Abhirup Banerjee

Current Position

The Royal Society University Research Fellow 2022.10 - 2027.09

Department of Engineering Science, Institute of Biomedical Engineering, University of Oxford, United Kingdom (UK).

Previous Position

Postdoctoral Researcher, University of Oxford, UK 2017.08 - 2022.09

Division of Cardiovascular Medicine, Radcliffe Department of Medicine, University of Oxford

- Supervisor: Prof. Robin P. Choudhury.

Department of Engineering Science, Institute of Biomedical Engineering, University of Oxford

- Supervisor: Prof. Vicente Grau.

Principal Investigator, The Alan Turing Institute, UK 2021.06 - 2021.12

- Data Study Group Challenge: UK Dementia Research Institute and DEMON Network.

Stipendiary Lecturer, Mansfield College, Oxford, UK 2020.01 - 2020.06

- Lecturer in Engineering Science.

Contact Information

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Level 2, John Radcliffe Hospital
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Date of Birth August 08, 1988.

Research Interests Biomedical Image Analysis, Machine Learning, Artificial Intelligence, Geometric Deep learning, Image Processing, Statistical Pattern Recognition, Data Analysis, etc.

Education

Doctor of Philosophy (Ph.D.) in Computer Science 2011.07 - 2017.03
Indian Statistical Institute, Kolkata, India

- Thesis Title: *Rough Sets and Probabilistic Models for Segmentation and Bias Field Correction in Brain MR Images.* Advisor: Prof. Pradipta Maji. Awarded on: **March 27, 2017**.

Master of Statistics (M.Stat.) 2009.07 - 2011.06
Indian Statistical Institute, Kolkata, India

- Marks – 82.05%, First Division.
- Dissertation Title: *A Study on Simultaneous Clustering and Feature Selection.* Advisor: Prof. Pradipta Maji.

Bachelor of Science (B.Sc.), Statistics Hons. 2006.07 - 2009.06
St. Xaviers College, Kolkata, India (Autonomous) Under **University of Calcutta**

- Subjects: Statistics (Honours), Mathematics, Computer Science.
- Marks – 78.70%, First Division.

Higher Secondary Examination (A-Level equivalent) 2004.07 - 2006.06
West Bengal Council of Higher Secondary Education, India

- Subjects: Physics, Chemistry, Mathematics, Statistics.
- Marks – 91.80%, First Division.

Secondary Examination (GCSE equivalent) 2002.05 - 2004.04
West Bengal Board of Secondary Education, India

- Subjects: Mathematics, Physical Science, Life Science, Chemistry.
- Marks – 87.50%, First Division.

Editorial Activity

Associate Editor:

– IET Healthcare Technology Letters.

Teaching Experience

- Stipendiary Lecturer in Engineering Science at Mansfield College, Oxford, UK (2020.01 - 2020.06) - Courses: Engineering Mathematics (P1 and A1).
- Course Demonstrator in the Doctoral Training Centre in the University of Oxford, UK (2022.02) - Module: Medical Imaging, Microscopy and Analysis.
- Oxbridge International Summer School (OISS) 2019 - Tutor in Modules: a) Basics of Pattern Recognition and Machine Learning, b) Programming in C and Python.

Project Grant

1. "Multimodal Reconstruction of Digital Heart for Cardiac Interventions in Real-Time", Principal Investigator: **A. Banerjee**. Grant amount of £600,786.27, *The Royal Society University Research Fellowship (URF)*, June 2022.
2. "Development of A System for Real Time Integration and Display of Quantitative Multi-modality Data During Cardiac Catheterisation", Principal Investigator: R. P. Choudhury, Co-Applicants: **A. Banerjee**, V. Grau, and G. L. De Maria. Grant amount of £183,050, *British Heart Foundation (BHF)*, March 2020.
3. "Building Personalised Heart and Torso Models from Clinical MRI Scans for Simulation of Cardiac Electromechanics", Principal Investigator: V. Grau, Secondee: **A. Banerjee**, *Engineering and Physical Sciences Research Council (EPSRC) Impact Acceleration Account (IAA) Project*, April 2020 - March 2022 (Completed).

