications INformation Science Laboratores (COMINLabs), a large research centre in Bretagne, France, (2012-).
- Member of the **International Review Committee** for Institut Eurecom, Sophia Antipolis, France.
- Member of the **International Review Committee** for the School of Computer Science, National University of Singapore, 2013.
- Member of the **founding steering group** of TREC, the annual Text Retrieval Evaluation Conference carried out at the US National Institute for Standards and Technology, US, 1991-1996.
- ARNETMINER² lists me as the 17th-ranked active inventor for the topic *IR/Probabilistic Indexing* and as the 11th-ranked active inventor for *Large Scale Video Retrieval*

AWARDS AND APPOINTMENTS

- Awarded the Royal Irish **Academy's Gold Medal** for 2015 in the area of Engineering Science. Only two Academy medals are awarded each year to "*two outstanding academics ... recognised as a truly national expression of celebration for scholarly achievement ... testament to a lifetime of passionate commitment to the highest standards in scholarship ... a well-deserved recognition of academic excellence.*"
- Admitted to Membership of the **Royal Irish Academy**, Ireland's highest academic distinction, May 2013, for "*world-class contribution to science*". I now chair the Academy's *Engineering and Computer Sciences* Committee (2014-2018) and am a member of the Academy's *Academic Board*.
- Elected as **Fellow of the IEEE**, for "*outstanding contribution to multimedia information indexing and retrieval*", January 2017.
- Awarded the 2016 **Niwa-Takayanagi Prize** (jointly) by the Institute of Image Information and Television Engineers in Japan for outstanding achievements in the field of video information media and in promoting basic research in this field.
- Member of the **Irish Research Council** (2012-2015, 2015-2018), an appointment by the Irish Government.
- Member of the Higher Education Authority Committee on Research & Graduate Education (2013-).
- Member of the Irish Research Council for Science, Engineering and Technology, (2011-2012), appointed by Ireland's Minister for Research and Innovation.
- Winner of the **University President's Research Award** (2002) for "*outstanding contribution to research in science and engineering*".
- Winner of **DCU Educational Trust Leadership Circle Award** (2009) for "*world-leading work in the area of digital video processing*".
- Winner of **Tony Kent Strix Award** (2011) from the UK e-Information Society for "*sustained contributions to the field of ... indexing and retrieval of image, audio and video data*".
- Several best paper awards including STAIRS'2002, IMVIP'1999, VIE'2006 (best student paper) and SENSORCOMM'2013
- Nominated by **Irish Software Association** for "*Outstanding Academic Achievement Award*", 2015, for my work on applying educational analytics to improving first year student retention in University

SCIENTIFIC REFEREEING AND PROGRAM COMMITTEE ACTIVITIES

Since 1989 I have refereed papers for 27 different journals, most of them on numerous occasions, and in a range of disciplines. I have also served on over 200 separate program committees for international conferences or international workshops, often in roles such as Program Committee Chair, Area Chair, Best Papers chair, Workshops Chair, Best PhD thesis, Tutorials chair, etc. These events include marquee conferences such as ACM MULTIMEDIA, ACM SIGIR, ECIR, ICME, WSDM and WWW.

I am presently on a run-rate of accepting only between 12 and 15 such program committee invitations per year.

I have assisted the European Commission since 1990 in dozens of roles, as an evaluator of project proposals and a reviewer of ongoing projects. I have also reviewed research project proposals for **22**

² ARNETMINER is an automated system which mines deep knowledge from scientific networks and publications. It has (automatically) identified 200 different domains (topics) based on an author-conference publication-topic model

research funding agencies, including research councils in Australia, Austria, Belgium, France, Hong Kong, Ireland, the Netherlands, New Zealand, Portugal, Romania, Singapore, Switzerland, EPSRC (UK), Royal Society of Edinburgh, European Research Council, Niels Stensen Stichting (the Netherlands), Dutch Technology Foundation (STW) (the Netherlands), IWT-Vlaanderen, Nuffield Foundation, National Science Foundation (US), Ontario Research Fund (Canada), and the AHRB (UK).

