



FACULTY FULL NAME: Dr Mahbubunnabi Tamal

POSITION: Assistant Professor

Personal Data

Nationality | British

Date of Birth | 26 October, 1978

Department | Biomedical Engineering

Official UoD Email | mtamal@uod.edu.sa

Office Phone No. |

Language Proficiency

Language	Read	Write	Speak
Arabic	Basic	Basic	Basic
English	Proficient	Proficient	Proficient
Others	Bangla, Hindi, Urdu	Bangla, Hindi, Urdu	Bangla, Hindi, Urdu

Academic Qualifications (Beginning with the most recent)

Date	Academic Degree	Place of Issue	Address
April, 2007	PhD	Manchester, UK	University of Manchester, Manchester, UK
May, 2001	Bachelor of Engineering (BE)	Ranchi, India	Birla Institute of Technology, India

PhD, Master or Fellowship Research Title: (Academic Honors or Distinctions)

PhD	Maximum likelihood reconstruction for positron emission tomography using a new unified attenuation and scatter model
Master	
Fellowship	Metrology Guided Radiotherapy

Professional Record: (Beginning with the most recent)

Job Rank	Place and Address of Work			Date
Assistant Professor	Department of Biomedical Engineering	College of Engineering, University of Dammam	PO Box 1982, Dammam 31441 Kingdom of Saudi Arabia	August, 2015-present
Senior Research Associate	Wolfson Molecular	The University of Manchester	27 Palatine Road, Withington,	June, 2011-August, 2015



	Imaging Center		Manchester, M20 3LJ, UK	
Assistant Professor	Department of Electronics and Communication	East West University	Aftabnagar, Dhaka, Bangladesh	January, 2011-May, 2011
Research Associate	Imaging Sciences and Biomedical Engineering	The University of Manchester	Stopford Building, Manchester, UK	September, 2008-December, 2010
Postdoctoral Research Fellow	Department of Engineering	University of Central Lancashire	Preston, UK	January, 2007-August, 2008

Administrative Positions Held: (Beginning with the most recent)

Administrative Position	Office	Date
Member of college committee of Community Service and Sustainable Development	Imam Abdulrahman Bin Faisal University	September, 2018 - Present
Department Chairman of the committee of Community Service and Sustainable Development	Imam Abdulrahman Bin Faisal University	October, 2016-August, 2020
Member, Department ABET Committee	University of Dammam	September, 2015 - Present
Member, Department Course Curriculum Development Committee	University of Dammam	September, 2016 – Present
Member, College Quality and Academic Accreditation Committee	University of Dammam	September, 2015 – May, 2016

Scientific Achievements

Patent Application

#	Name of Investigator(s)	Research Title	Status
1	M Tamal	Nonlinear Diffusion Filter For Image Processing in Nuclear Medicine	Patent pending
2	M Tamal	Chromatic Calibration Of Embedded Cameras	Patent pending

Published Refereed Scientific Researches

(In Chronological Order Beginning with the Most Recent)

#	Name of Investigator(s)	Research Title	Publisher and Date of Publication
	M. Tamal	A Phantom Study to Investigate	Applied Sciences, Vol. 11, Issue 2,



