

Tania S Douglas, PhD

Professor of Biomedical Engineering
South African Research Chair in Biomedical Engineering & Innovation
Director: Medical Imaging Research Unit

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POSITIONS

2000-present	Academic positions and roles at the University of Cape Town
2016-present	South African Research Chair in Biomedical Engineering & Innovation
Jun 2013 – Feb 2016	Deputy Dean for Research, Faculty of Health Sciences
2013-present	Full Professor, Biomedical Engineering
2010-present	Director, Medical Imaging Research Unit (co-funded by the Medical Research Council till March 2016)
2008-2012	Associate Professor, Biomedical Engineering
2007-2013	Programme Convenor, Postgraduate Programme in Biomedical Engineering
2004-2007	Senior Lecturer, Biomedical Engineering
2000-2003	Lecturer, Biomedical Engineering
Jun-Dec 2017	Visiting Scholar, Department of Biomedical Engineering, Northwestern University, Chicago
Sep-Dec 2016	Humboldt Research Fellow, Innovation Management Group, Free University of Berlin
Apr 2016	Erasmus Research Fellow, Department of Industrial Engineering and Management, Uppsala University
2014-present	Visiting Professor, School of Engineering and Technology, Kenyatta University, Nairobi
2008	Humboldt Research Fellow, Max Planck Institute for Neurological Research, Cologne
2006-2011	Honorary Senior Research Fellow, Centre for Health Informatics and Multiprofessional Education, University College London
2003-2008	Junior Associate, Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
1999-2000	Postdoctoral Fellow in Image Processing, Japan Broadcasting Corporation, Tokyo

QUALIFICATIONS

B.Sc. Eng. Electrical and Electronic Engineering, 1992. UNIVERSITY OF CAPE TOWN, South Africa
M.S. Biomedical Engineering, 1995. VANDERBILT UNIVERSITY, Nashville, TN, USA
Ph.D. Bioengineering, 1999. UNIVERSITY OF STRATHCLYDE, Glasgow, UK
M.B.A. Executive Practice, 2012. UNIVERSITY OF CAPE TOWN, South Africa

PUBLICATIONS AND PRESENTATIONS

Articles in peer-reviewed journals

1. **Douglas TS**, Mann NH, Hodge AL. Evaluation of preoperative patient education and computer-assisted patient instruction. *Journal of Spinal Disorders* 1998; 11(1):29-35.
2. **Douglas TS**, Solomonidis SE, Lee VSP, Spence WD, Sandham WA, Hadley DM. Automatic segmentation of magnetic resonance images of the trans-femoral residual limb. *Medical Engineering & Physics* 1998; 20(10):756-63.
3. **Douglas T**, Solomonidis S, Sandham W, Spence W. Ultrasound imaging in lower limb prosthetics. *IEEE Transactions on Neural Systems and Rehabilitation Engineering* 2002; 10(1):11-21.

