## Professor Mark W. Jones Swansea University

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https://swansea.ac.uk/staff/m.w.jones/

https://markwjones.github.io/

https://www.youtube.com/@markwjones/videos

G https://scholar.google.co.uk/citations?user=zlThfKsAAAAJ

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#### **Research Interests**

Professor Mark W. Jones is a data scientist with areas of expertise in photon mapping, ray tracing, global illumination, visualization, kernel density estimation, time-series data, accelerometry data, transfer functions, probability density functions, clustering, Monte-Carlo techniques, statistics, distance measures, Lloyd's relaxation, Voronoi diagrams, vector/chamfer distances, volume rendering, data structures (kd-trees).

### **Employment History**

March 2015 – present	<b>Professor,</b> in Department of Computer Science, Swansea University.
October 2012 – March 2015	Reader, in Department of Computer Science, Swansea University.
October 2006 – October 2012	<b>Senior lecturer,</b> in the Department of Computer Science, University of Wales Swansea (renamed as Swansea University in 2007).
October 1995 – October 2006	<b>Lecturer (A) then Lecturer (B),</b> in the Department of Computer Science, University of Wales Swansea.

### **Education**

October 1992 – October 1995	<b>Ph.D., University of Wales Swansea</b> under the supervision of Min Chen with PhD awarded in October 1995.  Thesis title: <i>The Visualisation Of Regular Three Dimensional Data.</i>
October 1989 – July 1992	First Class B.Sc. with Honours, University of Wales Swansea in Computer Science.

### **Notable Professional Leadership & Contributions**

### **Serving the Graphics Community**

2015	Programme Chair, 26th British Machine Vision Conference [4]
2014-2017	Associate Editor, Computer Graphics Forum
2010-2020	Management Board Member, The Research Institute of Visual Computing
2003	Conference Chair, TPCG '03, Birmingham, UK [5]
2002	Conference Chair, EGUK '02, Leicester, UK [6]
	Elected member of the EGUK Executive Committee
1999	Local Organisation Co-Chair, Volume Graphics 1999

#### Leadership at Swansea University

2011–present **REF Environment Lead,** Swansea University. Notably authoring the REF 2014 Environment, REF 2021 Environment and REF 2029 People, Culture and Environment submissions for UoA 11 (Computer Science).

### Notable Professional Leadership & Contributions (continued)

**Group Lead,** Visual and Interactive Computing Group, Swansea University. Since 1992 when it was first established, the group has grown to a team of ten academics and around 20 researchers and PhD students. The group has built an international profile in the areas of Machine Learning, Computer Vision, Data Analysis, Data Visualisation, Ray Tracing and Global Illumination.

2011-2016

**Director of Computer Science Admissions, Swansea University,** encompassing policy, managing workflows for admissions, creating recruitment brochure, talks at open and visit days, meeting students/parents, handling all queries and UCAS forms, attending all meetings, gathering statistics, NSS, league tables.

#### External Examiner (BSc and MSc Programmes)

2006-present

**External,** moderator, or subject representative for programmes at various times for University of East Anglia, University of Wales, Aberystwyth University, and Warwick University.

### **Awards and Prizes**

- ICIP 2020, Top Viewed Q&A Paper Award 2<sup>nd</sup> place The COVID struck ICIP was held entirely online in early 2021. Our paper Lossless Compression For Volumetric Medical Images Using Deep Neural Network With Local Sampling [65] was the second top viewed paper with a \$1000 prize.
- **Computer Graphics and Visual Computing (CGVC) 2017, Best Full Paper Award** A best paper award for *Data Painter: A Tool for Colormap Interaction* [71].
- **Computer Graphics and Visual Computing (CGVC) 2015, Best Paper Award** A best paper award for *Multivariate Hybrid Visualisation of Ornithological Sensor Data* [73].
- ACM Computing Reviews, Notable Article Award An award for our Photon Mapping work [39].

  Eurographics 2013, Best Paper Award Awarded for Photon Parameterisation for Robust Relaxation
  Constraints [39] with a prize of €1500 and a nVidia Quadro Kepler K6000 GPU.
  - **Computer Graphics Forum, Cover Image: Prism** Our entry *Prism* was judged to be the winning entry combining artistic and technical merit for the Cover Image competition and used for the *Computer Graphics Forum 2013* journal cover for a whole year.
- Eurovis 2009, Best Paper Award Awarded for Visualization of Sensor Data from Animal Movement which created new visualisation and analysis techniques for animal motion data in collaboration with biologists.

**Computer Graphics Forum, Cover Image: Leaf** Our entry *Water droplet on leaf* was judged to be the winning entry combining artistic and technical merit for the Cover Image competition and used for the *Computer Graphics Forum 2009* journal cover for a whole year.