		Robustness and Reproducibility of Grey Level Co-Occurrence Matrix (GLCM)-Based Radiomics Features for PET	pages 535-550
1	M. Tamal	A hybrid region growing tumour segmentation method for low contrast and high noise Nuclear Medicine (NM) images by combining a novel non-linear diffusion filter and global gradient measure (HNDF-GGM-RG)	Heliyon, Vol 5(12), 1-8, 2019
2	A. Lamarca, P. Manoharan, P. J Julyan, M. Tamal, M. Rao, A. Cotterill, I. Trigonis, M. G. McNamara, R. A. Hubner, Z. Win, J. W. Valle and A. Saleem	Fluorothymidine Positron Emission Tomography (FLT-PET) Repeatability and Response Evaluation in Advanced Pancreatic Cancer Patients Treated with Gemcitabine-Based Chemotherapy	Clinical Oncology and Research, Vol 2(5), 1-11, 2019
3	M. Tamal	Grey Level Co-occurrence Matrix (GLCM) as a Radiomics Feature for Artificial Intelligence (AI) Assisted Positron Emission Tomography (PET) Images Analysis	IOP Conference Series: Material Science and Engineering, Vol 646, 1-8, 2019
4	M. Tamal	A Fully Automatic Global Gradient Measure Based 3D Region Growing Solid Tumour Segmentation Method (3D-GGM-RG) for Low Contrast and Low Count Positron Emission Tomography.	Journal of Medical Imaging and Health Informatics, Vol 9(9), 2022-2030, 2019
5	M. Tamal	A phantom study to assess the reproducibility, robustness and accuracy of PET image segmentation methods against statistical fluctuations.	PLoS One, Vol 14(7), 2019
6	M. Tamal	Nonlinear Diffusion Filter for Low Count Positron Emission Tomography Utilizing Orientation Information of Neighbouring Gradient Vectors.	9TH IEEE-GCC CONFERENCE AND EXHIBITION (GCCCE), 232-234, 2018
7	M Tamal, C Robinson, D Clarke, J Anton-Rodriguez, D Morris, A Jackson, M-C Asselin	Investigation of the Factors Affecting Quantification of Heterogeneity derived from PET Images of the Torso NEMA Phantom.	European Journal of Nuclear Medicine and Molecular Imaging, Vol 42, S302, 2015. (Thomson Reuter JCR Impact factor 7.27)
8	I. Trigonis and P. Koh, B. Taylor, M. Tamal, M. Earl, D. Ryder, H. Young, C Faivre-Finn, F. Blackhall, M-C Asselin and A. Jackson.	Early reduction in tumour [F-18]fluorothymidine (FLT) uptake in patients with non-small cell lung cancer (NSCLC) treated with	European Journal of Nuclear Medicine and Molecular Imaging, vol. 41, pp. 682-693, 2014. (Thomson Reuters JCR Impact factor



		radiotherapy alone.	7.27)
9	M. Tamal, I. Trigonis, L. Horsley, B. Taylor, P. Manoharan, A. Jackson and M-C Asselin.	Semi-automatic extraction of image-derived input functions using Temporal Shape Driven Filter (TSDF) for improved quantification of whole body dynamic FLT-PET images.	European Journal of Nuclear Medicine and Molecular Imaging, vol. 39(2), s.515, 2012. (Thomson Reuters JCR Impact factor 7.27)
10	M. Tamal.	Threshold based segmentation in positron emission tomography for radiotherapy planning and treatment assessment.	Current Molecular Imaging, vol. 1, pp. 63-68, 2012.
11	I. Trigonis, P. Koh, M-C Asselin, M. Tamal, B. Taylor, M. Earl, O. Ataman, A. Jackson, C. Faivre-Finn and F. Blackhall.	Imaging early radiotherapy (RT)-induced changes of proliferation in patients with non-small cell lung cancer (NSCLC) using FLT-PET.	Journal of Thoracic Oncology, vol. 7(6), s50, 2012. (Thomson Reuters JCR Impact factor 6.60)
12	I. Trigonis and P. Koh, M-C. Asselin, M. Tamal, B. Taylor, T. Goldstone, E. Dean, O. Ataman, A. Jackson, C. Faivre-Finn, F. Blackhall.	Evaluation of FLT PET as early predictor of response to radical RT in patient with non-small cell lung cancer.	Journal of Thoracic Oncology, vol. 6(6), s1127-s1128, 2011. (Thomson Reuters JCR Impact factor 6.60)
13	P. J. Markiewicz, M. Tamal, P. J. Julyan, D. L. Hastings and A. J. Reader,	High Accuracy Multiple Scatter Modelling for 3D Whole Body PET.	Physics in Medicine and Biology, vol. 52(3), pp. 829-847, 2007. (Thomson Reuters JCR Impact factor 2.74)
14	M. Tamal, A. J. Reader, P. J. Markiewicz, D. L. Hastings and P. J. Julyan,	Noise Properties of Four Strategies for Incorporation of Attenuation and Scatter Information in PET Reconstruction.	IEEE Transaction on Nuclear Science, vol. 53(5), pp. 2778-2786, 2006. (Thomson Reuters JCR Impact factor 1.71)

Refereed Scientific Research Papers in Progress

#	Name of Investigator(s)	Research Title	Journal
1	M. Tamala, M. Alshammaria, M. Alabdullaha, R. Hourania, H. A. Alolab and T. M. Hegazib	An Integrated Framework with Machine Learning and Radiomics for Accurate and Rapid Early Diagnosis of COVID-19 from Chest X-ray	Expert Systems with Applications (accepted)
2	K. Hameed, R. Zainon and M. Tamal	Sensitivity of Cadmium Telluride Zinc photon counting detector for tissue quantification	Applied Sciences (accepted)
3	S. Zaleha, R. Zainon and M. Tamal	State of the Art in Gold Nanoparticle Synthesis via Laser Ablation in Liquid and Its Characterization: A Review	Materials and Design (under review)