4. **Douglas TS**, Solomonidis SE, Sandham WA, Spence WD. Ultrasound image matching using genetic algorithms. *Medical & Biological Engineering & Computing* 2002; 40(2):168-72.
5. Meintjes EM, **Douglas TS**, Martinez F, Vaughan CL, Adams LP, Stekhoven A, Viljoen D. A stereo-photogrammetric method to measure the facial dysmorphology of children in the diagnosis of fetal alcohol syndrome. *Medical Engineering & Physics* 2002; 24(10):683-89.
6. **Douglas TS**, Martinez F, Meintjes EM, Vaughan CL, Viljoen DL. Eye feature extraction for diagnosing the facial phenotype associated with fetal alcohol syndrome. *Medical & Biological Engineering & Computing* 2003; 41(1):101-06.
7. **Douglas TS**, Meintjes EM, Vaughan CL, Viljoen DL. Role of depth in eye distance measurements: Comparison of single and stereo-photogrammetry. *American Journal of Human Biology* 2003; 15(4):573-78.
8. **Douglas TS**, Vaughan CL, Wynne SM. Three-dimensional point localisation in low-dose X-ray images using stereo-photogrammetry. *Medical & Biological Engineering & Computing* 2004; 42(1):37-43.
9. **Douglas TS**. Image processing for craniofacial landmark identification and measurement: a review of photogrammetry and cephalometry. *Computerized Medical Imaging and Graphics* 2004; 28(7):401-09.
10. **Douglas TS**, Viljoen DL. Eye measurements in 7-year-old black South African children. *Annals of Human Biology* 2006; 33(2):241-54.
11. Koning L, **Douglas TS**, Pitcher R, van As AB. Short emergency department length of stay attributed to full-body digital radiography - a review of 3 paediatric cases. *South African Medical Journal* 2006; 96(7):613-14.
12. van As AB, van Loghem AJ, Biermans BFJ, **Douglas TS**, Wieselthaler N, Naidoo S. Causes and distribution of facial fractures in a group of South African children and the value of computed tomography in their assessment. *International Journal of Oral and Maxillofacial Surgery* 2006; 35(10):903-06.
13. van As AB, **Douglas TS**, Kilborn T, Pitcher R, Rode H. Multiple injuries diagnosed using full-body digital x-ray. *Journal of Pediatric Surgery* 2006; 41(7):E25-E28.
14. **Douglas TS**, Sanders V, Machers S, Pitcher R, van As AB. Digital radiographic measurement of the atlantodental interval in children. *Journal of Pediatric Orthopaedics* 2007; 27(1):23-26.
15. Dwyer JP, **Douglas TS**, van As AB. Dog bite injuries in children - a review of data from a South African paediatric trauma unit. *South African Medical Journal* 2007; 97:597-600.
16. Grobbelaar R, **Douglas TS**. Stereo image matching for facial feature measurement to aid in fetal alcohol syndrome screening. *Medical Engineering & Physics* 2007; 29(4):459-64.
17. Mutsvangwa T, **Douglas TS**. Morphometric analysis of facial landmark data to characterize the facial phenotype associated with fetal alcohol syndrome. *Journal of Anatomy* 2007; 210(2):209-20.
18. Halberstadt W, **Douglas TS**. Fuzzy clustering to detect tuberculous meningitis-associated hyperdensity in CT images. *Computers in Biology and Medicine* 2008; 38(2):165-70.
19. **Douglas TS**, Sanders V, Pitcher R, van As AB. Early detection of fractures with low-dose digital x-ray images in a paediatric trauma unit. *Journal of Trauma Injury, Infection, and Critical Care* 2008; 65(1):E4-7.
20. Pitcher RD, van As AB, Sanders V, **Douglas TS**, Wieselthaler N, Vlok A, Paverd S, Kilborn T, Rode H, Potgieter H, Beningfield S. A pilot study evaluating the "STATSCAN" digital X-ray machine in paediatric polytrauma. *Emergency Radiology* 2008; 15(1):35-42.
21. Irving BJ, Maree GJ, Hering E, **Douglas TS**. Radiation dose from a linear slit scanning x-ray machine with full body imaging capabilities. *Radiation Protection Dosimetry* 2008; 130(4):482-489.
22. Pitcher RD, Wilde JCH, **Douglas TS**, van As AB. The use of the "STATSCAN" digital X-ray unit in paediatric polytrauma - a review. *Pediatric Radiology* 2009; 39(5):433-437.
23. Hussein K, Vaughan CL, **Douglas TS**. Modeling, validation and application of a mathematical tissue-equivalent breast phantom for digital mammography. *Physics in Medicine and Biology* 2009, 54, 1533-1553. PMC2839081
24. Sanders VM, Pitcher RD, **Douglas TS**, Kibel MA, van As AB. Digital radiographic measurement of the pediatric main bronchi – a pilot study, *Annals of Tropical Paediatrics* 2009; 29:209-216.