### **Research Grants**

#### Total award value £2,520,921

07/04/2022-07/04/2022	£144,930, Innovate UK, Innovate UK KTP 21-22, Round 5 Awarded, but not started due to company pull out. <i>Principal Investigator</i>
30/09/2022-30/09/2026	<b>EPSRC, Efficient labelling of underwater datasets (Beam)</b> CDT Studentship (Jason Summers) with Vaarst/Beam. <i>Principal Investigator @</i>
30/09/2019-31/05/2024	<b>EPSRC, UKHO Celestial Navigation Project</b> CDT Studentship (Floyd Hepburn-Dickins) with UKHO. <i>Principal Investigator</i>
30/09/2019-30/09/2023	<b>EPSRC, Geospatial machine learning in safety critical systems (UKHO)</b> CDT Studentship (Tulsi Patel) with UKHO. <i>Principal Investigator</i>

# **Research Grants (continued)**

01/09/2018-31/08/2020	£107,343, Welsh Government (COFUND), Developing new dimension reduction techniques and their integration with information visualisation for new visual analytics approaches Awarded, started, but sadly ended early due to be
01/12/2016-30/11/2019	£174,813, Welsh Government (COFUND), Improving algorithms for scientific discoveries This funded ManDuhu on a fellowship to work on advanced GPU algorithms. <i>Principal Investigator</i>
01/09/2016-15/08/2020	£993,796, EPSRC, Data Release - Trust, Identity, Privacy and Security £1,242,246 FEC. We (myself, John Tucker, Markus Roggenbach and Xianghua Xie at Swansea) worked with Victoria Wang and Mark Button at the Institute of Criminal Justice Studies, University of Portsmouth, bringing the total funding to £1.6M. Related grant: https://gtr.ukri.org/projects?ref=EP/No27825/1. <i>Principal Investigator</i>
01/04/2016-30/06/2016	£30,000, DVLA, DVLA Data Aggregation Impact (DAI) project Principal Investigator
01/09/2013-31/08/2015	£89,523, Leverhulme, Advanced Visualisation Techniques for Urban Modelling/Simulation This was a collaboration with Sir Alan Wilson of UCL CASA to introduce visualisation techniques into his dynamic urban modelling work. It funded Joel Dearden to work as an PDRA on the project. Joel was a fantastic person, and is greatly missed by everyone who knew him. <i>Principal Investigator</i>
01/08/2011-31/07/2014	£247,013, EPSRC, Faster and higher quality global illumination Principal Investigator @
01/06/2011-30/06/2011	£1,800, EADS, Visualisation of Network Security Principal Investigator
01/01/2009-31/12/2012	£100,000, Welsh Government, Sub-programme leader within the One Wales Research Institute for Visual Computing (RIVIC) This was a large multi-site convergence grant (Bangor, Aberystwyth, Cardiff, Swansea, >£5M). The Swansea programme was led by Min Chen. I was a Sub-programme leader on the grant with a 3 year RA post funded and an equipment and travel budget. My component of Swansea's funding was about £100,000. I took over management of the grant at Swansea (>£1M) when Professor Min Chen left. <i>Co-investigator</i>
01/06/2005-01/06/2007	£275,000, WDA/KEF, VISTA Professor Min Chen was principal investigator. Together with Phil Grant, we worked on an online virtual, scalable, automatic gallery for multimedia presentation. <i>Co-investigator</i>
30/04/2004-29/07/2007	£148,251, EPSRC, Volume Animation Professor Min Chen was principal investigator in Swansea, I was co-investigator. Other members of the consortium are Swansea (Shoukat Islam and Simon Walton, postgraduates) and Bath (Professor Phil Willis + 1 RA). Following on from our research in Volume Graphics, we took the next step towards real-time volume graphics animation. <i>Co-investigator</i>
01/05/2004-30/09/2005	£15,000, ReachIn, MPhil student funding from ReachIn Haptics Together with Professor Min Chen, we obtained £15K funding for an MPhil student to work on Haptic research. <i>Co-PI</i>
01/01/2004-31/12/2006	£130,685, EPSRC, An Advanced Environment for Enabling Visual Supercomputing Professor Min Chen was principal investigator in Swansea, I was co-investigator. Other members of the consortium were Swansea (David Chisnall and Nicolas Roard, postgraduates), Bangor (Professor Nigel John +2 postgrads), Leeds (Professor Ken Brodlie + 1 RA) and Manchester (Mark Riding, RA). Co-investigator 60

investigator 🙋

### **Research Grants (continued)**

01/12/2000-30/11/2002 £11,344, EPSRC, Modelling Objects Using Distance Fields (Voxelisation)