Scientific Research Papers Presented to Refereed Specialized Scientific Conferences



#	Name of Investigator(s)	Research Title	Conference and Publication Date
1	S. Talay, H. Mubarak, A. Aldarwish, F. Alhamoud, N. Aljabr, K. Hameed and M. Tamal	Integration of 3D Virtual Reality (VR) in Diagnostic and Therapeutic Imaging.	5 th International Conference on Radiation Medicine, Riyadh, March, 2018.
2	M. Tamal	Smart phone: a cost-effective point-of-care (POC) medical device for non-invasive diagnosis of anemia.	5 th International Conference on Radiation Medicine, Riyadh, March, 2018.
3	M. Tamal	Nonlinear Diffusion Filter for Low Count Positron Emission Tomography Utilizing Orientation Information of Neighbouring Gradient Vectors	The 9 th IEEE-GCC Conference, Manama, Bahrain, May, 2017
4	M. Tamal	Gradient vector orientation based nonlinear diffusion filter for low count Positron Emission Tomography – a novel parameter free approach.	The 8th Saudi Medical Physics Conference (KFMC Conference on Physics & Engineering in Medicine), Riyadh, KSA, October, 2015.
5	A. Lamarca, P. Manoharan, M. C. Asselin, I. Trigonis, P. Hindmarsh, S. Wood, R. McMahon, M. Rao, R. Hubner, M. Tamal, D. O'Reilly, R. Deshpande, J. W. Valle and A. Saleem,	Pilot, proof-of-concept studies for determining the feasibility of the use of FLT-PET in patients with pancreatic adenocarcinoma.	Presented at American Society for Clinical Oncology, Chicago, Illinois, June, 2013.
6	M. Tamal, I. Trigonis, M. C. Asselin, A. Armstrong, L. H. Horsely, G. Jayson and A. Jackson,	Temporal Shape Driven Filtering to Enhance Contrast of Liver Against Liver Metastases and Other Organs.	NCRI Conference, Liverpool, UK, November, 2011.
7	I. Trigonis and P. Koh, M. C. Asselin, M. Tamal, B. Taylor, T. Goldstone, E. Dean, O. Ataman, A. Jackson, C. Faivre-Finn, F. Blackhall.	FLT PET in RADIATION DAMAGE and Resistance in Lung Cancer Radiotherapy (RADAR).	14th World conference on lung cancer, Amsterdam, Netherlands, July, 2011.
8	M. Tamal,	Positron Emission Tomography: A Multidisciplinary Endeavour in Functional Nuclear Medicine Imaging for in vivo cancer studies.	National conference on physics for development, Dhaka, Bangladesh, February, 2011.
9	M. Tamal, I. Trigonis, M. C. Asselin, A. Armstrong, L. H. Horsely, G. Jayson and A. Jackson,	Temporal Shape Driven Filtering to Enhance Contrast of Liver Against Liver Metastases and Other Organs.	World Molecular Imaging Congress, Koyoto, Japan, September, 2010.
10	B. J. Matuszewski, M. Tamal, G. Price and C. J. Moore.	Diffusion Filter for Structured Noise Removal.	Medical Image Understanding and Analysis, Dundee, 2008.
11	M. Tamal, A. J. Reader, P. J. Markiewicz, P. J. Julyan and D. L. Hastings.	Impact of Scatter Modeling Error on 3D Maximum Likelihood Reconstruction in PET.	Proc. Conf. Rec. IEEE NSS-MIC, vol. 5, pp. 3154-3158, 2006.
12	P. J. Markiewicz, M. Tamal, P. J. Julyan, D. L. Hastings and A. J.	A New, Dedicated, High Accuracy Multiple Order Scatter Model for 3D Whole Body PET.	Proc. Conf. Rec. IEEE NSS-MIC, vol. 5, pp. 2840-2844, 2006.



