Professor Sarah Barman PhD, FInstP, CPhys
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EDUCATION AND QUALIFICATIONS

- PhD Optical Physics, King's College, University of London, Department of Physics Oct 92 –Sept 96,
- MSc Applied Optics, Imperial College, University of London, Department of Physics, Oct 88 – Oct 89.
- BSc (Hons) Physics, University of Essex, Department of Physics, Oct 84 - June 87.

CAREER

- Positions held:
    - Professor, Aug 2016 – present (School Research Director role, Mar 14 – present).
    - Associate Professor, Jan 14 - present
    - Reader, Aug 11 - Dec 13.
    - Principal Lecturer, Aug 08 – Aug 11.
    - Senior Lecturer, Jan 00 – Aug 08.

Kingston University, School of Computer Science and Mathematics (SEC Faculty), Jan 00 - present

Current research and teaching interests include: medical image analysis; validation of medical image processing algorithms and health informatics. A substantial body of my work in medical image analysis involves the recognition and quantification of features in ophthalmic imaging.

- Position held: Research Associate

King's College London, Department of Physics, Image Processing Group, Nov 95 – Dec 99.

As a postdoctoral researcher, I worked on the analysis of ophthalmic images. The images tracked the progress of Posterior Capsule Opacification (PCO), a complication that can occur after cataract surgery. The key development was an image processing algorithm which automatically measures the amount of PCO present on an image of an implant lens after cataract surgery. Based on texture analysis and intensity segmentation, this technique has been clinically validated and approved by the Food and Drug Administration in the United States. It has been used in worldwide clinical trials to assess the effect of different lens design parameters on the formation of PCO.

- Position held: Senior Optical Physicist

Precision Optical Engineering Ltd. (part of BAe), Hertfordshire, Diamond Turning Group, Jun 91 - Sep 92.

- Position held: Optical Physicist

British Aerospace (Dynamics) Ltd., Department of Optical Technology, Stevenage, Diamond Turning Group, Sep 89 - Jun 91.

FINANCIAL SUPPORT
Awarded

- "Automated retinal microvascular quantification as a predictor of cardiovascular disease risk in UK Biobank", British Heart Foundation, C Owen (PI), A Rudnicka, D Cook, P Foster, S A Barman, D Strachan, Value 200,000 (£90,000 to KU), Duration 2 years (2016)

- "Quantification of vessel morphology on large retinal datasets", St George's, University of London, S A Barman (PI), Value £11,965, Duration 3 months (2015)

- "Research travel grant on retinal image analysis", Sirindhorn International Institute of Technology, Thammasat University, Thailand. S A Barman (PI), Value £400, Duration 2 weeks (2015)

- “Automated retinal microvascular quantification as a predictor of cardiovascular disease risk in later life”, MR/L02005X/1, Medical Research Council, C Owen (PI), A Rudnicka, D Cook, P Foster, S A Barman, D Strachan, Value £149000 (£79,931 to KU), Duration 1 year (2014)
- “An investigation into visual loss in Giant Cell Arteritis”, Fight for Sight, E O’ Sullivan (PI), S Mackie, S A Barman (Collaborator), Value £15000 (£8000 to KU), Duration 1 year (2014)
- “Extension Quantification of vessel morphology on large retinal datasets”, St George’s, University of London, S A Barman (PI), Value £23,617, Duration 6 months (2014)
- “Quantification of vessel morphology on large retinal datasets”, St George’s, University of London, S A Barman (PI), Value £25,000, Duration 6 months year (2013)
- “Analysis of arterioles and venules in retinal fundus images” Internal Faculty Scholarship, S A Barman (PI), Mohamed Habib, Value £48,000, Duration 3 years (2013).
- "Retinal Analysis Project Collaboration (invitation as Visiting Professor)", Thammasat University, Thailand, Travel Grant, S A Barman (PI), Value £2,000, Duration 1 month (2010).
- “Quantification of retinal vessel morphology” Internal Medical Image Analysis Scholarship, Digital Imaging Research Centre, S A Barman (PI), Mohammed Moazam Fraz, Value £48,000, Duration 3 years (2010).
- "Drusen detection in retinal images", Guy's and St Thomas' Trust, Research Grant, S A Barman (PI), C Duanggate, B Uyyanonvara, Value £5,920, Duration 7 months (2010).
- MORPHIDAS, "Morphometric Herbarium Image Data Analysis", Leverhulme Trust, Research Project Grant, F/00 242/H, with University of Surrey, Royal Botanic Gardens Kew, P. Remagnino (PI), S A Barman, Value £189,113, Duration 36 months (2009).
- "Retinal Microvascular Structure in British Children of Asian, African-Caribbean and White Origin", The BUPA Foundation, Research Grant (BUPA F/33a/05) with St. George’s, University of London, S A Barman, C Owen (SGUL PI), A Rudnicka, P Whincup, Value £98,741, Duration 24 months (2008).
- "Detection of exudates and drusen on fundus images using morphological techniques", Thai Research Scholarship Fund, Research Scholarship with Thammassat University, Thailand, A Sopharak, B Uyyanonvara(PI) and S A Barman, Value £6,000, Duration 6 months (2008).
- "The Virtual Clinic", Other, SWAN award for Innovation in Education and Research Technologies with St George's University of London, I Sheeler (PI), J Di Pietro, S A Barman, A Singleton and S De Lusignan, Value £35,000, Duration 12 months (2008).
- "Machine vision", DTI, Knowledge Transfer Partnership, KTP001000 with Chess Systems Ltd., J. Karwatzki, S A Barman and R. Benhadj-Djilali, Value £116,120, Duration 24 months (2006).
- "Computer aided retinal vasculature analysis", PPARC, Industrial Programme Support Scheme, PPA/1/S/2002/00659:C, C Patterson (PI), S A Barman, M J Moseley, K Parker and A R Fielder, Value £164,000, Duration 36 months (2004).
- "Quantification of Images Taken of Premature Infants Using the Retcam 120(TM) Digital Fundus" & , "Optic Disk Recognition in Images of Premature Infants" Institute of Physics, Optical Group Travel Grants, S A Barman (PI) and A. Toniappa, Value £600, Duration 1 months (2002).
- "Computer aided analysis in infant and adult retinal images", Royal Society, Joint Projects Proposal (Thailand), Ref 15247, S A Barman (PI) and C Sinthanayothin, Value £14,000, Duration 24 months (2001).