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- As of the end of 2016, I have supervised 50 research M.Sc. and PhD students to graduation, the majority at PhD level. These now work in companies like Google, Yahoo!, Microsoft Research, AOL, IBM, Facebook, etc., in academia (Singapore, Malaysia, Ireland), and in start-up businesses in Ireland and abroad.
- I presently supervise 4 PhD students and have 3 postdoctoral researchers working directly for me, and I oversee the work of a team of over 80 researchers at the Insight Centre for Data Analytics in DCU.
- I have examined over 30 PhD or *Habilitation a Diriger des Recherches* (HDR) theses external to my own University, including Universities in Helsinki (Aalto), Southampton (x2), Putra (Malaysia) (x2), Leiden, Amsterdam (UvA x2), Limerick, Khalifa Univ. of Science and Technology (UAE) (x2), RMIT Univ., Trinity College Dublin (x2), Glasgow, Oulu (x2), Luleå, Surrey, Univ. College Dublin (x2), Univ. Josef Fourier (Grenoble) (x2), Australian National, Ulster (x2), Twente (x2), and U.C. London.

RESEARCH FUNDING HISTORY

I have been personally responsible for securing over €13.57M in funding for **my own** research, i.e. my part of larger grant awards, from Irish funding agencies (Science Foundation Ireland, Enterprise Ireland, Marine Institute, Environmental Protection Agency, the Irish Research Council), directly from industry (Samsung (Korea), QinetiQ (UK), Microsoft Research (UK), Google (US), Fujitsu (Japan), FXPAL (US), Synchronoss Technologies, Aviva Insurance, SAP, others), from European Union sources including FP5, FP6, FP7, H2020, EU Regions of Knowledge, Marie Curie, from the UK Medical Research Council, the Health Research Board of New Zealand and the European Space Agency.

10 representative publications from the last 10 years ...

1. K. McDonald and A.F. Smeaton. A comparison of score, rank and probability-based fusion methods for video shot retrieval. In *CIVR 2005 - International Conference on Image and Video Retrieval, Singapore*, pages 592–592. Springer Berlin/Heidelberg, 2005. [CIVR is rated 9/208 conferences in Multimedia/Image/Video by Arnetminer. Paper has 107 citations on SCHOLAR]. Included because it **defines a novel approach to image search**.
2. A.F. Smeaton, P. Over, and W. Kraaij. Evaluation campaigns and TRECVID. In *Proceedings of the 8th ACM international workshop on Multimedia Information Retrieval*, pages 321–330. ACM, 2006. [1,280 citations on SCHOLAR]. My most-cited article, continues to attract +150 citations per year reflecting the continuing importance of TRECVID to the multimedia research community. This paper is the **2nd most highly-cited paper among all 10,939 papers across all ACM SGMM Conferences/Workshops, ever**.
3. A.F. Smeaton. Techniques used and open challenges to the analysis, indexing and retrieval of digital video. *Information Systems*, 32(4):545–559, 2007. [Impact Factor 1.235), 104 citations on SCHOLAR]. Included as it **sets out a research roadmap** for 10 years of research in content-based video access.
4. A.F. Smeaton, P. Over, and W. Kraaij. High level feature detection from video in TRECVID: a 5-year retrospective of achievements. In *Ajay Divakaran (Ed.), Multimedia Content Analysis, Theory and Applications*, pages 151–174. Springer US, Norwell, MA, 2008. [199 citations on SCHOLAR]. Included because it is a **capstone summary of concept detection work from TRECVID**.
5. A.R. Doherty and A.F. Smeaton. Automatically segmenting lifelog data into events. In *Image Analysis for Multimedia Interactive Services, 2008. WIAMIS'08*, pages 20–23. IEEE, 2008. [108 citations on SCHOLAR]. The open source software which this paper describes, has **more than 1,200 downloads** (<https://sensemabrowser.codeplex.com/releases/view/40196>).
6. A.F. Smeaton, P. Over, and A.R. Doherty. Video shot boundary detection: Seven years of TRECVID activity. *Computer Vision and Image Understanding*, 114(4):411–418, 2010. [Impact Factor 1.358, 189 citations on SCHOLAR]. The **seminal article on shot boundary detection** work from TRECVID.
7. A. Bermingham and A.F. Smeaton. Classifying sentiment in microblogs: is brevity an advantage? In *Proceedings of the 19th ACM International Conference on Information and Knowledge Management*