Principal Investigation

1. "Modelling Amyloid Beta Plaque Formation in Alzheimer's Disease", Principal Investigator: **A. Banerjee** and Y.-Y. Leung, *Turing Data Study Group*, The Alan Turing Institute, June 2021 - December 2021 (Completed).

Patents

1. **A. Banerjee**, R. P. Choudhury, and V. Grau, "Reconstruction method of organ vessel centerline", *US Patent Publication No. 2022/0020215 A1*, filed by Oxford University Innovation (OUI), January 2022.

Articles in Peer-reviewed Journals

(* denotes Corresponding Author)

Mean IF: **7.946**

Median IF: **8.233**

1. S. Ray, **A. Banerjee**, A. Swift, J. W. Fanstone, M. Mamalakis, B. Vorselaars, C. Wilkie, J. Cole, L. S. Mackenzie, and S. Weeks, "A Robust COVID-19 Mortality Prediction Calculator Based on Lymphocyte Count, Urea, C-Reactive Protein, Age and Sex (LUCAS) with Chest X-Rays", *Scientific Reports* (Accepted), October 2022. (IF: 4.996)
2. M. Shanmuganathan, A. Masi, M. K. Burrage, R. A. Kotronias, A. Borlotti, R. Scarsini, **A. Banerjee**, D. Terentes-Printzios, Q. Zhang, E. Hann, E. Tunnicliffe, A. Lucking, J. Langrish, R. Kharbanda, G. L. De Maria, A. P. Banning, R. P. Choudhury, K. M. Channon, S. K. Piechnik, and V. M. Ferreira, "Acute Response in the Non-infarcted Myocardium Predicts Long-term Major Cardiovascular Events After ST-elevation Myocardial Infarction", *JACC: Cardiovascular Imaging* (Accepted), October 2022. (IF: 16.051)
3. A. N. Boss, **A. Banerjee**, M. Mamalakis, S. Ray, A. J. Swift, C. Wilkie, J. W. Fanstone, B. Vorselaars, J. Cole, S. Weeks, and L. S. Mackenzie, "Development of A Mortality Prediction Model in Hospitalised SARS-CoV-2 Positive Patients Based on Routine Kidney Biomarkers", *International Journal of Molecular Sciences*, 23(13), 7260, June 2022. (IF: 6.208)
4. M. Beetz, **A. Banerjee**, and V. Grau, "Multi-Domain Variational Autoencoders for Combined Modeling of MRI-Based Biventricular Anatomy and ECG-Based Cardiac Electrophysiology", *Frontiers in Physiology*, 13, June 2022. (IF: 4.755)

5. N. Akbar, A. T. Braithwaite, E. M. Corr, G. J. Koelwyn, C. van Solingen, C. Cochain, A.-E. Saliba, A. Corbin, D. Pezzolla, M. M. Jørgensen, R. Bæk, L. Edgar, C. De Villiers, M. Gunadasa-Rohling, **A. Banerjee**, D. Paget, C. Lee, E. Hogg, A. Costin, R. Dhaliwal, E. Johnson, T. Krausgruber, J. Riepsaame, G. E. Melling, M. Shanmuganathan, OxAMI Study, C. Bock, D. R. F. Carter, K. M. Channon, P. R. Riley, I. A. Udalova, K. J. Moore, D. Anthony, and R. P. Choudhury, "Rapid Neutrophil Mobilisation by VCAM-1+ Endothelial Extracellular Vesicles", *Cardiovascular Research*, February 2022. (IF: 13.081)

6. * **A. Banerjee**, J. Camps, E. Zacur, C. M. Andrews, Y. Rudy, R. P. Choudhury, B. Rodriguez, and V. Grau, "A Completely Automated Pipeline for 3D Reconstruction of Human Heart from 2D Cine MR Slices", *Philosophical Transactions of the Royal Society A*, 379(2212), pp. 1–21, December 2021. (IF: 4.019)

7. * M. Mamalakis, A. J. Swift, B. Vorselaars, S. Ray, S. Weeks, W. Ding, R. H. Clayton, L. S. Mackenzie, and **A. Banerjee**, "DenResCov-19: A Deep Transfer Learning Network for Robust Automatic Classification of COVID-19, Pneumonia, and Tuberculosis from X-Rays", *Computerized Medical Imaging and Graphics*, 94, pp. 102008, December 2021. (IF:7.422)