COMPLETED and CURRENT PhD SUPERVISIONS & POSTDOCTORAL RESEARCHER SUPERVISION

- Simon Rickaby PhD (Full Time), 2015. “Radiology image interpretation” Supervision Team: Dr M Colbert (DoS), Dr S A Barman, In progress

- Neda Sadri PhD (Part Time), 2012. “Image analysis of narrow structures”. Supervision Team: Dr Sarah Barman, Dr David Wertheim (DoS). In progress

- Roshan Welikala, Postdoctoral researcher, October 2014 to present.

- Mohammed Habib PhD (Full Time), 2013. “Recognition of arterioles and venules on retinal fundus images” Supervision Team: Dr S A Barman (DoS), Dr A Hoppe. In progress.

- Moazam Fraz, Postdoctoral researcher, Oct 2013 to Sept 2014.

- Roshan Welikala, PhD (Full Time), 2011. "Recognition of Automated Detection of Proliferative Diabetic Retinopathy from Retinal Images” Supervision Team: Dr S A Barman (DoS), Professor Jamshid Dehmeshki, Dr Andreas Hoppe. Completed 2014

- Moazam Fraz, PhD (Full Time), 2010. "Quantifcation of Width and Tortuosity of Retinal Vessels in British Children of South Asian, African-Caribbean & White European Origin" Supervision Team: Dr S A Barman (DoS), Dr P. Remagnino, Dr A Hoppe. Completed 2013

- Cattleya Duanggate, 2010. Research relating to Guy’s and St Thomas’ Trust Research Grant, “Drusen detection in retinal images”, 6 months. Supervision team Dr S A Barman(PI), Dr B Uyyanonvara.

- James Cope; PhD (Full Time), 2009. “Analysis of venation patterns and quantification of morphology on plant leaf images”. Supervision Team: Dr S A Barman, Dr P. Remagnino (DoS). Completed.

- R. Hosseini, PhD (Full Time), 2009. "Modeling and Measuring Performance of IT Services in Healthcare", Supervision Team: Dr S A Barman, Prof J. Dehmeshki (DoS), Prof L. Hatton, Prof S.D. Qanadli, Dr H. Amin. Completed.

- Charles Mallah, PhD(Full Time), 2009. “Shape analysis in moving images”, Supervision team: Dr S A Barman, Dr J. Orwell (DoS). Completed.

- Robert Mullen, Rahil Hosseini, Mahdi Mazinani, Yousef Ebrahim Doost Kanafi, 2008/9. Research related to CHASE-EYE project grant, “Quantification of retinal vessel tortuosity in the CHASE data set”, 12 months. Supervision team: Dr S A Barman(PI), Dr N Monekosso.

- Akara Sopharak, 2008 Research relating to Thai studentship project grant, “Exudate detection on retinal images”, 6 months. Supervision team Dr S A Barman, Dr B Uyyanonvara (PI).

- Robert Mullen, PhD (Full Time) 2007. “Biologically Inspired Machine Learning Algorithms for Feature Extraction”, Supervision Team: Dr S A Barman, Dr N.D. Monekosso (DoS), Dr P. Remagnino. Completed.

- Maria Valera, KTP Associate 2007. “Image defect detection on semi-conductor wafers”. Supervision Team: Dr S A Barman and Dr J Kartowski.

- J. Amiguet Vercher; MSc by Research (2004). “Multi-agent interaction for crowd scene simulation”. Supervision Team: Dr S A Barman, Dr J. Orwell (DoS), Prof G.A. Jones. Completed.

EXAMINING

Internal

- Spyridon Bakas, Medical image analysis, PhD 2014
- Bashir Bagherinakhjavanlo, Medical image analysis, PhD 2013
- Mohsen Firoozbakht, Medical image analysis, PhD 2013
- Yousef Ebrahimdoust, Medical image analysis, PhD 2012
- Mahdi Mazinani, Medical image analysis, PhD 2012
- Ali Reza, Medical image analysis, PhD 2011
- Beibei Zhan, Computer Vision, PhD 2009
- Edita Hamzic, Computer Vision, MRes, 2007
- Adam Sarawitch, Computer Vision, PhD 2006

External

- Enrico Pellegrini PhD, Retinal Image Analysis, Dundee University, PhD Dec 2015
- Nitin Kumar Mahadeo, Iris recognition, Monash University, Melbourne, Australia PhD 2015
- Alan Turpin, Retinal Image Analysis, University of Ulster, PhD 2012
- Eamonn Brankin, Retinal Image Analysis, University of Ulster, MPhil 2011
- Saaddia Iftikhar , Computer Vision, Imperial College, PhD 2011
- Clare Wilson, Retinal Image Analysis, City University, PhD 2008.
- Ji Eun Lee, Retinal Image Analysis, Imperial College, PhD 2008
- Sara Butt, Retinal Image Analysis, Heriot Watt University, PhD 2007.
- Melvin Lim, Computer Vision, Imperial College, PhD 2007.

- MSc Imaging, King's College London 2003 – 2008

My duties as External Examiner for this MSc course included the moderation of coursework, examination scripts and projects in addition to the marking of project presentations. I contributed to two Exam Boards held each year.