25. Mutsvangwa TEM, Smit J, Kalberg W, Hoyme HE, Viljoen DL, Meintjes EM, **Douglas TS**. Design, construction and testing of a stereo-photogrammetric tool for the diagnosis of Fetal Alcohol Syndrome in infants. *IEEE Transactions on Medical Imaging* 2009; 28(9):1448-58.
26. Daya RB, Kibel MA, Pitcher RD, Workman L, **Douglas TS**, Sanders V. A pilot study evaluating erect chest imaging in children, using the Lodox Statscan digital X-ray machine. *South African Journal of Radiology* 2009; 13(4):80-85.
27. Khutlang R, Krishnan S, Whitelaw A, **Douglas TS**. Automated detection of tuberculosis in Ziehl-Neelsen stained sputum smears using two one-class classifiers. *Journal of Microscopy-Oxford* 2010, 237(1):96:102. PMC2825536
28. Mutsvangwa TEM, Meintjes EM, Viljoen DL, **Douglas TS**. Morphometric analysis and classification of the facial phenotype associated with fetal alcohol syndrome in five- and twelve-year-old children. *American Journal of Medical Genetics Part A* 2010, 152A(1):32-41.
29. **Douglas TS**, Mutsvangwa TEM. A review of facial image analysis for delineation of the facial phenotype associated with fetal alcohol syndrome. *American Journal of Medical Genetics Part A* 2010, 152A(2):528-536.
30. Robertson F, **Douglas TS**, Meintjes EM. Motion artefact removal for functional near infrared spectroscopy: a comparison of methods. *IEEE Transactions on Biomedical Engineering* 2010, 57(6): 1377-1387.
31. Khutlang R, Krishnan S, Dendere R, Whitelaw A, Veropoulos K, Learmonth G, **Douglas TS**. Classification of Mycobacterium tuberculosis in images of ZN-stained sputum smears. *IEEE Transactions on Information Technology in Biomedicine* 2010, 14(4): 949:957. PMC2953636
32. Osibote OA, Dendere D, Krishnan S, **Douglas TS**. Automated focusing in brightfield microscopy for tuberculosis detection. *Journal of Microscopy-Oxford* 2010, 240(2):155-163. PMC2965442
33. Mutsvangwa TEM, Veeraragoo M, **Douglas TS**. Precision assessment of stereo-photogrammetrically derived facial landmarks in infants. *Annals of Anatomy* 2011, 193(2):100-105.
34. Gorbach NS, Schütte C, Melzer C, Goldau M, Sujazow O, Jitsev J, **Douglas T**, Tittgemeyer M. Hierarchical information-based clustering for connectivity-based cortex parcellation. *Frontiers in Neuroinformatics* 2011, 5: article 18; doi:10.3389/fninf.2011.00018.
35. von Bezing H, Andronikou S, van Toorn R, **Douglas T**. Are linear measurements and computerized volumetric ratios determined from axial MRI useful for diagnosing hydrocephalus in children with tuberculous meningitis? *Child's Nervous System* 2012, 28:78-85.
36. **Douglas TS**, Fenton-Muir N, Kewana K, Ngema Y, Liebenberg L. Radiological findings in cases of sudden unexpected death in infants at the Salt River Forensic Pathology Laboratory. *South African Journal of Radiology* 2012, February:4-6.
37. **Douglas TS**, Gresak LK, Koen N, Fenton-Muir M, van As AB, Pitcher RD. Measurement of prevertebral cervical soft tissue in lateral digital radiographs. *Journal of Pediatric Orthopaedics* 2012, 32(3):249-252.
38. **Douglas TS**. Is the master's degree being neglected in the discourse on postgraduate education? *South African Journal of Science*, 2012, 108(3/4), Art. #1115.
39. **Douglas TS**. Biomedical engineering at UCT – challenges and opportunities, *South African Medical Journal* 2012, 102(6) :456.
40. Patel B, **Douglas TS**. Creating a virtual slide map from sputum smear images for region-of-interest localisation in automated microscopy. *Computer Methods and Programs in Biomedicine* 2012, 108: 38-52. PMC3350602
41. **Douglas TS**. Biomedical engineering education for developing countries. *IEEE Technology and Society Magazine*, 2012, Fall: 51-57.
42. Dendere R, Osibote OA, Krishnan S, **Douglas TS**. Comparison of image fusion and focus function-based autofocusing in fluorescence microscopy for tuberculosis detection. *International Journal of Medical Engineering and Informatics* 2013 5(2):177-189.
43. **Douglas TS**. Contextual innovation and social engagement: From impact factor to impact. *South African Journal of Science* 2013, 109(3/4), Art. #a010.