8. M. Leo, G. L. De Maria, A. B. e Gala, M. Pope, **A. Banerjee**, A. Kelion, M. Pedersen, K. Rajappan, M. Ginks, Y. Bashir, R. J. Hunter, and T. Betts, "INtra-procedural ultraSound Imaging for DEtermination of atrial wall thickness and acute tissue changes after isolation of the Pulmonary Veins with radiofrequency, cryoballoon or laser balloon energy: the INSIDE PVs Study", *The International Journal of Cardiovascular Imaging*, 37, pp. 3525–3535, September 2021. (IF: 2.316)

9. * **A. Banerjee** and P. Maji, "A Spatially Constrained Probabilistic Model for Robust Image Segmentation", *IEEE Transactions on Image Processing*, 29(1), pp. 4898–4910, December 2020. (IF: 11.041)

10. * **A. Banerjee**, S. Ray, B. Vorselaars, J. Kitson, M. Mamalakis, S. Weeks, M. R. Baker, and L. S. Mackenzie, "Use of Machine Learning and Artificial Intelligence to predict SARS-CoV-2 infection from Full Blood Counts in a population', *International Immunopharmacology*, 86, 106705, September 2020. (IF: 5.714)

11. * **A. Banerjee**, F. Galassi, E. Zacur, G. L. De Maria, R. P. Choudhury, and V. Grau, "Point-Cloud Method for Automated 3D Coronary Tree Reconstruction from Multiple Non-Simultaneous Angiographic Projections", *IEEE Transactions on Medical Imaging*, 39(4), pp. 1278–1290, April 2020. (IF: 11.037)

12. * **A. Banerjee** and P. Maji, "Segmentation of Bias Field Induced Brain MR Images Using Rough Sets and Stomped-t Distribution", *Information Sciences*, 504, pp. 520–545, December 2019. (IF: 8.233)

13. * **A. Banerjee** and P. Maji, "Spatially Constrained Student's t-Distribution Based Mixture Model for Robust Image Segmentation", *Journal of Mathematical Imaging and Vision*, 60(3), pp. 355–381, March 2018. (IF: 1.627)

14. * **A. Banerjee** and P. Maji, "Stomped-t: A Novel Probability Distribution for Rough-Probabilistic Clustering", *Information Sciences*, 421, pp. 104–125, December 2017.(IF:8.233)

15. * **A. Banerjee** and P. Maji, "Rough-Probabilistic Clustering and Hidden Markov Random Field Model for Segmentation of HEp-2 Cell and Brain MR Images", *Applied Soft Computing*, 46, pp. 558–576, September 2016. (IF: 8.263)

16. * **A. Banerjee** and P. Maji, "Rough Sets and Stomped Normal Distribution for Simultaneous Segmentation and Bias Field Correction in Brain MR Images", *IEEE Transactions on Image Processing*, 24(12), pp. 5764–5776, December 2015. (IF: 11.041)

17. * **A. Banerjee** and P. Maji, "Rough Sets for Bias Field Correction in MR Images Using Contraharmonic Mean and Quantitative Index", *IEEE Transactions on Medical Imaging*, 32(11), pp. 2144–2155, November 2013. (IF: 11.037)

Articles in Peer-reviewed Conference Proceedings

1. M. Beetz, **A. Banerjee**, and V. Grau, "Reconstructing 3D Cardiac Anatomies from Misaligned Multi-View Magnetic Resonance Images with Mesh Deformation U-Nets", *Proc. Geometric Deep Learning in Medical Image Analysis (GeoMedIA)* (Accepted), November 2022.

2. M. Beetz, **A. Banerjee**, and V. Grau, "Point2Mesh-Net: Combining Point Cloud and Mesh-Based Deep Learning for Cardiac Shape Reconstruction", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)* (Accepted), September 2022.

3. M. Beetz, J. Corral Acero, **A. Banerjee**, I. Eitel, E. Zacur, T. Lange, T. Stiermaier, R. Evertz, S. J. Backhaus, H. Thiele, A. Bueno-Orovio, P. Lamata, A. Schuster, and V. Grau, "Post-Infarction Risk Prediction with Mesh Classification Networks", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)* (Accepted), September 2022.