	Reader.		
13	P. J. Markiewicz, A. J. Reader, M. Tamal, P. J. Julyan and D. L. Hastings.	An Advance Analytical Method Incorporating the Geometrical Properties of Scatter and Radiation Emissions into the System Model for the True Component of 3D PET Data.	Proc. Conf. Rec. IEEE NSS-MIC, vol. 4, pp. 2310-2314, 2005.
14	P. J. Markiewicz, A. J. Reader, M. Tamal, P. J. Julyan and D. L. Hastings.	Scattered Photon Information Inclusion in 3D PET Image Reconstruction.	Fully Three-Dimensional Image Reconstruction Meeting in Radiology and Nuclear Medicine, Salt Lake City, Utah, USA, 2005.
15	M. Tamal, A. J. Reader, P. J. Markiewicz, D. L. Hastings and P. J. Julyan.	Noise Properties of Four Strategies for Incorporation of Attenuation and Scatter Information in 3D Whole Body PET.	Proc. Conf. Rec. IEEE NSS-MIC, vol. 5, pp. 2840-2844, 2004.
16	P. J. Markiewicz, A. J. Reader, M. Tamal, D. L. Hastings and P. J. Julyan.	Towards an Analytical Unified Scatter and Attenuation System Model for 3D Whole Body PET Imaging.	Proc. Conf. Rec. IEEE NSS-MIC, vol. 4, pp. 2310-2314, 2004.

Completed Research Projects

#	Name of Investigator(s) (Supported by)	Research Title	Report Date
1	Mahbubunnabi Tamal (PI) (Deanship of Scientific Research)	Early screening of breast cancer utilizing spectral x-ray mammogram and virtual reality device	2019
2	Mahbubunnabi Tamal (PI) (Deanship of Scientific Research)	Characterization and quantification of tissue heterogeneity in multi-modal/spectral oncological and cardiac images for diagnosis and treatment assessment	2018
3	Mahbubunnabi Tamal (PI)	Metrology Guided Radiotherapy	2008

Current Researches

#	Research Title	Name of Investigator(s)
1	An integrated approach with in vivo molecular imaging and machine learning to characterize tissue microenvironment for accurate diagnosis and prognosis of infection, inflammation and cancer.	Mahbubunnabi Tamal (PI) (RDO, Ministry of Education)
2	Automated Approach to Detect Heart Rate Variability obtained from Electrocardiographic and Photoplethysmographic signals using Deep Neural Network	Mahbubunnabi Tamal (Col) (Deanship of Scientific Research)
3	Development of a comprehensive prototype of revolutionary micro	Mahbubunnabi Tamal (PI) (Deanship of Scientific Research)



molecular computed tomography (micro-mCT) system	
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Contribution to Scientific Conferences and Symposia

#	Conference Title	Place and Date of the Conference	Extent of Contribution
1	In-vivo molecular imaging: a paradigm in personalized and precision medicine	3 rd International Conference on Medical Physics in Radiation Oncology and Imaging (ICMPROI), Dhaka, Bangladesh, March, 2018	Invited Speaker
2	Radiomics, Big Data and Deep Learning – New Paradigms in Precision Medicine in Cancer	2 nd Bangladesh Cancer Congress, Dhaka, Bangladesh, January, 2017	Invited Speaker
3	Radiotracers in PET: what they tell us about the tumour microenvironment?	2 nd Bangladesh Cancer Congress, Dhaka, Bangladesh, January, 2017	Invited Speaker
4	FDG and FLT PET: Beyond SUV.	10 th International Seminar on Medical Physics, Penang, Malaysia, August, 2016.	Invited Speaker and Reviewer
5	Multimodality Imaging in Cancer – Opportunities and Challenges.	8 th Saudi Medical Physics Conference (KFMC Conference on Physics & Engineering in Medicine), Riyadh, KSA, October, 2015.	Invited Speaker and Reviewer

Membership of Scientific and Professional Societies and Organizations

- Member of Institute of Physics in Engineering and Medicine (MIPEM)
- Member of Institute of Electrical and Electronics Engineers (IEEE)
- Member of Saudi Medical Physics Society
- Member of Bangladesh Medical Physics Society

Teaching Activities

Undergraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Biomedical instrumentation Design	BIOEN 432	Course Leader
2	Design of Medical Devices	BIOEN 521	Course Leader
3	Biomedical Imaging Systems	BIOEN 553	Course Leader
4	Medical Image Processing and Communications	BIOEN 563	Course Leader
5	Computer Programming	COM 212	Course Leader



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Brief Description of Undergraduate Courses Taught: (Course Title – Code: Description)