44. **Douglas TS**. Additive manufacturing: from implants to organs. *South African Medical Journal* 2014 104(6):408-409.
45. Chimhundu C, Smit J, Sivarasu S, **Douglas, TS**. Inter-landmark Measurements from Lodox Statscan Images. *Journal of Medical Devices-Transactions of the ASME*, 2014, 8(3): 030908:1-030908:3 doi: 10.1115/1.4027102.
46. De Jager K, Fickling, S, Krishnan, S, Jabbari, M, Learmonth G, **Douglas TS**. Automated Fluorescence Microscope for Tuberculosis Detection. *Journal of Medical Devices-Transactions of the ASME*, 2014, 8(3): 030943:1-030943:2 doi:10.1115/1.4027111.
47. Irving BJ, Goussard P, Andronikou S, Gie R, **Douglas TS**, Todd-Pokropek A, Taylor P. Computer assisted detection of abnormal airway variation related to tuberculosis in CT scans. *Medical Image Analysis* 2014, 18(7):963-976.
48. Dendere R, Whiley SP, **Douglas TS**. Computed Digital Absorptiometry for Measurement of Phalangeal Bone Mineral Mass on a Slot-scanning Digital Radiography System, *Osteoporosis International* 2014, 25(11): 2625-2630.
49. Chimhundu C, De Jager K, **Douglas TS**. Sectoral collaboration networks for cardiovascular medical device development in South Africa. *Scientometrics*, 2015, 105:1721-1741 DOI:10.1007/s11192-015-1743-y.
50. Dendere R, Myburgh N, **Douglas TS**. A review of cell-phone microscopy for disease detection. *Journal of Microscopy* 2015, 260(3):248-259 DOI:10.1111/jmi.12307.
51. Dendere R, Potgieter H, Steiner S, Whiley SP, **Douglas TS**. Dual-energy X-ray absorptiometry for measurement of phalangeal bone mineral density on a slot-scanning digital radiography system. *IEEE Transactions on Biomedical Engineering* 2015, 62(12):2850:2859 DOI:10.1109/TBME.2015.2447575.
52. Perks TD, Dendere, R, Irving B, Hartley T, Lawson A, Scholtz, P, Trauernicht C, Steiner S, **Douglas TS**. Filtration to reduce paediatric dose for a linear slot scanning digital X-ray machine. *Radiation Protection Dosimetry* 2015, 167(4):552-561 DOI:10.1093/rpd/ncu339.
53. Chimhundu C, De Jager K, **Douglas TS**. Focus areas of cardiovascular medical device research in South Africa. *South African Medical Journal* 2016, 106(1):55-56 DOI:10.7196/SAMJ.2016.v106i1.10166.
54. Kulkarni M, Dendere R, Nicolls F, Steiner S, **Douglas TS**. Monte-Carlo simulation of a slot-scanning X-ray imaging system. *Physica Medica* 2016, 32(1):284-289 <http://dx.doi.org/10.1016/j.ejmp.2015.12.003>.
55. Chimhundu C, Smit J, Sivarasu S, **Douglas, TS**. Femoral neck anteversion measurement using x-ray stereophotogrammetry. *Medical Engineering & Physics* 2016, 38:187-191 DOI:10.1016/j.medengphy.2015.11.017.
56. Vaughan CL, **Douglas TS**, Said-Hartley Q, Baasch RV, Boonzaier JA, Goemans B, Harverson J, Mingay MW, Omar S, Smith RV, Venter NC, Wilson HS. Testing a dual-modality system that combines full-field digital mammography and automated breast ultrasound. *Clinical Imaging* 2016, 40:498:505 <http://dx.doi.org/10.1016/j.clinimag.2015.11.024>.
57. Kulkarni M, Dendere R, Nicolls F, **Douglas TS**. Monte-Carlo simulation of a slot-scanning digital mammography system for tomosynthesis. *Journal of X-ray Science and Technology* 2016, 24:191–206 DOI 10.3233/XST-160543.
58. Harley Y, Taylor E, Hlungwani C, **Douglas T**. Does the DHET research output subsidy model penalise high-citation publication? A case study. *South African Journal of Science* 2016, 112(5/6), Art. #2015-0352. <http://dx.doi.org/10.17159/sajs.2016/20150352>.
59. Saidi T, **Douglas TS**. Minimally invasive transcatheter aortic valve implantation for the treatment of rheumatic heart disease in developing countries. *Expert Review of Medical Devices* 2016, 13(10): 979-985 <http://dx.doi.org/10.1080/17434440.2016.1236679>
60. Fortuin J, Salie F, Abdullahi L, **Douglas TS**. The impact of mHealth interventions on health systems: a systematic review protocol. *Systematic Reviews* 2016, 5:200 DOI 10.1186/s13643-016-0387-1
61. Saidi T, **Douglas TS**. The sociology of space as a catalyst for innovation in the health sector. *Social Science & Medicine*, 2017, 180:36-44, <http://dx.doi.org/10.1016/j.socscimed.2017.03.015>
62. De Jager K, Chimhundu C, Saidi, T, **Douglas TS**. Medical Device Development in South Africa: Network Analysis of Sectoral Collaboration. *South African Journal of Science*, 2017, 113(5/6), Art. #2016-0259 <http://dx.doi.org/10.17159/sajs.2017/20160259>