4. M. Beetz, J. Corral Acero, **A. Banerjee**, I. Eitel, E. Zacur, T. Lange, T. Stiermaier, R. Evertz, S. J. Backhaus, H. Thiele, A. Bueno-Orovio, P. Lamata, A. Schuster, and V. Grau, "Mesh U-Nets for 3D Cardiac Deformation Modeling", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)* (Accepted), September 2022.

5. L. Li, J. Camps, **A. Banerjee**, M. Beetz, B. Rodriguez, and V. Grau, "Deep Computational Model for the Inference of Ventricular Activation Properties", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)* (Accepted), September 2022.

6. **A. Banerjee**, E. Zacur, R. P. Choudhury, and V. Grau, "Automated 3D Whole-Heart Mesh Reconstruction From 2D Cine MR Slices Using Statistical Shape Model", *Proc. 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Glasgow, UK, pp. 1702–1706, July 2022.

7. H. J. Smith, **A. Banerjee**, R. P. Choudhury, and V. Grau, "Automated Torso Contour Extraction from Clinical Cardiac MR Slices for 3D Torso Reconstruction", *Proc. 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, Glasgow, UK, pp. 3809–3813, July 2022.

8. H. He, **A. Banerjee**, M. Beetz, R. P. Choudhury, and V. Grau, "Semi-Supervised Coronary Vessels Segmentation from Invasive Coronary Angiography with Connectivity-Preserving Loss Function", *Proc. IEEE International Symposium on Biomedical Imaging (ISBI)*, Kolkata, India, pp. 1–5, March 2022.

9. M. Beetz, **A. Banerjee**, Y. Sang, and V. Grau, "Combined Generation of Electrocardiogram and Cardiac Anatomy Models Using Multi-Modal Variational Autoencoders", *Proc. IEEE International Symposium on Biomedical Imaging (ISBI)*, Kolkata, India, pp. 1–4, March 2022.

10. M. Beetz, **A. Banerjee**, and V. Grau, "Generating Subpopulation-Specific Biventricular Anatomy Models Using Conditional Point Cloud Variational Autoencoders", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)*, Strasbourg, France, pp. 75–83, January 2022.

11. M. Beetz, J. Ossenberg-Engels, **A. Banerjee**, and V. Grau, "Predicting 3D Cardiac Deformations With Point Cloud Autoencoders", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)*, Strasbourg, France, pp. 219–228, January 2022.

12. **A. Banerjee**, E. Zacur, R. P. Choudhury, and V. Grau, "Optimised Misalignment Correction from Cine MR Slices using Statistical Shape Model", *Proc. Annual Conference on Medical Image Understanding and Analysis (MIUA)*, Oxford, UK, pp. 201–209, July 2021.

13. M. Beetz, **A. Banerjee**, and V. Grau, "Biventricular Surface Reconstruction From Cine MRI Contours Using Point Completion Networks", *Proc. IEEE 18th International Symposium on Biomedical Imaging (ISBI)*, Nice, France, pp. 105–109, April 2021.

14. **A. Banerjee**, R. P. Choudhury, and V. Grau, "Optimized Rigid Motion Correction from Multiple Non-Simultaneous X-Ray Angiographic Projections", *Proc. International Conference on Pattern Recognition and Machine Intelligence (PReMI)*, Tezpur, India, pp. 61–69, November 2019.

15. **A. Banerjee**, R. K. Kharbanda, R. P. Choudhury, and V. Grau, "Automated Motion Correction and 3D Vessel Centerlines Reconstruction from Non-simultaneous Angiographic Projections", *Proc. Statistical Atlases and Computational Models of the Heart (STACOM)*, Granada, Spain, pp. 12–20, February 2019.

16. **A. Banerjee** and P. Maji, "Rough Sets for Finite Mixture Model Based HEp-2 Cell Segmentation", *Proc. International Conference on Rough Sets and Knowledge Technology (RSKT)*, Tianjin, China, pp. 459–469, November 2015.

17. **A. Banerjee** and P. Maji, "Rough Set Based Homogeneous Unsharp Masking for Bias Field Correction in MRI", *Proc. International Conference on Image Analysis and Processing (ICIAP)*, Naples, Italy, pp. 542–551, September 2013.