1	BIOEN 432 -Biomedical instrumentation Design: This course introduces the students to the basic design concept required to acquire, process and interpret biological and medically relevant signals. Emphasis is placed on recognizing and accommodating limitations inherent in sensor and their associated electronics. Topics include: design of biomedical instrumentation including different sensor types and their associated electronics. Mathematical models of sensor ranging including resistive sensors and biosensors. The design of the signal conditioning electronics. Practical application on specific cases where students will be able to demonstrate their skills on evaluating a biomedical instruments using MATLAB/LabVIEW/Multisim software.
2	BIOEN 521 - Design of Medical Devices: This multidisciplinary problem based learning module is design to bridge the technical knowledge with the broader practical design and commercial challenges and aims to advance the students' knowledge and skills in the area of medical device design through case studies. It will enable students to develop a critical understanding and awareness of effective implementation strategies for new and emerging technologies utilizing the appropriate design routes.
3	BIOEN 553 – Biomedical Imaging Systems: The course introduces students to the basic physics and instrumentation concepts of main biomedical imaging modalities such as X- Ray, Radiography, Computed Tomography, Ultrasound and Magnetic Resonance Imaging (MRI). Student will learn the fundamental concept of radiation and image formation processes along with the safety issues of different imaging modalities. The focus of the course is a series of labs using PHYWE training units and Gate 4 simulation software and home works that will enable students to perform useful biomedical imaging experiments that in turns not only will help them to understand the principle of imaging systems but also will familiarize them with basic parameters that matter most for clinical applications.
4	BIOEN 563 - Medical Image Processing and Communications: This course provides students with an overview of computational and mathematical aspects of medical image processing and communication. Students will learn the fundamentals behind image processing and analysis methods and algorithms with an emphasis on biomedical applications. It covers basic principles and algorithms for processing both deterministic and random signals presented in images. Topics include image quality assessment, filtering, image enhancement and image analysis. The focus of the course is hybrid learning method combining traditional lectures and problem based learning. In hybrid learning, the students will implement the knowledge learnt through traditional lectures to identify and solve practical medical image processing and analysis problems using MATLAB.
5	COMP 212 – Computer Programming II: This course enables the students to understand binary codes and how computer works, different data types, the principles of computer programming and programming languages (machine, assembly and high level languages), programming principles of algorithm (flow chart). Variables, scripts and operations, MATLAB programming language.

Postgraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Nuclear Medicine	PHYS 525	Course Leader

Brief Description of Postgraduate Courses Taught: (Course Title – Code: Description)

1	PHYS 525 (Nuclear Medicine): Planar scintigraphy, SPECT and PET/CT, dosimetry, dynamic imaging
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Course Coordination



#	Course Title and Code	Coordination	Co-coordination	Undergrad.	Postgrad.	From	to
1	COMP 361 Advance Computer Programming	x		x		2017	Date
2	HUMN 501 Professional Practice and Ethics	x		x		2018	Date

Guest/Invited Lectures for Undergraduate Students

#	Activity/Course Title and Code	Subject	College and University or Program	Date

Student Academic Supervision and Mentoring

#	Level	Number of Students	From	to
1	Undergraduate	4	September, 2016	Present
2	Undergraduate	5	September, 2015	May, 2016

Supervision of Master and/or PhD Thesis

#	Degree Type	Title	Institution	Date
1	PhD	EM-ML based reconstruction method for micro computed tomography (micro-CT) using Photon counting CZT detectors	University Sains Malaysia, Malaysia	Ongoing
2	PhD	Development of radiolabelled gold nanoparticle for pre-clinical molecular imaging and therapy of cancer	University Sains Malaysia, Malaysia	Ongoing
3	MSc (leading to PhD)	Advanced tissue microenvironment characterizing technique with in vivo molecular imaging and machine learning technique for accurate infection, inflammation, and cancer diagnosis and prognosis	University Sains Malaysia, Malaysia	Ongoing
4	PhD	Estimating tumour proliferation using [F18] FLT PET. Correlation with other imaging (MRI) and serum biomarkers.	The University of Manchester, UK	September, 2014
5	MSc	Design and acquisitions of heterogeneous lesions in phantoms for PET and MRI	The University of Manchester, UK	September, 2013



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Ongoing Research Supervision

#	Degree Type	Title	Institution	Date

Administrative Responsibilities, Committee and Community Service (Beginning with the most recent)

Administrative Responsibilities

#	From	To	Position	Organization

Committee Membership

#	From	To	Position	Organization

Scientific Consultations

#	From	To	Institute	Full-time or Part-time

Volunteer Work

#	From	To	Type of Volunteer	Organization

Personal Key Competencies and Skills: (Computer, Information technology, technical, etc.)

1	Windows, UNIX and Linux, Mac
2	Basic, C, C++, Mat Lab, IDL, CGAL, ITK and VTK. Applications: Adobe Illustrator, Dreamweaver, Microsoft Word, Excel, Power Point, OpenOffice and Latex

Last Update

12 /11/2016