63. Saidi T, Salie F, **Douglas TS**. Towards understanding the drivers of policy change: a case study of infection control policies for multi-drug resistant tuberculosis in South Africa. *Health Research Policy and Systems* 2017, 15:41 DOI 10.1186/s12961-017-0203-y
64. Padia K, **Douglas T**, Cairncross L, Baasch R, Vaughan C. Detecting Breast Cancer with a Dual-Modality Device. *Diagnostics*, 2017, 7(17), doi:10.3390/diagnostics7010017
65. Saidi T, **Douglas T**. Nanotechnology in South Africa – challenges in evaluating the impact on development. *South African Journal of Science*, 2017, 113(7/8), Art. #a0217, 2 pages. <http://dx.doi.org/10.17159/sajs.2017/a0217>
66. Ploss B, **Douglas TS**, Glucksberg M, Kaufmann EE, Malkin RA, McGrath J, Mkandawire T, Oden M, Osuntoki A, Rollins A, Sienko K, Ssekitoleko R, Reichert W. Part II: U.S.—Sub-Saharan Africa Educational Partnerships for Medical Device Design, *Annals of Biomedical Engineering* 2017, in press doi:10.1007/s10439-017-1898-1

Book chapters

- S.E. Solomonidis, V.S.P. Lee, W.D. Spence, **T. Douglas**. The role of finite element analysis in the design of prosthetic sockets for trans-femoral amputees. In *CAD/CAM Systems in Pedorthics, Prosthetics and Orthotics*, Eds: U. Boenick, E.h.M Nader and M. Seitz. Verlag Orthopadie-Technik, Dortmund, Germany, ISBN 3-931981-04-5, 286-301, 1998.
- E.M. Meintjes, **T.S. Douglas**. Diagnosis of Fetal Alcohol Syndrome: measurement of the facial dysmorphism. In *Comprehensive Handbook of Alcohol Related Pathology*, Eds: V.R. Preedy and R.R. Watson, Academic Press, London, ISBN 0125643705, 2004.

Conference articles: available on request

Invited articles

- **Douglas TS**, Pitcher RD, van As AB. Full-body digital radiographic imaging of the injured child. *Continuing Medical Education* Theme issue: “What’s new in Paediatric Trauma?” 28(3):108-112, 2010.
- **Douglas TS**. Guest editorial. *Continuing Medical Education* Theme issue: “Biomedical Engineering and Medical Imaging”, 29(3): 101, 2011.
- **Douglas TS**. Facial image analysis to detect gestational alcohol exposure. *Continuing Medical Education* Theme issue: “Biomedical Engineering and Medical Imaging”, 29(3): 108-110, 2011.
- Mouton A, **Douglas TS**. Computer-aided diagnosis in chest radiography. *Continuing Medical Education* Theme issue: “Biomedical Engineering and Medical Imaging”, 29(3): 127-128, 2011.
- **Tania Douglas**. Health technologies for resource-poor settings. *Association of Commonwealth Universities - Realising Research*, May 2015.