PROFESSIONAL CONTRIBUTION / ESTEEM

- National and international conference/meeting activity
    a. Asian Conference on Pattern Recognition (ACPR), Tutorial Speaker, "Medical Image Analysis", Kuala Lumpur, November 3-6, 2015.
    b. Program Committee member, ICIAR 2015, International Conference on Image Analysis and Recognition, Niagara Falls, Canada, October 22-24, 2015
    c. Technical Committee member, Medical Image Analysis and Understanding conference, 2014, July 9-11.
    d. Co-organiser and co-chair of Imaging in the Eye meetings 2002,04,06.08,10, Institute of Physics.
    e. Programme committee member and Chair of session: Photon 04, Biennial Conference of Optics and Photonics Division, Institute of Physics.
    f. Editorial duties – Co-editor (1 of 3) Conference proceedings, British Machine Vision Conference 2004

- Membership of national bodies
    a. UK Biobank Eyes and Vision consortium member 2012 – present
    b. EPSRC College and Healthcare panel member (2003 – 2009)
    c. Organising committee member of the Institute of Physics Optical Group (2001-2004)
    d. Fellow of the Institute of Physics (Member 1992 – 2015, Fellow 2015 - present)

- Invited speaker
    a. “Computational analysis of retinal fundus images.” Intelligent Medical Imaging group, A* Star Institute of Infocomm Research, Singapore, November 2015
    b. “Experience of retinal image quantification on very large datasets” Visiting professor invitation, Sirindhorn International Institute of Technology, Bangkok, Thailand, November 2015
    c. “Automated analysis of retinal images” streamed simultaneously to Computer Vision Group, University of Pennsylvania and presented to Diabetes and Cardiovascular Group, Kingston University, July 2015.
    d. “Retinal image analysis on large datasets” UK Biobank Eyes and Vision consortium, Welcome Trust, February 2015.
    e. “Retinal image analysis on the CHASE eye dataset”, Clinical Research Imaging Centre, Edinburgh University, June 2012
    f. “ Retinal image analysis to detect pathology”, Visiting Professor invitation, Thammasat University, Bangkok, Thailand, July 2010
    g. “Image processing at KU Digital Imaging Research Centre” Royal Photographic Society, December 2002
    h. “Quantification of Ophthalmic Images”, University of Torun, Poland, August 1998

- Grant reviewer
    a. EU, Topic: Retinal Image Analysis (September 2014)
    b. EPSRC, Topic: Retinal Image Analysis (June 2014)
    c. Dutch Veni programme (Innovational Research Incentive Scheme), Retinal Image Analysis (March 2015)

- Journal reviewer (includes, but is not limited to the journals listed below)
    a. IEEE Journal of Biomedical and Health Informatics.
    b. IEEE Transactions Biomedical Engineering
    c. Investigative Ophthalmology and Visual Science
    d. Medical Imaging and Understanding
    e. Optics Communications, Elsevier Science
    f. Remote Sensing Reviews, Taylor & Francis.
    g. Journal of Biomedical Optics
    h. Computers in Biology and Medicine
    i. Computer Methods and Programs in Biomedicine
    j. Concurrency and computation practice and experience
    k. Journal of Modern Optics
    l. Pattern Analysis and Applications
    m. Computational and mathematical methods in medicine

- Conference reviewer (includes, but is not limited to the conferences listed below):
    a. ICIAR 2015, International Conference on Image Analysis and Recognition, October 22-24, 2015, Niagara Falls, Canada
    b. Medical Imaging Understanding and Analysis (MIUA), 2014, July 9-11, London, UK
    c. Fifth World Multiconference on Systemics, Cybernetics and Informatics 2001, July 22-25, Orlando, Florida
    d. International Symposium on Visual Computing, Nov 06, Nevada, US
    e. Sixth World Multiconference on Systemics, Cybernetics and Informatics 2002, July 14-18, Orlando, Florida

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TEACHING and ADMINISTRATION

- Member of the Faculty Research Degrees Committee (July 2014 to present)
- Member of the Faculty Research and Enterprise Committee (March 2014 to present)
- School of Computing and Information Systems Research Director (March 2014 to present)
- Faculty member of validation panel : BSc Aircraft Engineering to Cardiff and Vale College, April 2014
- Dean's representative and Chair of exam boards (September 2006 to present).
- MSc: Health Information Systems module, E-health and telemedicine (September 2011 – present)
- Course Director BSc Medical Technologies Management (September 2010 – present)
    - Responsibility for liaison with module leaders to deliver distance learning material on-line.
    - Sole responsibility for translating course to Revised Academic Framework (RAF)
- KU Liaison Officer FdSc Medical Technologies (September 2010 - 2014)
    - Responsibility for liaison and adherence to KU quality standards with external partner institution, Eastwood Park, Bristol.
- Field Leader Health Informatics (2006-2014)
    - Responsibility for development of the field in terms of developing links with: external bodies such as Connecting for Health, Health Informatics professionals working in Hospitals, NHS trusts and Health Informatics departments.
    - Responsibility for validation of the FdSc Health Informatics (included input from National Occupational Standards body, Professional Association for Clinical Coders along with registry and academic input from St George's and Royal Holloway).
- Course Director FdSc Health Informatics (2006 – 2014)
    - Organization of Disease Representation to adapt the curriculum to meet the needs of both clinical coders taking the module as part of their CPD and to allow the assessment of the module to be combined with a Professional Body Qualification.
    - Responsibility for staff development of module leaders from three institutions to ensure they are in a position to deliver distance learning material
    - Responsibility for the development of distance learning material in collaboration with Distance Learning Technologists and Module Leaders.
- Level 1 Head and theme leader BSc Biomedical Informatics, St George's, 2006-2007
    - Responsibility for liaison with eight module leaders at three different institutions regarding module assessment type and frequency.
    - Responsibility for collecting NHS compentencies covered within modules and reporting to NHS verifier.
    - Responsibility for theme representation across modules
    - Plagiarism and misconduct interview duties.
- KU Liaison BSc Biomedical Informatics (2006 – 2013)
    - Responsibility to represent KU at course committee, the course development committee and module leader meetings.
- BSc Biomedical Informatics Module Leader (SGUL) (2008-2013)
    - E-Health and Telemedicine.
- Module Leader (KU)
    - Programming Essentials 2001-2007 (C, C++ and Java)
        - Large cohort of between 200 and 450 students
        - Implementation of novel automated testing system
        - International liaison with Mumbai module leaders to ensure consistency.
    - Applications of Digital Imaging 2004-2006
    - NTI Introduction to Programming 2005-2010
    - NTI Further Programming 2005-2010
    - Reflective Learning Element, FdSc Health Informatics (double module) 2008 - 2012
        - Responsible for development of distance learning material to date
    - Project, FdSc Health Informatics (double module), in preparation for July 2011
        - Work based project.
    - Project Management and Planning, BSc(Hons) Medical Technologies Management, 2013 – present.
    - Field based Literature review and Individual project, BSc(Hons) Medical Technologies Management, 2013 – present