This was my second EPSRC grant, which was an equipment bid to support my

research. Principal Investigator 💇

31/03/1998–30/12/2001 £51,423, EPSRC, Volume Graphics This was my EPSRC "First Grant" now New

Investigator Award. At the time, a first grant was around £50K covering funding

for a 3 year PhD student. Principal Investigator @

### **Research Publications**

#### **Patent**

M. Jones and B. Spencer, "Rendering caustics in computer graphics with photon mapping by relaxation," Patent US 20120038644 A1, Feb. 17, 2010. URL: https://patentscope.wipo.int/search/en/detail.jsf?docId=US73485872

### **Thesis**

M. W. Jones, "The visualisation of regular three dimensional data," Ph.D. dissertation, University of Wales, University College of Swansea (Swansea University), Jul. 10, 1995. ODOI: 10.23889/SUthesis.67325

### **Edited Special Issue and Conference Proceedings**

- X. Xie, **M. Jones**, and G. Tam, Eds., Special Issue: Recognition, Tracking, and Optimisation, vol. 122, 3, Springer, Mar. 23, 2017, pp. 409–410. ODOI: 10.1007/s11263-017-1008-8
- X. Xie, **M. W. Jones**, and G. K. L. Tam, Eds., *Proceedings of the British Machine Vision Conference 7-10 September 2015*, Swansea, UK: BMVA Press, Sep. 7, 2015, ISBN: 1-901725-53-7. **W**URL: https://bmva-archive.org.uk/bmvc/2015
- M. W. Jones, Ed., TPCG '03: Proceedings of the 21st Theory and Practice of Computer Graphics 3-5 June 2003, Birmingham, UK: IEEE Computer Society, Jun. 3, 2003, ISBN: 978-0-7695-1942-5. ©URL: https://www.computer.org/csdl/proceedings/tpcg/2003/120mNCuDzt8
- **M. W. Jones**, Ed., EGUK '02: Proceedings of the 20th Eurographics UK Conference 11-13 June 2002, De Montfort University, Leicester, UK: IEEE Computer Society, Jun. 11, 2002, ISBN: 0-7695-1518-5. **O**URL: https://www.computer.org/csdl/proceedings/eguk/2002/120mNyfd0If

#### **Journal Articles**

- K. W. Tesema, L. Hill, **M. W. Jones**, and G. K. L. Tam, "Denoising-while-completing network (DWCNet): Robust point cloud completion under corruption," *Computers & Graphics*, vol. 132, p. 104 401, Sep. 2025. © DOI: 10.1016/j.cag.2025.104401
- T. Patel, **M. W. Jones**, and T. Redfern, "Leveraging convolutional and graph networks for an unsupervised remote sensing labelling tool," *arXiv preprint arXiv:2508.00506*, Aug. 1, 2025. ODOI: 10.48550/arXiv.2508.00506
- J. M. Summers and **M. W. Jones**, "Impact of underwater image enhancement on feature matching," arXiv preprint arXiv:2507.21715, Jul. 29, 2025. ODOI: 10.48550/arXiv.2507.21715
- F. Jiang, S. Yang, **M. W. Jones**, and L. Zhang, "From attributes to natural language: A survey and foresight on text-based person re-identification," *Information Fusion*, vol. 118, Jun. 2025. ODOI: 10.1016/j.inffus.2024.102879