News articles and commentary

- **Tania Douglas**. Postgrads can meet employers halfway. *Mail & Guardian* (Getting Ahead supplement), 4 July 2014. <http://mg.co.za/article/2014-07-05-postgrads-can-meet-employers-halfway>
 - Nailah Conrad and **Tania Douglas**. Wanted: Health problem solvers. *Mail & Guardian* (Getting Ahead supplement), 8 August 2014. <http://mg.co.za/article/2014-08-08-wanted-health-problem-solvers>
 - **Tania Douglas**. Varsities must strive for both excellence and transformation. *Mail & Guardian* (Getting Ahead supplement), 12 June 2015. <http://mg.co.za/article/2015-06-11-varsities-must-strive-for-both-excellence-and-transformation>
 - **Tania Douglas**. Looking into health innovation in the Division of Biomedical Engineering at UCT. *Mail & Guardian*, 29 July 2016 <http://mg.co.za/article/2016-07-29-00-looking-into-health-innovation-in-the-division-of-biomedical-engineering-at-uct>
- Tania Douglas**, Dawit Haile, Daniel Atwine, Yvonne Karanja, June Madete, Akinniyi Osuntoki, Muhammad Rushdi, Arti Ahluwalia. Building needs-based healthcare technology competencies across Africa. *South African Journal of Science*, 2017;113(7/8), Art. #a0226. <http://dx.doi.org/10.17159/sajs.2017/a0226>

Invited presentations and guest lectures

1. "Photogrammetric analysis of children with FAS". South Africa-United States Consultation on Fetal Alcohol Research: scientific progress and future directions, Cape Town, 7-8 November 2002.
2. "Screening children for Fetal Alcohol Syndrome using stereo photogrammetry". Department of Medical Physics, University of Edinburgh, UK, 25 August 2003.
3. "Screening children for Fetal Alcohol Syndrome using stereo photogrammetry". Department of Electronic and Electrical Engineering, University College Dublin, Ireland, 27 August 2003.
4. "Screening children for Fetal Alcohol Syndrome using stereo photogrammetry". Laboratory of Medical Information Processing, INSERM, Brest, France, 1 September 2003.
5. "Voxel-based morphometry for the analysis of structural magnetic resonance images". Cognitive Neuropsychology Group, International School for Advanced Studies, Trieste, Italy, 23 August 2005.
6. "Medical imaging activities at the University of Cape Town". Centre for Health Informatics and Multiprofessional Education, University College London, UK, 10 July 2007.
7. "Analysis of facial images for fetal alcohol syndrome screening". Centre for Medical Image Computing, University College London, UK, 19 July 2007.
8. "Biomedical Engineering at the University of Cape Town", Department of Instrumentation Engineering, Madras Institute of Technology, Anna University, Chennai, India, 17 November 2009.
9. "Medical Imaging at the University of Cape Town", Department of Biomedical Engineering, SSN College of Engineering, Kalavakkam, Chennai, India, 19 November 2009.
10. "Medical imaging at the University of Cape Town - addressing public health threats in South Africa", Trinity Centre for Bioengineering, Trinity College Dublin, 14 May 2010.
11. Plenary lecture: "Some applications of medical imaging in the South African context", MEDINFO: 13th World Congress on Medical and Health Informatics, Cape Town, 14 September 2010.
12. "Some applications of medical imaging in the South African context", Department of Computer Science and Engineering, University of Washington, 5 October 2010.
13. "Some applications of medical imaging to address public health challenges", CSIR, Pretoria, 13 April 2011.
14. "Some applications of medical imaging to address public health challenges", IEEE Women in Engineering UCT Student Branch, 5 May 2011
15. "Biomedical Engineering and Medical Imaging at the University of Cape Town", presented to visiting students from the Carlson School of Management, University of Minnesota, as part of a course on *Life Science Technologies in South Africa: An International Business Perspective*, Cape Town, 5 January 2012.
16. "Medical imaging Research at the University of Cape Town" Geneva Business Mission to South Africa, Swiss-South Africa Joint Research Programme, Department of Trade and Industry, Pretoria, 22 October 2012.
17. "Innovation, X-ray imaging and public health", South African – German Workshop on IT-based Technologies for Rural Health Care, Stellenbosch, November 2012
18. Plenary lecture: "Biomedical engineering and innovation for developing countries", International Conference on Biomedical Signals, Systems and Images, Indian Institute of Technology, Chennai, India, November 2012.
19. "Biomedical Engineering Programme & Medical Imaging Research Unit at the University of Cape Town" UN Economic Commission for Africa Progress Review and Planning Meeting for *Engineering Expertise for Improved Healthcare in Africa*, Kenyatta University, Nairobi, Kenya, 5 December 2012.
20. "Innovation, biomedical engineering and public health" presented to visiting students from the Carlson School of Management, University of Minnesota, as part of a course on *Life Science Technologies in South Africa: An International Business Perspective*, Cape Town, 10 January 2013.
21. "Technological innovation & public health" Centre for Bioprocess Engineering, Department of Chemical Engineering, University of Cape Town, 22 February 2013