LIST OF PUBLICATIONS – Professor S A BARMAN

This document presents information on a total of 96 published research outputs. They are listed in the categories of journal publications, monographs and edited books, chapters in books, theses and conference publications.

Information relating to the published outputs:

- citation and metrics can be found at https://scholar.google.co.uk/citations?user=8ub2nBgAAAAJ&hl=en
- h-index: 23; all citations: 2958 (as of November 2016)

Journal publications

1. Abdullah M, Fraz MM, Barman SA. Localization and segmentation of optic disc in retinal images using circular Hough transform and grow-cut algorithm. PeerJ. 2016; 4:e2003 https://doi.org/10.7717/peerj.2003

2. Usman M, Fraz MM, Barman SA. Computer Vision Techniques Applied for Diagnostic Analysis of Retinal OCT Images: A Review. Arch Computat Methods Eng. 2016; doi:10.1007/s11831-016-9174-3

3. Welikala RA, Fraz MM, Foster PJ, Whincup PH, Rudnicka AR, Owen CG, Strachan DP, Barman SA on behalf of the UK Biobank Eye and Vision Consortium. Automated Retinal Image Quality Assessment on the UK Biobank Dataset for Epidemiological Studies. Computers in biology and medicine. 2016; 71, 67-76

4. Usman M, Fraz MM, Barman SA. Computer Vision Techniques Applied for Diagnostic Analysis of Retinal OCT Images: A Review. Archives of Computational Methods in Engineering. 2016; 1-17

5. Fraz MM, Welikala RA, Rudnicka AR, Owen CG, Strachan DP, Barman SA. QUARTZ: Quantitative Analysis of Retinal Vessel Topology and size - an automated system for quantification of retinal vessels morphology. Expert Systems with Applications. 2015; 42(20):7221-7234.

6. Welikala RA, Fraz MM, Dehmeshki J, Hoppe A, Tah V, Mann S, Williamson TH, Barman SA. Genetic algorithm based feature selection combined with dual classification for the automated detection of proliferative diabetic retinopathy. Computerized Medical Imaging and Graphics. 2015; 43:64-77

7. Welikala RA, Fraz MM, Williamson TH, Barman SA. The automated detection of proliferative diabetic retinopathy using dual ensemble classification. International Journal of Diagnostic Imaging. 2015; 2(2):72-89

8. Fraz MM, Rudnicka AR, Owen CG, Barman SA. Delineation of blood vessels in paediatric retinal images using decision trees-based ensemble classification. International Journal of Computer Assisted Radiology and Surgery. 2014; 9(5):795-811

9. Welikala RA, Dehmeshki J, Hoppe A, Tah V, Mann S, Williamson TH, Barman SA. Automated detection of proliferative diabetic retinopathy using a modified line operator and dual classification. Computer Methods and Programs in Biomedicine. 2014; 14(3):247-261

10. Fraz MM, Basit A, Barman SA. Application of morphological bit planes in retinal blood vessel extraction. Journal of Digital Imaging. 2013; 26(2):274-286

11. Fraz MM, Remagnino P, Hoppe A, Rudnicka AR, Owen CG, Whincup PH, Barman SA. Quantification of blood vessel calibre in retinal images of multi-ethnic school children using a model based approach. Computerized Medical Imaging and Graphics. 2013; 35(1):51-63

12. Sopharak A, Uyyanonvara B, Barman SA. Simple hybrid method for fine microaneurysm detection from non-dilated diabetic retinopathy retinal images. Computerized Medical Imaging and Graphics. 2013; 37(5-6):294-402

13. Fraz MM, Barman SA, Remagnino P, Hoppe A, Basit A, Uyyanonvara B, Rudnicka A, Owen CG. An approach to localize the retinal blood vessels using bit planes and centerline detection. Computer Methods and Programs in Biomedicine. 2012; 108(2):600-616

14. Fraz MM, Remagnino P, Hoppe A, Uyyanonvara B, Rudnicka AR, Owen CG, Barman SA. Blood vessel segmentation methodologies in retinal images: a survey. Computer Methods and Programs in Biomedicine. 2012; 108(1):407-433

15. Hosseini R, Qanadli S, Barman SA, Mazinani M, Ellis T, Dehmeshki J. An automatic approach for learning and tuning Gaussian interval type-2 fuzzy membership functions applied to lung CAD classification system. IEEE Transactions on Fuzzy Systems. 2012 April; 20(2):224-234

16. Fraz MM, Remagnino P, Hoppe A, Uyyanonvara B, Rudnicka AR, Owen CG, Barman SA. An ensemble classification based approach applied to retinal blood vessel segmentation. IEEE Transactions on Biomedical Engineering. 2012; 59(9):2538-2548.