18. **A. Banerjee** and P. Maji, "Contraharmonic Mean Based Bias Field Correction in MR Images", *Proc. International Conference on Computer Analysis of Images and Patterns (CAIP)*, York, UK, pp. 523–530, August 2013.

Published Technical Report

1. **A. Banerjee**, Y.-Y. Leung, A. Wagen, B. Nortier, D. Jarrett, H. Alawiye, K. Wang, K. Abdullah, P. Bothongo, S. Mararu, V. Ganesh, D. Sainz, and M. Fiers, "Modelling Amyloid Beta Plaque Formation in Alzheimer's Disease", *The Alan Turing Institute*, *Data Study Group*, July 2022.

Preprints

1. M. Leo, **A. Banerjee**, A. B. e Gala, M. Pope, M. Pedersen, K. Rajappan, M. Ginks, Y. Bashir, R. J. Hunter, and T. Betts, "Lesion Size Index (LSI)–Guided Catheter Ablation for Atrial Fibrillation: Can Tissue Impedance Drop Help to Identify Desirable Ablation Settings and Target Indices?", *Journal of Cardiovascular Electrophysiology* (Under Submission), March 2022.

2. **A. Banerjee** and S. K. Mukhoti, "Characterization of A Robust Probabilistic Framework for Image Data Distributions", *Statistics in Medicine* (Under Revision), August 2022.

3. S. Ghosh, S. Mukhoti, and **A. Banerjee**, "Poor and Sick Newsboy Model: A Robust Generalisation with Misspecified Demand", *European Journal of Operational Research* (Under Submission), October 2021.

Articles under Revision / Submission

1. M. Beetz, **A. Banerjee**, J. Ossenberg-Engels, and V. Grau, "Multi-Class Point Cloud Completion Networks with Cross-Domain Transfer for Cardiac Surface Reconstruction from Cine Magnetic Resonance Images", *Medical Image Analysis* (Under Submission), September 2022.

2. M. Shanmuganathan, R. A. Kotronias, M. K. Burrage, Y. Ng, **A. Banerjee**, C. Xie, A. Fletcher, P. Manley, A. Borlotti, M. Emfietzoglou, A. Menzter, F. Marin, B. Raman, OXAMI investigators, E. M. Tunnicliffe, S. Neubauer, S. K. Piechnik, K. M. Channon, and V. M. Ferreira, "CMR Findings in Acutely Ill COVID-19 Patients in Hospital: A Prospective Case-Control Study", *International Journal of Cardiology* (Under Revision), August 2022.

3. D. A. Beccano-Kelly, M. Cherubini, Y. Mousba, K. Cramb, S. Giussani, P. Rai, S. Vingill, N. Bengoa-Vernigory, B. Ng, G. Corda, **A. Banerjee**, J. Vowles, S. Cowley, and R. Wade-Martins "Calcium Dysregulation, Mitochondrial Failure and Electrophysiological Maturity Converge to Confer Vulnerability in Parkinson's iPSC-Dopamine Neurons", *Cell Reports* (Under Submission), July 2022.

4. M. Beetz, J. Corral Acero, **A. Banerjee**, I. Eitel, E. Zacur, T. Lange, T. Stiermaier, R. Evertz, S. J. Backhaus, H. Thiele, A. Bueno-Orovio, P. Lamata, A. Schuster, and V. Grau, "Interpretable Cardiac Anatomy Modeling Using Variational Mesh Autoencoders", *Frontiers in Cardiovascular Medicine* (Under Revision), June 2022.

5. M. Mamalakis, **A. Banerjee**, S. Ray, C. Wilkie, R. H. Clayton, A. J. Swift, G. Panoutsos, and B. Vorselaars, "Deep multi-metric training: The need of multi-metric curve evaluation to avoid weak learning", *International Journal of Computer Vision* (Under Revision), December 2021.

6. M. T. B. Pope, P. Kuklik, **A. Banerjee**, A. B. e Gala, M. Leo, M. Mahmoudi, J. Paisey, and T. R Betts, "Recurrence Matrix Mapping – Novel Approach to Characterising Atrial Fibrillation Phenotype", *Europace* (Under Submission), July 2021.