22. "Biomedical Engineering & Medical Imaging at UCT" University of Cape Town Chapter of the South African Medical Students' Association (SAMSA), 12 March 2014
23. "Innovation activities in the Faculty of Health Sciences" University of Cape Town Innovation Forum, 17 April 2014.
24. "Women in 21st Century Leadership" Women's Day Distinguished Lecture, Nelson Mandela Metropolitan University George Campus, 6 August 2014.
25. "Collaboration Networks for Medical Device Development in South Africa", 3rd International Workshop on Microsystems Technologies for African Health, Stellenbosch, 19 September 2015.
26. "Health Technology Innovation in South Africa", Division of Industrial Engineering and Management, Uppsala University, Sweden, 20 April 2016.
27. "Biomedical Engineering at the University of Cape Town", School of Engineering, Kenyatta University, Kenya, 2 June 2016.
28. "Health Innovation & Engaged Scholarship", Workshop: Engaged Scholarship in Action at UCT, University of Cape Town, 12 May 2016.
29. "Health Innovation in South Africa", Laboratory of Medical Information Processing, Telecom Bretagne, Brest, France, 28 June 2016.
30. "Health technology innovation in South Africa," Department of Information Systems, Freie Universität Berlin, 15 November 2016
31. "Technological Innovation System analysis of medical device development in South Africa," Chair of Innovation Management, Freie Universität Berlin, 21 November 2016
32. "Indicators of engaged scholarship," Research Indaba on Engaged scholarship: The challenge of determining social and economic impact, University of Cape Town, 13 June 2017
33. "Health technology & context," TEDGlobal, Arusha, 28 August 2017.

CURRENT RESEARCH GRANTS

Funder	Role	Project title	Timeline
European Commission Intra-Africa Mobility Scheme	UCT Project Leader	African Biomedical Engineering Mobility: Building Needs-based Healthcare Technology Competencies across Africa <i>In collaboration with: Kenyatta University, Kenya (coordinator); Addis Ababa University, Ethiopia; Cairo University, Egypt; Mbarara University of Science and Technology, Uganda; University of Lagos, Nigeria; University of Pisa, Italy.</i>	2017-2021
National Research Foundation Community Engagement Programme	PI	Health Technology Innovation in South Africa: Academic Engagement and Social Construction	2017-2019
National Research Foundation / Department of Science & Technology	Chair holder	South African Research Chair in Biomedical Engineering & Innovation	2016-2020
South African Medical Research Council	PI	Patient-specific 3D bone mineral density distribution from DXA images using statistical appearance models	2016-2019
National Institutes of Health (NIH) Fogarty International Center	PI on UCT subaward	Developing innovative interdisciplinary biomedical engineering programs in Africa (1D43TW009374) <i>In collaboration with: Northwestern University, USA; University of Ibadan, Nigeria; University of Lagos, Nigeria</i>	2013-2018

RESEARCH SUPERVISION

- Postdoctoral fellows: *6 completed, 5 in progress*
- PhD in Biomedical Engineering: *5 completed; 3 in progress*
- MSc in Biomedical Engineering (full dissertation): *24 completed; 3 in progress*
- MSc in Biomedical Engineering (minor dissertation): *1 completed; 2 in progress*
- MPhil in Biomedical Forensic Science (minor dissertation): *1 completed*
- MPhil in Health Innovation (minor dissertation): *5 in progress*
- MBA (minor dissertation): *1 completed*

TEACHING LEADERSHIP

Programme administration

- Convenor, Postgraduate Programme in Biomedical Engineering, 2007–2013
- Designer and Convenor, Postgraduate Programme in Health Innovation, 2015-present