17. Owen CG, Rudnicka A, Nightingale CM, Mullen R, Barman SA, Sattar N, Cook DG, Whincup PH. Retinal arteriolar tortuosity and cardiovascular risk factors in a multi-ethnic population study of 10 year old children; the Child Heart And health Study in England (CHASE). Arteriosclerosis, Thrombosis, and Vascular Biology. 2011: 31(8):1933-1938

18. Sopharak A, Uyyanonvara B, Barman SA. Automatic microaneurysm detection from non-dilated diabetic retinopathy retinal images using mathematical morphology methods. IAENG International Journal of Computer Science. 2011; 28(3):295-301

19. Duanggate C, Uyyanonvara B, Makhanov S, Barman SA, Williamson T. Object detection with feature stability over scale space. Journal of Visual Communication and Image Representation. 2011; 22(4): 345-352

20. Duanggate C, Uyyanonvara B, Makhanov S, Barman SA, Williamson T. Parameter-free optic disc detection. Computerized Medical Imaging and Graphics. 2011 Jan; 35(1):51-63

21. Mullen R, Barman SA, Remagnino P, Monekosso DN. Towards autonomous robot swarms for multi-target localisation and monitoring with applications to counter IED operations. International Journal of Intelligent Defence Support Systems. 2011 Jan; 4(1):87-107

22. Ng J, Clay ST, Barman SA, Fielder AR, Moseley MJ, Parker K, Paterson C. Maximum likelihood estimation of vessel parameters from scale space analysis. Image and Vision Computing. 2010 Jan; 28(1):55–63

23. Sopharak A, Uyyanonvara B, Barman SA, Williamson T. Comparative Analysis of Automatic Exudate Detection between Machine Learning and Traditional Approaches Date of Evaluation. IEICE Transactions on Information and Systems. 2009 Nov; 92(11):2264-2271

24. Sopharak A, Uyyanonvara B, Barman SA. Automatic Exudate Detection from Non-dilated Diabetic Retinopathy Retinal Images Using Fuzzy C-means Clustering. Sensors, MDPI. 2009; 9(3):2148-2161

25. Owen CJ, Rudnicka AR, Mullen R, Barman SA, Monekosso DN, Whincup P, Ng J, Paterson C. Measuring retinal vessel tortuosity in 10 year old children: validation of the Computer Assisted Image Analysis of the Retina (CAIAR) program. Investigative Ophthalmology and Visual Science. 2009; 50(5):2004-2010

26. Mullen R, Monekosso DN, Barman SA, Remagnino P. A review of ant algorithms. Expert Systems with Applications. 2009 Aug; 36(6):9608-9617

27. Sopharak A, Dailey M, Uyyanonvara B, Barman SA, Williamson T, Nwe KT, Moe YA. Machine Learning Approach to Automatic Exudate Detection in Retinal Images from Diabetic Patients. Journal of Modern Optics. 2009 May; 57(2):124-135

28. Sopharak A, Uyyanonvara B, Barman SA. Automatic exudate detection for diabetic retinopathy screening. Science Asia. 2009; 35(1):80-88

29. Sukkaew L, Uyyanonvara B, Makhanov S, Barman SA, Pangputhipong P. Automatic Tortuosity-Based Retinopathy of Prematurity Screening System. IEICE Transactions on Information and Systems. 2008 Jan; 91(12):2868-2874

30. Owen CJ, Newsom RSB, Rudnicka AR, Barman SA, Woodward EG, Ellis T. Diabetes and the tortuousity of vessels of the bulbar conjunctiva. Ophthalmology. 2008 Jun; 115(6):e27-32

31. Sopharak A, Uyyanonvara B, Barman SA, Williamson T. Automatic Detection of Diabetic Retinopathy Exudates from Non-Dilated Retinal Images Using Mathematical Morphology Methods. Computerized Medical Imaging and Graphics. 2008 Dec; 32(8):720-727

32. Sukkaew L, Uyyanonvara B, Barman SA, Cocker K, Fielder AR. Automatic extraction of the structure of the retinal blood vessel network of prenature infants. Journal of the Medical Association of Thailand. 2007 Sept; 90(9):2148-2161

33. Toniappa A, Barman SA, Corvee E, Moseley MJ, Cocker K, Fielder AR, Image quality assessment in retinal images of premature infants taken with the RetCam 120 digital fundus camera. The Imaging Science Journal. 2005 Mar; 53(1):51-59

34. Sanguinetti G, Spalton DJ, Boyce JF, Bisantis C, Ravalico G, Barman SA, Meacock WR. Quantificazione Della Opacizzazione Della Capsula Posteriore. Viscochirurgia. 2002 Apr; 17(1):57-68

35. Meacock WR, Spalton DJ, Hollick EJ, Barman SA, Boyce JF. The effect of AcrySof and Pmma intraocular lenses on the posterior capsule in patients with a large capsulorrhexis. Japanese Journal of Ophthalmology. 2001 Aug; 45(4):348-354

36. Barman SA, Walker JG, Downs MJ, Nunn JW, Turner NP. Phase effects in double-focus and double-aperture interference microscopy. Applied Optics. 2000 May; 39(13):2159-2166

37. Meacock WR, Spalton DJ, Hollick EJ, Boyce JF, Barman SA, Sanguinetti G. A double masked prospective ocular safety study of an anti-lens epithelial cell antibody to prevent posterior capsular opacification. Journal of Cataract and Refractive Surgery. 2000 May; 26(5):716-721

38. Hollick EJ, Spalton DJ, Ursell PG, Meacock WR, Barman SA, Boyce JF. Posterior capsular opacification with hydrogel, pmma and silicone intraocular lenses: two year results of a prospective randomised clinical trial. American Journal of Ophthalmology. 2000 May; 129(5):577-584