- (*CIKM*), pages 1833–1836. ACM, 2010. [CIKM is A-rated by the Australian Research Council Conference Ranking and rated 5/76 conferences in information retrieval/WWW by Arnetminer. Paper has 216 citations on SCHOLAR]. Paper **shows breadth of the areas I work in**.
8. C.V. Thornley, A.C. Johnson, A.F. Smeaton, and H. Lee. The scholarly impact of TRECVID (2003–2009). *Journal of the American Society for Information Science and Technology*, 62(4):613–627, 2011. [Impact Factor 2.23, ranked 17/135 (Computer Science Information Systems), 32 citations on SCHOLAR]. Included because it **quantifies the impact TRECVID has had** on research worldwide.
 9. A.R. Doherty, S.E. Hodges, A.C. King, A.F. Smeaton, E. Berry, C.J.A. Moulin, S. Lindley, P. Kelly, and C. Foster. Wearable cameras in health: the state of the art and future possibilities. *American Journal of Preventive Medicine*, 44(3):320–323, 2013. [Impact factor 4.281, ranked 18/150 journals (Medicine: General and Internal), 60 citations on SCHOLAR]. The paper highlights **future potential for lifelogging**
 10. C. Gurrin, A.F. Smeaton, and A.R. Doherty. Lifelogging: Personal big data. *Foundations and Trends in Information Retrieval*, 8(1):1–125, 2014. [Impact Factor 1.86, a per has 67 citations on SCHOLAR]. This is a **capstone paper for my own work in lifelogging** over the last decade and is a summary of the field.

Since January 2005 all of my publications are placed on my institution’s open access repository and in that time there have been **169,124 full text downloads** of those publications. This is in addition to the **31,700 downloads** of my papers from the ACM DL

I have the following patents ...

1. D Larkin, V Muresan, S Marlow, N Murphy, NE O’Connor, and AF Smeaton. Efficient block-matching architecture. WO2005088974 (A1), 2005.
2. D Sadlier, AF Smeaton, S Marlow, N Murphy, and NE O’Connor. Audio-visual sequence analysis, 2005. WO2005124686 (A1).
3. T Adamek, NE O’Connor, S Marlow, N Murphy, and AF Smeaton. Shape matching method for indexing and retrieving multimedia data, 2005. WO 2004088538 A3.
4. NE O’Connor, S Marlow, N Murphy, AF Smeaton, V Muresan, and A Kinane. Power-efficient shape adaptive discrete cosine transformation, 2006. WO2006008725 (A1)
5. T Adamek, N O’Connor, S Marlow, N Murphy, and AF Smeaton. Shape matching method for indexing and retrieving multimedia data, 2009. US Patent 7,620,250.
6. AF Smeaton, C Foley, and GJF Jones. Method and system for locating data, 2009. US2009319509 (A1).
7. T-U Jung, H Lee, Y-H Choi, AF Smeaton, and C Gurrin. Method and apparatus to provide broadcasting program information on screen of broadcast receiver. CN102017650 (A), 2011.
8. T-U Jung, H. Lee, Y-H Choi, AF Smeaton, C Gurrin. Method and apparatus to provide broadcasting program information on screen of broadcast receiver. CN101630987 (A), 2010.
9. T-U Jung, H. Lee, Y-H Choi, AF Smeaton, C Gurrin. Method and apparatus to provide broadcasting program information on screen of broadcast receiver. CN103428562 (A). 2013
10. M. Hughes and AF Smeaton. System and Method for Identifying an Image. WO2015079012 (A1). 2015.

My work has been licensed to companies outside Dublin City University 5 times (Connected Care Solutions, Digifeye, Beta Electronics, Aliope, and InnerStrength) with license options on 2 more (SpongeIT, Zignals).