Course administration

- Convenor, Biomedical Engineering & Ergonomics Overview for MSc (Biomedical Engineering), 2003
- Co-designer and Convenor, Introduction to Medical Imaging and Image Processing, for MSc (Biomedical Engineering), 2003–2012
- Convenor, Introduction to Medical Engineering, for 2nd-year Engineering students, 2010–2012
- Convenor, 1st year orientation programme for MSc (Biomedical Engineering), 2003–2014
- Designer and Convenor, Biomedical Engineering Overview for MSc (Biomedical Engineering), 2013–2014

PROFESSIONAL SERVICE

External examination of postgraduate degrees

- Department of Electronic Engineering, Tshwane University of Technology: 2 MTech dissertations, 2007
- Department of Electrical Engineering, University of the Witwatersrand: 2 MSc dissertations, 2007
- Division of Medical Physiology, Stellenbosch University: MSc dissertation, 2010
- Faculty of Information and Communication Engineering, Anna University, Chennai, India: PhD thesis, 2010
- Department of Electrical Engineering, Cape Peninsula University of Technology, MTech dissertation, 2012
- Department of Electrical Engineering, Tshwane University of Technology and Department of Computer Science, Université Paris-Est Creteil: DTech thesis, 2012
- Department of Mechanical Engineering, Stellenbosch University: MSc dissertation, 2012
- Department of Radiology, University of the Witwatersrand: MMed dissertation, 2013
- Graduate School of Business, UCT: 2 Executive MBA dissertations, 2015
- School of Electrical, Electronic & Computer Engineering, University of KwaZulu-Natal: PhD thesis, 2015

Reviewing of scientific papers and proposals

Scientific reviewer for journals

Medical & Biological Engineering & Computing; Journal of Biomechanical Engineering; Journal of Telemedicine and Telecare; Biomedical Engineering Online; Annals of Biomedical Engineering; Journal of Digital Imaging; SAIEE Transactions; Journal of Mechanics in Medicine and Biology; Computers in Medicine and Biology; American Journal of Physical Anthropology; IEEE Transactions on Medical Imaging; Optics Express; Clinical Anatomy; Alcoholism: Clinical and Experimental Research; Medical Image Analysis; IEEE Journal of Biomedical and Health Informatics; Medical Engineering and Physics; PLOS One; Saudi Medical Journal

Scientific reviewer for conferences

Pattern Recognition Association of South Africa Annual Conference; IEEE Engineering in Medicine and Biology Annual Conference; International Symposium on Biomedical Imaging; Congress of the World Federation of Nuclear Medicine and Biology; International Congress on Image and Signal Processing;

International Conference on Biomedical Engineering and Informatics; International Conference on Medical Image Computing and Computer Assisted Intervention; South African Telecommunication Networks and Applications Conference

- *Reviewer of funding proposals*

National Research Foundation (Innovation Fund; Focus Area funding programme; Evaluation and Rating; Thuthuka programme; Community Engagement programme; Flagship programme); Medical Research Council (Strategic Health Innovation Partnerships); Dutch Technology Foundation STW; National Institutes of Health, USA; European Research Council (Seventh Research Framework Programme); Wellcome Trust; Netherlands Organisation for Scientific Research NWO (Innovational Research Incentives Scheme; Responsible Innovation Programme); Le Studium Loire Valley Institute for Advanced Studies, France

Membership of professional societies

- Fellow of the South African Academy of Engineering
- Member of the Academy of Science of South Africa
- Institute of Electrical and Electronics Engineers (IEEE) – senior member
- IEEE Engineering in Medicine and Biology Society - member
- IEEE Society on Social Implications of Technology - member

Editorial activities

- Associate Editor, Medical Engineering and Physics (since January 2014)
- Associate Editor, South African Journal of Science (since October 2014)
- Editor-in-Chief, Global Health Innovation (since September 2017)

Advisory activities

2010-present	Member of Board of Directors of CapeRay Medical, a medical imaging company
2013-present	Member of Board of Directors of the Foundation for Alcohol-related Research
2015-present	Member of the Committee on Scholarly Publishing in South Africa
2016-present	Member of the Advisory Committee for the Scientific Electronic Library Online South Africa (SciELO SA)