39. Barman SA, Hollick EJ, Boyce JF, Spalton DJ, Uyyanonvara B, Meacock WR, Sanguinetti G. Quantification of posterior capsule opacification in digital retroillumination images using a computational method based on texture analysis. Investigative Ophthalmology and Visual Science. 2000; 41(2):3882-3892

40. Hollick EJ, Spalton DJ, Ursell PG, Pande MV, Barman SA, Boyce JF, Tilling K. The effect of pmma, silicone and polyacrylic intraocular lenses on posterior capsule opacification, three years after cataract surgery. Ophthalmology. 1999 Jan; 106(1):49-54

41. Ursell PG, Spalton DJ, Pande MV, Hollick EJ, Barman SA, Boyce JF, Tilling K. The relationship between intraocular lens biomaterials and posterior capsule opacification: A 2 year prospective randomised trial comparing pmma, silicone and polyacrylic lenses. Journal of Cataract and Refractive Surgery. 1998; 24(3):352-360

Monographs and Edited Books

1. Hoppe A, Barman SA, Ellis T, editors. British Machine Vision Conference. British Machine Vision Association; 2004

Chapters in Books

1. Fraz MM, Barman SA. Computer vision algorithms applied to retinal vessel segmentation and quantification of vessel caliber. In: Ng E, Acharya I, Suri J, Campilho A, editors. Image Analysis and Modeling in Ophthalmology. CRC press; 2014. p 49-84

2. Fraz MM, Barman SA, Ensemble classification applied to retinal blood vessel segmentation: theory and implementation, in: Ng E, Acharya I, Suri J, Campilho A, editors Image Analysis and Modeling in Ophthalmology, CRC press; 2014. p 23-45

3. Fraz MM, Remagnino P, Hoppe A, Uyyanonvara B, Rudnicka A, Owen C G, Barman SA. Ensemble classification system applied for retinal vessel segmentation on child Images containing various vessel profiles. In: Campilho A, Kamel M, editors. Image Analysis and Recognition, Springer Berlin/ Heidelberg; 2012. p380-389

4. Fraz MM, Remagnino P, Hoppe A, Uyyanonvara B, Rudnicka A, Owen C G, Barman SA. Retinal Vessel Extraction Using First-Order Derivative of Gaussian and Morphological Processing. In: Campilho A, Kamel M, editors. Advances in Visual Computing, Springer Berlin/ Heidelberg; 2011. p41--420

5. Cope J, Remagnino P, Barman SA, Wilkin P. Plant texture classification using Gabor co-occurrences. In: Bebis G; Boyle R; Parvin B; Koracin D; Chung R; Hammound R; Hussain M; Kar-Han T; Crawfis R; Thalmann D; Kao D; Avila L, editors. Advances in Visual Computing, 6th International Symposium, ISVC 2010. Las Vegas. Springer; 2010. p. 699-677

6. Mullen R, Monekosso DN, Barman SA, Remagnino P, Wilkin P. Artificial ants to extract leaf outlines and primary venation patterns. In: Dorigo M, Birattari M; Blum C; Clerc M; Stützle T; Winfield AFT, editors. Ant Colony Optimization and Swarm Intelligence, Lecture Notes in Computer Science. Brussels. Springer, 2008. p. 251-258

Theses

1. Barman SA. Measurement of Profiled Surfaces Using Polarising Optical Interferometry [PhD thesis]. King's College, University of London; 1996

Conference publications

1. Yates M, Hayat S, Luben RN, Welikala R, Rudnicka A, Owen C, Barman S, O'Sullivan E, Mackie S, Watts R, Foster P, Khaw KT, Wareham N, Macgregor AJ. Retinal Vessel Morphometry Associations with Polymyalgia Rheumatica; Findings from the European Prospective Investigation of Cancer (EPIC) in Norfolk [abstract]. Arthritis Rheumatol. 2016; 68 (suppl 10). http://acrabstracts.org/abstract/retinal-vessel-morphometry-associations-with-polymyalgia-rheumatica-findings-from-the-european-prospective-investigation-of-cancer-epic-in-norfolk/.

2. Welikala, R, Fraz, MM, Hayat S, Rudnicka, A R, Foster, PJ, Whincup, PH, Owen CG, Strachan DP, Barman SA. Automated Retinal Vessel Recognition and Measurements on Large Datasets. In: IEEE Engineering and Biology in Medicine (EMBC 2015); 2015 Aug 25-28; Milan, Italy

3. Japunya T, Jitpakdee P, Uyyanonvara B, Aimmanee P, Philippaki E, Hull C, Barman SA. Software for the Quantification of Glistenings in Intra-Ocular Lenses. In: Proceedings of the World Congress on Engineering; 2014 July 2-4, London, UK

4. Fraz MM, Rudnicka AR, Owen CG, Strachan DP, Barman SA. Automated arteriole and venule recognition in retinal images using ensemble classification. In: 9th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP); 2014 Jan 5-8; Lisbon, Portugal

5. Fraz MM, Remagnino P, Hoppe A, Barman SA. Retinal image analysis aimed at extraction of vascular structure using linear discriminant classifier. In: IEEE International Conference on Computer Medical Applications (ICCMA' 2013); 2013 Jan 20-22; Sousse, Tunisia

6. Welikala RA, Tah V, Williamson T, Hoppe A, Dehmeshki J, Barman SA. Differing Matched Filter Responsivity for the Detection of Proliferative Diabetic Retinopathy. In: Computer Graphics and Imaging / 798: Signal Processing, Pattern Recognition and Applications (CGIM2013) ; 2013 Feb 12-14; Innsbruck, Austria

7. Fraz MM, Remagnino P, Hoppe A, Rudnicka A, Owen CG, Whincup PH, Barman SA. A model based approach for vessel calibre measurement in retinal images. In: 8th International Conference on Signal Image Technology & Internet Based Systems (SITIS). 2012 Nov 25-29; Sorrento, Italy.