Abstracts in Peer-reviewed Journals

1. M. Shanmuganathan, A. Masi, M. K. Burrage, R. A. Kotronias, A. Borlotti, R. Scarsini, **A. Banerjee**, D. Terentes-Printzios, Q. Zhang, E. Hann, E. Tunnicliffe, A. Lucking, J. Langrish, R. Kharbanda, G. L. De Maria, A. P. Banning, R. P. Choudhury, K. M. Channon, S. K. Piechnik, and V. M. Ferreira, "Long-term prognosis after acute ST-segment elevation myocardial infarction is determined by characteristics in both non-infarcted and infarcted myocardium on cardiovascular magnetic resonance imaging", *Heart*, 107(Suppl 3), A1, November 2021.

2. M. Pope, P. Kuklik, **A. Banerjee**, A. B. e Gala, M. Leo, M. Mahmoudi, J. Paisey, and T. R. Betts, "Insights into Electrophysiological Mechanisms of Atrial Fibrillation Propagation using Simultaneous Bi-Atrial Mapping", *EP Europace*, 23(Suppl 3), pp. iii147, May 2021.

3. M. Wamil, A. Borlotti, **A. Banerjee**, L. Gaughran, G. L. De Maria, A. P. Banning, R. Kharbanda, R. P. Choudhury, and K. M.Channon, "Impaired Myocardial Healing in Patients with Diabetes After ST-Elevation Myocardial Infarction", *European Heart Journal*, 40(Suppl 1), pp. 2666, October 2019.

4. N. Akbar, A. Corbin, E. Hogg, **A. Banerjee**, C. Lee, G. Melling, L. Edgar, R. Dragovic, D. Carter, P. Riley, I. Udalova, D. Anthony, and R. Choudhury, "Endothelial Cell Derived Extracellular Vesicles Mediate Immune Cell Deployment from the Spleen and Transcriptional Programming Following Acute Myocardial Infarction", *European Heart Journal*, 40(Suppl 1), pp. 1361, October 2019.

5. N. Akbar, A. Corbin, S. Dawkins, C. Lee, E. Hogg, L. Edgar, M. Gunadasa-Rohling, **A. Banerjee**, G. Melling, R. Dragovic, D. Carter, P. Riley, I. Udalova, K. M. Channon, D. Anthony, and R. P. Choudhury, "Endothelial Cell Derived Extracellular Vesicles Mediate Neutrophil Deployment from the Spleen Following Acute Myocardial Infarction", *Heart*, 105(Suppl 6), pp. A181, May 2019.

Abstracts in Peer-reviewed Conference Proceedings

1. M. Shanmuganathan, R. A. Kotronias, M. K. Burrage, Y. Ng, **A. Banerjee**, A. Borlotti, M. Emfietzoglou, C. Xie, F. Marin, B. Raman, A. Menzter, P. Manley, A. Fletcher, E. Tunnicliffe, S. Neubauer, S. K. Piechnik, K. Channon, and V. Ferreira, "Hospitalized Patients with COVID-19 and Bacterial Sepsis Have Similar T1 and T2 Abnormalities on CMR", *SCMR 25th Annual Scientific Sessions*, February 2022.

2. M. Shanmuganathan, A. Masi, M. Burrage, R. Kotronias, A. Borlotti, **Abhirup Banerjee**, R. Scarsini, D. Terentes-Printzios, E. Tunnicliffe, Q. Zhang, E. Hann, G. De Maria, A. Lucking, J. Langrish, R. Kharbanda, A. Banning, R. Choudhury, K. Channon, S. K. Piechnik, and V. Ferreira, "Both Non-infarct and Infarct Myocardial T1 Post-STEMI are Independent and Incremental Predictors of Long-term Outcomes Beyond Conventional CMR Biomarkers", *SCMR 25th Annual Scientific Sessions*, February 2022.

3. A. Boss, **A. Banerjee**, M. Mamalakis, A. Swift, S. Ray, C. Wilkie, B. Vorselaars, J. W. Fanstone, S. Weeks, and L. S. Mackenzie, "Can kidney function be used to predict survival of COVID-19 in hospitals? Predictive modelling in a retrospective cohort study", *Pharmacology 2021*, British Pharmacological Society, September 2021.