- K. W. Tesema, L. Hill, **M. W. Jones**, M. I. Ahmad, and G. K. Tam, "Point cloud completion: A survey," *IEEE Transactions on Visualization and Computer Graphics*, vol. 30, no. 10, pp. 6880–6899, Oct. 2024. 
  DOI: 10.1109/TVCG.2023.3344935
- T. Patel, **M. W. Jones**, and T. Redfern, "Manifold explorer: Satellite image labelling and clustering tool with using deep convolutional autoencoders," *Algorithms*, vol. 16, no. 10, p. 469, Oct. 4, 2023, ISSN: 1999-4893. ODI: 10.3390/a16100469
- O. H. Nagoor, J. Whittle, J. Deng, B. Mora, and **M. W. Jones**, "Sampling strategies for learning-based 3D medical image compression," *Machine Learning with Applications*, vol. 8, p. 100 273, Jun. 15, 2022, ISSN: 2666-8270. ODOI: 10.1016/j.mlwa.2022.100273
- M. Ali, R. Borgo, and **M. W. Jones**, "Concurrent time-series selections using deep learning and dimension reduction," *Knowledge-Based Systems*, vol. 233, p. 107 507, Dec. 5, 2021, ISSN: 0950-7051. Doi: 10.1016/j.knosys.2021.107507
- A. Alqahtani, M. Ali, X. Xie, and **M. W. Jones**, "Deep time-series clustering: A review," *Electronics*, vol. 10, no. 23, p. 3001, Dec. 2, 2021, ISSN: 2079-9292. DOI: 10.3390/electronics10233001
- A. Alqahtani, X. Xie, and **M. W. Jones**, "Literature review of deep network compression," *Informatics*, vol. 8, no. 4, p. 77, Nov. 17, 2021, ISSN: 2227-9709. ODI: 10.3390/informatics8040077
- A. Alqahtani, X. Xie, **M. W. Jones**, and E. Essa, "Pruning CNN filters via quantifying the importance of deep visual representations," *Computer Vision and Image Understanding*, vol. 208–209, p. 103 220, Jul. 2021, ISSN: 1077-3142. ODOI: 10.1016/j.cviu.2021.103220
- M. Ali, A. Alqahtani, **M. W. Jones**, and X. Xie, "Clustering and classification for time series data in visual analytics: A survey," *IEEE Access*, vol. 7, no. 1, pp. 181 314–181 338, Dec. 10, 2019, ISSN: 2169-3536. © DOI: 10.1109/ACCESS.2019.2958551
- M. Manduhu and **M. W. Jones**, "A work efficient parallel algorithm for exact Euclidean distance transform," *IEEE Transactions on Image Processing*, vol. 28, no. 11, pp. 5322–5335, Nov. 2019, ISSN: 1057-7149. DOI: 10.1109/TIP.2019.2916741
- D. Man, **M. W. Jones**, D. Li, H. Zhang, and Z. Song, "Calibration of turntable based 3D scanning systems," *IEICE Transactions on Information and Systems*, vol. E102-D, no. 9, pp. 1833–1841, Sep. 1, 2019. ODOI: 10.1587/transinf.2019EDP7043
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- J. Dearden, Y. Gong, **M. Jones**, and A. Wilson, "Using the state space of a BLV retail model to analyse the dynamics and categorise phase transitions of urban development," *Urban Science*, vol. 3, no. 1, p. 31, Mar. 11, 2019, ISSN: 2413-8851. ODI: 10.3390/urbansci3010031
- J. Whittle, **M. W. Jones**, and R. Mantiuk, "Analysis of reported error in Monte Carlo rendered images," *The Visual Computer*, vol. 33, no. 6, pp. 705–713, Jun. 2017, ISSN: 1432-2315. ODOI: 10.1007/s00371-017-1384-7
- J. Whittle, R. Borgo, and **M. W. Jones**, "Implementing generalized deep-copy in MPI," *PeerJ Computer Science*, vol. 2, no. 95, Nov. 21, 2016. ODOI: 10.7717/peerj-cs.95
- R. P. Wilson, M. D. Holton, J. S. Walker, E. L. C. Shepard, D. M. Scantlebury, V. L. Wilson, G. I. Wilson, B. Tysse, M. Gravenor, J. Ciancio, M. A. McNarry, K. A. Mackintosh, L. Qasem, F. Rosell, P. M. Graf, F. Quintana, A. Gomez-Laich, J.-E. Sala, C. C. Mulvenna, N. J. Marks, and **M. W. Jones**, "A spherical-plot solution to linking acceleration metrics with animal performance, state, behaviour and lifestyle," *Movement Ecology*, vol. 4, no. 22, pp. 1–11, Sep. 23, 2016, ISSN: 2051-3933. ODOI: 10.1186/s40462-016-0088-3

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- J. Dearden, **M. W. Jones**, and A. Wilson, "DynaMoVis: Visualization of dynamic models for urban modeling," *The Visual Computer*, vol. 31, no. 6–8, pp. 1079–1088, Jun. 2015, ISSN: 0178-2789. **②** DOI: 10.1007/s00371-015-1096-9
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- S. A. Najim, I. S. Lim, P. Wittek, and **M. W. Jones**, "FSPE: Visualization of hyperspectral imagery using faithful stochastic proximity embedding," *IEEE Geoscience and Remote Sensing Letters*, vol. 12, no. 1, pp. 18–22, Jan. 2015, ISSN: 1545-598X. ODOI: 10.1109/LGRS.2014.2324631
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Roard, Ben Spencer, Ian Doidge, James Walker, Joss Whittle, Mohammed

Ali, Omniah Nagoor, Tulsi Patel, Floyd Hepburn-Dickins.

**Current PhD Students (2)** Jason Summers, Jonathan Davies (with Gibin Powathil).

**Completed MPhil Students (3)** Tim Lewis, Chris Whyley, Matt Parry.

Completed MRes Students (1) Ed Grundy.

Past RAs (5) Ben Spencer, Joel Dearden, ManDuhu, Ric Colasanti, Safa Najm.

### **External Examiner**

PhD Students (8) University of Catalunya, Barcelona, Bangor (2), Sheffield, Warwick (2), KCL, Durham.

**MSc by research (2)** Leeds, Kent.