8. Fraz M, Remagnino P, Hoppe A, Barman S, Uyyanonvara B, Rudnicka A, Owen C. Retinal vessel segmentation using ensemble classifier of bagged decision trees. In: The IET Image Processing Conference 2012; 2012 July 3-4; London, U.K.

9. Fraz M, Remagnino P, Hoppe, Velastin S, Barman SA. A supervised method for retinal blood vessel segmentation using line strength multiscale gabor and morphological features. In: IEEE International Conference on Signal and Image Processing Applications; 2011 Nov 16–18; Kuala Lumpur, Malaysia

10. Fraz M, Basit A, Remagnino P, Hoppe A, Barman SA. Retinal vasculature segmentation by morphological curvature, reconstruction and adapted hysteresis thresholding. In: IEEE International Conference on Emerging Technologies; 2011 Sept 5-6; Islamabad, Pakistan

11. Sopharak A, Uyyanonvara B, Barman SA, Williamson T. Automatic Microaneurysm Detection from Non-dilated Diabetic Retinopathy Retinal Images. In: World Congress on Engineering, IAENG; 2011 July 6-8; London, UK

12. Inthajak K, Duanggate C, Uyyanonvara B, Makhanov S, Barman SA. Medical Image Blob Detection with Feature Stability and KNN Classification. In: Eighth International Joint Conference on Computer Science and Software Engineering (JCSSE); 2011 May 11-13; Nakhon Pathom, Thailand

13. Mullen R, Monekosso DN, Barman SA, Remagnino P. Reactive coordination and adaptive lattice formation in mobile robotic surveillance swarms. In: 10th International Symposium on Distributed Autonomous Robotics Systems; 2010 Nov 1-3; Lausanne, Switzerland

14. Beghin T, Cope J, Remagnino P, Barman SA. Shape and texture based plant leaf classification in Advanced Concepts For Intelligent Visual Systems. In: Advanced Concepts for Intelligent Vision Systems; 2010 Dec 13-16; Sydney, Australia

15. Cope J, Remagnino P, Barman SA, Wilkin P. The extraction of venation from leaf images by evolved vein classifiers and ant colony algorithms. In: Advanced Concepts For Intelligent Visual Systems; 2010 Dec 13-16; Sydney, Australia

16. Sopharak A,Uyyanonvara B, Barman SA, Williamson T. Comparative Analysis of Automatic Exudate Detection Algorithms (paper awarded Certificate of Merit). In: The World Congress on Engineering; 2010 June 30-July 2; London, UK

17. Hosseini R, Dehmeshki J, Barman SA, Mazinani M, Qanadli S. A Genetic type-2 fuzzy logic system for pattern recognition in computer aided detection systems. In: 2010 IEEE International Conference on Fuzzy Systems (FUZZ); 2010 July 18-23; Barcelona, Spain

18. Duanggate C, Inthajak K, Uyyanonvara B, Makhanov S, Barman SA, Williamson T. Automatic optic disc detection for ROP images using scale-space theory. In: International Conference on Embedded Systems and Intelligent Technology (ICESIT2010); 2010 Feb 5-7; Chiang Mai, Thailand

19. Hosseini R, Dehmeshki J, Barman SA, Mazinani M, Qanadli S. A fuzzy logic system for classification of the lung nodule in digital images in computer aided detection. In: Fourth International Conference on Digital Society, ICDS 2010; 2010 Feb 10-16; St. Maarten, Netherlands Antilles

20. Hosseini R, Dehmeshki J, Barman SA, Mazinani M, Qanadli S. Modeling uncertainty in classification design of computer aided detection. In: SPIE Medical Imaging, Computer-Aided Diagnosis 2010; 2010 Feb 16; San Diego, USA

21. Duanggate C, Uyyanonvara B, Makhanov S, Barman SA. Enhanced support region for scale-space blob detection. In: International conference on Robotics, Informatics and Intelligent control Technologies (RIIT2009); 2009 Dec 11-14; Bangkok, Thailand

22. Sopharak A, Uyyanonvara B, Barman SA, Williamson T. Comparative analysis of automatic exudate detection with traditional and machine learning methods. In: Medical Image Understanding and Analysis 2009; 2009 July 14-15; Kingston upon Thames, UK

23. Mullen R, Monekosso DN, Barman SA,Remagnino R. Autonomous control laws for mobile robotic surveillance swarms. In: IEEE international conference on Computational intelligence for security and defense; 2009 July 8-10; Ottawa, Canada

24. Sopharak A, Nwe KT, Moe YA, Dailey M, Uyyanonvara B, Barman SA. Automatic exudate detection with a support vector machine classifier. In: Institute of Physics Imaging in the Eye IV: Technologies and Applications; 2008 May 28; London, UK

25. Williamson T, Barman SA, Uyyanonvara B, Sopharak A, Duanggate C. Automated detection of age-related macular degeneration for screening programmes. In: Institute of Physics Imaging in the Eye IV: Technologies and Applications; 2008 May 28; London, UK

26. Mullen R, Monekosso DN, Wilkin P, Barman SA, Remagnino P. Artificial Ants to Extract Leaf Outlines and Primary Venation Patterns. In: ANTS 2008 Sixth International Conference on Ant Colony Optimization and Swarm Intelligence; 2008 Sept 22-24; Brussels, Belgium

27. Clarke J, Barman SA, Remagnino P, Bailey K, Kirkup D, Mayo S, Wilkin P. Ventation pattern analysis of leaf images. In: International Symposium on Vision Computing; 2006 Nov 6-8; Nevada, US

28. Sukkaew L, Uyyanonvara B, Barman SA. Comparison of edge detection techniques on vessel detection of Infant's retinal image. In: International Conference on Computer and Industrial Management; 2005 Oct 29-30; Bangkok, Thailand