4. C. Wilkie, S. Ray, **A. Banerjee**, M. Mamalakis, A. Swift, B. Vorselaars, J. W. Fanstone, S. Weeks, and L. S. Mackenzie, "A simplified risk tool, LUCAS, which predicts the outcome for patients with SARS-CoV-2, also predicts survival from Influenza A and Influenza B infections", *Pharmacology 2021*, British Pharmacological Society, September 2021.

5. M. Leo, **A. Banerjee**, A. B. e Gala, M. Pope, M. Pedersen, K. Rajappan, M. Ginks, Y. Bashir, R. Hunter, and T. Betts, "Lesion Size Index (LSI) – Guided Catheter Ablation for Atrial Fibrillation: Can Tissue Impedance Drop Help Identifying Desirable Settings and Target Indices For Ablation?", *Heart Rhythm Congress (HRC)*, September 2020.

6. **A. Banerjee**, G. L. De Maria, K. M. Channon, A. P. Banning, R. P. Choudhury, and V. Grau, "Automated 3D Coronary Sinus Reconstruction from Non-simultaneous Angiographic Projections", *IEEE International Symposium on Biomedical Imaging (ISBI)*, Venice, Italy, April 2019.

7. N. Akbar, A. Corbin, E. Hogg, **A. Banerjee**, C. Lee, L. Edgar, R. Dragovic, I. Udalova, D. Anthony, R. P. Choudhury, "Extracellular Vesicles Mediate Immune Cell Deployment from the Spleen Following Acute Myocardial Infarction", *UK Society for Extracellular Vesicles (UKEV) Forum*, Sheffield, UK, December 2018.

Student Supervision

Current:

Co-supervision with Prof. Vicente Grau:

- Yiying Wang (Wolfson College, University of Oxford, UK): Doctoral Student (DPhil); October 2021 - .
- Haorui He (St Hugh's College, University of Oxford, UK): Doctoral Student (DPhil); October 2020 - .
- Siyu Wang (Jesus College, University of Oxford, UK): Research Project for 4th Year Engineering; October 2022 - .

Co-supervision with Prof. Blanca Rodriguez and Prof. Vicente Grau:

- Hannah Smith (Medical Sciences Doctoral Training Centre, University of Oxford, UK): Doctoral Student (DPhil); October 2020 - .

Past:

- Solace Hussein (St Peter's College, University of Oxford, UK): Research Project for 4th Year Engineering; October 2021 - June 2022.
- Thomas Gnodde (Christ Church, University of Oxford, UK): Research Project for 4th Year Engineering; October 2020 - June 2021.
- Hannah Smith (Medical Sciences Doctoral Training Centre, University of Oxford, UK): CDT short project; June 2020 - September 2020.
- Haorui He (Worcester College, University of Oxford, UK): Research Project for 4th Year Engineering; October 2019 - June 2020.

Official Committees

- Quad Fellowship by Schmidt Futures - 2022 - *Faculty Reviewer*.
- Vice-Chancellor's Innovation and Engagement Awards 2022 - University of Oxford - *Advisory Panel*.

PhD Thesis Committee

External Examiner:

- Yalei Yang, "Myocardial Perfusion Modelling: MR Image Processing and Statistical Inference", *University of Glasgow, School of Mathematics and Statistics*, June 2022.

Achievements

- Secured 1st Place in "CoronaHack - AI vs.Covid-19", organized by Mindstream AI during 14-19 April 2020, as part of Team MaPP (Modeling and Prediction Pandemics).
- Received the **Young Scientist Award** from the Indian Science Congress Association (ISCA) in the Section of Information and Communication Science & Technology (including Computer Sciences) in the year 2016-2017.
- Received 2nd Prize for the paper, titled "Bias Field Correction in MR Images Using Rough Sets and Contraharmonic Mean", in the 4th IDRBT Doctoral Colloquium, 2014.
- Received Graduate Student Support by GOOGLE Inc. and ICIAP2013 Committee for attending and presenting paper in the 17th International Conference on Image Analysis and Processing (ICIAP 2013), held in Naples, Italy on September 2013.
- Selected for the prestigious Senior Research Fellowship from the Indian Statistical Institute on July 2013 for pursuing PhD as a fully-funded research scholar.