I am regularly invited to **give keynote presentations at international events** including advanced schools and conferences. I accept about 2 of these each year as the list below for the last 5 years shows:

1. **December 2014** “Getting Inside the Head of a Searcher: How We Can Use EEG” at *the Asia Information Retrieval Society Conference*, Kuching, Malaysia.

2. **September 2014** “How much can we mine from a mouseclick ? Data Analytics on VLE Access Data” at the *UK and Ireland Higher Education Institutional Research (HEIR)* network, Oxford, UK.
3. **April 2014** “Remote monitoring of our environment: A data fusion problem” at the *International Workshop on Environmental Multimedia Retrieval*, Glasgow, UK.
4. **September 2013** “Introduction and Overview of Sensing Technologies for Monitoring Human Behaviour” at the *Summer School on Ambient Assisted Living*, Chania, Greece.
5. **March 2013** “Big Data ... join the dots or you won't see the picture” at the *EU Science: Global Challenges, Global Collaboration*, European Parliament, Brussels, Belgium.
6. **November 2012** “Multimedia Challenges in Sensing the Environment” at the *1st ACM International Workshop on Multimedia analysis for Ecological Data*, Nara, Japan.
7. **September 2010** “The Sensor Web: Unpredictable, Noisy and Loaded with Errors” at the *IEEE / WIC / ACM International Conference on Web Intelligence*, Toronto, Canada.
8. **May 2010** “Protecting the Bay: What Strands to Weave Together To Keep Galway Bay Clean” at the *17th World Congress on Information Technology (WCIT'2010)*, Amsterdam, Netherlands.
9. **October 2010** “Sensor nets discover search” at the *2nd ACM International Workshop on Events in Multimedia*, Firenze, Italy.

Conference Organisation and Services to the Profession

I was a founding member of the steering group of TREC in 1991. TREC was, and remains, the single most significant factor in improving the quality of information retrieval (search) across multiple applications, including web search. In 2001 I was founding co-ordinator of TREC Vid, the International Benchmarking Evaluation Campaign on IR from video. TREC Vid is run by myself and others at the US National Institute of Standards and Technology, Gaithersburg, Md. each year since 2001, funded by the US government and over the last 14 years has involved contributions from many hundreds of researchers from 120 teams worldwide.

Additional research events I (co-)organised in this 10-year period include:

- **General co-chair**, 23rd ACM Multimedia Conference, Brisbane, Australia, 2015.
- **Co-organiser**, Research Data Alliance, Third Plenary Meeting, Dublin, 2014.
- **Program co-chair**, ACM International Conference on Multimedia Retrieval (ICMR), Hong Kong, 2012.
- **Program co-chair**, Conf. Multilingual and Multimodal Info. Access Evaluation (CLEF), Padua, 2010.
- **Program co-chair**, 15th Intl. MultiMedia Modeling Conf. (MMM), Sophia Antipolis, France, 2009.
- **General chair and host**, 5th European Summer School in Information Retrieval (ESSIR), Dublin, 2005.
- **Program co-chair**, IEEE International Conference on Multimedia and Expo (ICME), Amsterdam, 2005.
- **General Chair**, Conference on Image and Video Retrieval (CIVR), Dublin, 2004.

My impact on the **careers of my PhD graduates from the last 10 years** can be seen from where they are now

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| • Data Scientist, IBM Labs, Dublin | • Systems management, Vodafone, Dublin |
| • Researcher, AON research, Dublin | • Data Scientist, IBM Labs, Dublin |
| • Postdoctoral researcher, Tsinghua University, Beijing, China | • Team Lead, Google Search, Dublin |
| • Postdoctoral researcher with me in DCU | • Assistant Prof., Dublin City University |
| • Analytics research, news agency, Dublin | • Associate Professor, Singapore |
| • Irish national coordinator for marine technology | • Principal Development Manager, Bing Image Search, Microsoft, Seattle |
| • Researcher, Samsung Electronics, Korea | • Senior Business Analyst, Google, Dublin |
| • Associate Professor, Malaysia | • Research Scientist, Yahoo!, Barcelona |
| • Research Scientist, Facebook, Dublin | • Research Engineer, Qualcomm, Dublin |
| • Postdoctoral Fellow, Oxford University | |