29. Toniappa A, Barman SA, Moseley MJ, Cocker K, Fielder AR. Quantification of image quality in infant retinal images. In: Institute of Physics Photon 04; 2004 Sept 8; Glasgow, UK

30. Sinthanayothin C, Barman SA. An automatic detection of demarcation-line/ridge from retinopathy of prematurity. In: IEEE Tencon04, Bioinformatics and Biomedical IEEE; 2004 Nov 24; Chiang Mai, Thailand

31. Uyyanonvara B, Barman SA, Boyce JF. Quantification of posterior capsule opacification using relaxation segmentation labeling. In:, Institute of Physics Photon 04; 2004 Sept 8; Glasgow, UK

32. Sae-Ui P, Uyyanonvara B, Barman SA, Sukkaew L. Skeletonised vessel detection on infant retinal images using the distance transform. In: International Symposium on Biomedical Engineering; 2004 Nov 16-18; Bangkok, Thailand

33. Sukkaew L, Uyyanonvara B, Barman SA, Jareanjit J. Automated Vessels Detection on Infant Retinal Images. In: International Conference on Control, Automation and Systems (ICCAS2004); 2004 Aug 25-27; Bangkok, Thailand

34. Toniappa A, Barman SA, Moseley MJ, Cocker K, Fielder R. Image Quality assessment of infant retinal images. In: Fourth International conference on intelligent technologies (Intech03); 2003 Dec 17-19; Chiang Mai, Thailand

35. Barman SA, Toniappa A, Petcu EO. Image analysis of implant lens and infant retinal images. In: Optics in Biomedicine and Life Sciences, The Physics Congress 2003; 2003 Mar 23-27; Edinburgh, UK

36. Barman SA, Toniappa A, Fielder AR, Moseley MJ. Application of an Adaptive Local Contrast Enhancement Technique to Retinal Images of Premature Infants Taken with the Retcam 120(TM) Digital Fundus Camera. In: Association for Research in Vision and Ophthalmology (ARVO 2002); 2002 May 5-10; Fort Lauderdale, USA

37. Toniappa A, Barman SA, Fielder AR, Moseley MJ. Optic Disc Recognition in Images Taken of Premature Infants Using the Retcam 120(TM) Digital Fundus Camera. In: Association for Research in Vision and Ophthalmology (ARVO 2002); 2002 May 5-10; Fort Lauderdale, USA

38. Toniappa A, Barman SA, Moseley MJ, Fielder AR. Recognition and Quantification of Features in Images taken of Premature Infants using the Retcam 120 Digital Fundus Camera. In: Photon 02 - Institute of Physics Applied Optics and Opto-Electronics Conference; 2002 Sept 2-5; Cardiff, UK

39. Uyyanonvara B, Boyce JF, Barman SA, Spalton DJ. Co-ocurrance matrix texture segmentation on digital medical imaging. In: First National meeting on Bio-medical Engineering; 2001 Sept 13-14; Bangkok, Thailand

40. Uyyanonvara B, Boyce JF, Barman SA, Spalton DJ. Posterior Capsule Opacification assessment using image processing techniques. In: 3rd Bio-systems symposium; 2001 July 1-4; Chiang Mai, Thailand

41. Paplinski AP, Boyce JF, Barman SA. Improvements in interpretation of posterior capsular opacification (PCO) images. In: SPIE International Symposium on Medical Imaging; 2000 Feb; San Diego, USA

42. Barman SA, Boyce JF, Paplinski AP. Automatic Quantification of posterior capsule opacification. In: SPIE International Symposium on Medical Imaging; 2000 Feb; San Diego, USA

43. Barman SA, Boyce JF, Walker JG. The relationship between Posterior Capsule Opacification and Visual Function. In: Institute of Physics Applied Optics and Opto-Electronics Conference; 2000 Sept; Loughborough, UK

44. Uyyanonvara B, Boyce JF, Barman SA, Spalton DJ. Analysis of posterior capsule opacification images. In: First Computer networking and integrated circuit design annual conference; 2000 Dec; Bangkok, Thailand

45. Hollick EJ, Barman SA, Spalton DJ, Boyce JF. Image analysis of posterior capsule opacification. In: ARVO '98 (Association of Research in Vision and Ophthalmology) Poster Session: Posterior capsular opacification: invitro and invivo studies; 1998 May 10-15; Fort Lauderdale, USA

46. Barman SA, Boyce JF, Spalton DJ, Hollick EJ, Ursell PG. Measurement of posterior capsule opacification, In: Medical Image Understanding and Analysis; 1997 July; Oxford UK

47. Hollick EJ, Spalton DJ, Barman SA, Boyce JF. What is the ideal capsulorhexis size?. In: American Society of Cataract and Refractive Surgery; 1997 April; Boston, USA
48. Hollick EJ, Spalton DJ, Barman SA, Boyce JF. The incidence of posterior capsule opacification with hydroview, pmma and silicone intraocular lens implants. In: American Society of Cataract and Refractive Surgery; 1997 April; Boston, USA
49. Hollick EJ, Spalton DJ, Barman SA, Boyce JF. The effect of capsulorhexis size on posterior capsule opacification. In: European Society of Cataract and Refractive Surgeons Meeting; 1997 Sept; Prague, Czech Republic
50. Hollick EJ, Spalton DJ, Barman SA, Boyce JF. The incidence of posterior capsular opacification with pmma, acrysof and silicone intraocular lens implants: 3 year results. In: United Kingdom and Ireland Society of Cataract and Refractive Surgeons; 1997 Sept; Chester, UK
51. Barman SA, Walker JG, Downs MJ, Nunn JW. Measurement of profiled surfaces using polarising optical interferometry. In: Institute of Physics Conference of Applied Optics and Optoelectronics, OM1.3; 1994 Sept 5-8; London, UK

End of publication list.