- Selected for the prestigious Junior Research Fellowship from the Indian Statistical Institute on July 2011 for pursuing PhD as a fully-funded research scholar.
- Secured an All India Rank 15 in the CSIR-NET Examination in Mathematical Sciences held on December, 2010.
- Received full scholarship and support for studying the MStat (Master of Statistics) degree from the Indian Statistical Institute on July, 2009.

Refereeing Activities

Reviewer for the journals:

- European Heart Journal,
- IEEE Signal Processing Letters,
- IEEE Transactions on Image Processing,
- IEEE Transactions on Fuzzy Systems,
- IEEE Transactions on Systems, Man, and Cybernetics: Systems,
- IEEE Journal of Biomedical and Health Informatics,
- Scientific Reports,
- Computerized Medical Imaging and Graphics,
- Expert Systems With Applications,
- Pattern Recognition,
- Information Sciences,
- Applied Soft Computing,
- IET Image Processing,
- IET Computer Vision,
- SN Computer Science, **etc.**

Program Committee (PC) Member and/or Reviewer for the Conferences:

- 25th Medical Image Computing and Computer Assisted Intervention (MICCAI) 2022 (Singapore),
- 4th MICCAI Workshop on Domain Adaptation and Representation Transfer (DART) 2022,
- 26th International Conf. on Pattern Recognition (ICPR) 2022 (Montréal, Québec),
- IEEE International Symposium on Biomedical Imaging (ISBI) 2022 (Kolkata, India),
- MICCAI 2021 (Strasbourg, France),
- 25th UK Conf. on Medical Image Understanding and Analysis (MIUA) 2021 (Oxford, UK),
- ISBI 2021 (Nice, France),
- MICCAI 2020 (Lima, Peru),
- MICCAI Educational Challenge (MEC) 2020,
- MIUA 2020 (Oxford, UK),
- MICCAI 2019 (Shenzhen, China),
- 8th Intl. Conf. Pattern Recognition and Machine Intelligence (PReMI) 2019 (Tezpur, India),
- 10th Functional Imaging and Modeling of the Heart (FIMH) 2019 (Bordeaux, France),
- PReMI 2017 (Kolkata, India),
- Intl. Conf. on Computer Vision and Image Processing (CVIP) 2016 (Roorkee, India),
- International Joint Conf. on Rough Sets (IJCRS) 2015 (Tianjin, China),
- PReMI 2015 (Warsaw, Poland),
- International Conf. on Advances in Pattern Recognition (ICAPR) 2015 (Kolkata, India),
- PReMI 2013 (Kolkata, India), **etc.**

Workshops/ Summer Schools Attended

- "Medical Imaging Summer School 2014", held at Favignana, Sicily, Italy, during July 28 – August 01, 2014.
- "School on Large Scale Problems in Machine Learning and Workshop on Common Concepts in Machine Learning and Statistical Physics", held at Adriatico Guest House, Kastler Lecture Hall, ICTP, Trieste, Italy, during August 20 – 31, 2012.

Membership of Professional Bodies

- Innovation Champion - Oxford University Innovation (Since January 2020).
- Institute of Electrical and Electronics Engineers (IEEE) Member (Membership No. – 92366366) (Since 2013)
- Indian Unit for Pattern Recognition and Artificial Intelligence (IUPRAI) Life Member (Membership No. – L093)
- Indian Science Congress Association (ISCA) Life Member (Membership No. – L29150)
- Medical Image Computing and Computer Assisted Interventions (MICCAI) Society Member

Academic Visits

- Biomedical Imaging and Bioinformatics Lab (BIBL), Machine Intelligence Unit, Indian Statistical Institute: *Visiting Scientist* invited by Prof. Pradipta Maji. April-July 2017.
- Computer Vision & Pattern Recognition Laboratory (CVPR Lab), Department of Applied Science, University of Naples "Parthenope", Italy: *Visiting Scientist* invited by Prof. Alfredo Petrosino. September 2013.

Computer Skills

- Programming Languages: C, C++, Python, HTML, JavaScript.
- Software: Matlab, R, SPSS, MS Excel, LaTex.

References

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