Rashed Karim

Image Data Scientist

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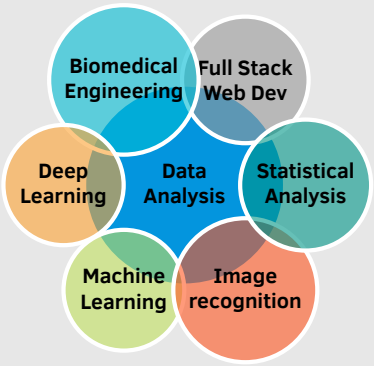
Skills

Overview



Programming

$0\ LOC$ $100K\ LOC$

C++ • PHP • Python

JS • SQL • MATLAB

Pandas • Keras • VTK

Awards

2017 – EPSRC early career scientist fellowship top 10 finalist for £1m

2016 – Journal of Cardiovascular Imaging highly cited research award

2015 – Imperial College Honorary Lecturer

2014 – Medical Engineering UK best paper poster

2012 – Hamlyn Robotics UK best paper poster

1998 – University of Toronto Scholar award

Education

2005 - 2009 **PhD. Computer Science** — Imperial College London

2004 - 2005 **MSc. Advanced Computing** (Distinction) — Queen Mary, U. of London

1998 - 2002 **BSc. Computing & Mathematics** — University of Toronto, Canada

Experience

Sep 2010 - Present **Research Fellow** — King's College London

- Making predictions from 3D imaging data using ML and AI. Quantitative analysis of data. Gaining over 10 years' experience in image data analytics.
- Published 41 research papers in leading journals and conferences in last 7 years. An authority on cardiac image analysis
- Co-chaired and organised 3 international data challenges at premier medical imaging conferences
- Designed software for NHS research units in Leeds & London.
- Commercialisation of technology used for implanting cardiac pacemakers with Siemens Healthcare
- Long track record of project supervision: 42 individual projects and 18 BSc student projects (13/18 obtained a 1st grade).

2007 - Present **Full Stack Development Consulting** — Karim Consulting LTD

- Architect and full-stack developer of a London agency's cloud-based CRM system in PHP/MySQL (≈30,000 lines of code)
- The CRM software now runs most of the day-to-day operations of its business. As of Oct. 2018, there are 30 users, processing over 1000 claims and invoices each month.

Sep 2009 - Dec 2010 **Research Associate** — Imperial College London

- Designed software to recognise dead tissue from images, work was published as scientific article and cited 73 times on Google Scholar

Sep 2007 - Sep 2008 **Software Developer Intern** — Ernst and Young London

- Member of infrastructure team, building plug-ins and deploying for EY global. Continued employment after internship. Declined offer of further employment to complete PhD.

2003 - 04 **Lecturer in Mathematics** — Primeasia university, Bangladesh

- 1st and 2nd year university-level calculus. Youngest lecturer in university. Resigned from post to pursue further study.

2002 - 03 **Java developer** — BEA Weblogic Dubai

- JSP and Servlets development. Sun Java certified programmer

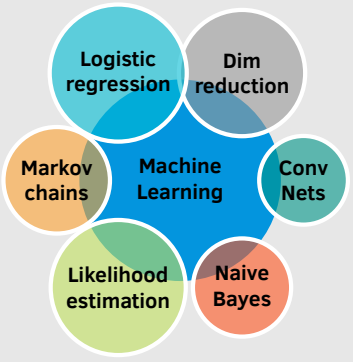
2001 - 02 **Part-time Tutor in Microprocessor Systems** — University of Toronto

Publications

Journals	28 publications, 8 as first author, 4 as second
Conference	22 proceedings, 9 as lead author
Abstracts	24 clinical abstracts, 14 as first, second or lead author
Summary	Published 50 articles in 10 years. 23 highly influential citations
Profiles	Google scholar , Semantic Scholar , PubMed , ResearchGate , ORCID , Publons

Technical

Modelling experience



Talks

Recent only

2018 – Prediction of pacing sites for cardiac pacemakers, IEEE EMBC, *USA*

2017 – Visualisation and uncertainty in whole-heart modelling, Zuse Maths Inst., *Berlin*

2017 – Problem solving using biomedical imaging analysis, EuroSciCon, *UK*

2015 – Data analytics and visualisation in interventional cardiac MRI, SCMR, *France*

2015 – Quantification algorithms to assess heart attacks from imaging, Hounsfield Lectures, *UK*

Editorial

J. of Healthcare Engineering	Editorial board
Asian J. of Info. Technology	Editorial board
Trans. Pattern Analy. & Mach. Intel.	Reviewer
Sensors	Reviewer
IEEE Trans. Medical Imaging	Reviewer

Teaching

Supervised theses (recent)

2017 – Model-based image analysis of cardiac wall thickness using measurements from CT

2017 – Image processing algorithms for measuring wall thickness in CMR

2016 – Tissue contact force sensing in uni and multi-directional catheters

2016 – Robotic ablation catheter - experimentations on precision and control

2016 – Validation of an adapted Cosserat rod model for contact force estimation

2016 – Ablation path trajectories of a robotic catheter inside a heart phantom

Years 2012 - 2016, 12 theses were supervised

Projects in industry and academia

2016 - 18 **Surgical guidance for pacemaker implantation** — Siemens

Designed and wrote software to obtain live cardiac tissue information from imaging and projection onto a map. Also built a decision support system for surgeons to use this information and implant pacemakers in the patient's heart. First built as a prototype with Siemens Healthcare and later translated into a commercial system. Work is set to appear in the press in Nov. 2018.

2018 **Neural networks for annotations** — MedcAI UK

Supervised a summer student to design a neural network that learns manual image annotations of radiologists. The network was trained on over 10,000 annotations. It took part in an international challenge held in MICCAI 2018, Granada, Spain, and came as one of top 5 algorithms. An online portal where this neural network can be run without any knowledge or experience of AI has been developed.

2017 **Augmented reality for museums** — Gordon museum of Pathology

Wrote full stack software of an augmented reality (AR) platform. The AR app runs on hand-held devices and is able to recognise 34 specimens in the museum and displays an AR layer with additional content. The system is in use regularly by visitors helping them explore in a completely different way.

2013 - 18 **Curating cardiac imaging data** — National Institute for Health Research

Undertook a 5-year effort with international collaborators to collect well-curated MRI and CT imaging data. On these datasets, benchmarks were established for algorithm accuracy. Designed a system for algorithm evaluation and made the data open source. I co-chaired meetings held in Nice (2012), Barcelona (2013) and Athens (2016) to discuss outcomes of these initiatives.

2016 **Responsive design and RESTful APIs** — De Silva Tutors UK

Re-designed website with a new responsive design. Also re-wrote a number of its API in PHP, JS and SQL following a new RESTful architecture. Wrote new modules to integrate Google maps search for its clients and tutors. A new CV search implemented with with Elastic search engine. This boutique tutoring agency is one of the largest in London with over 100 tutors and 1000 clients in its books.

2013 **Dimensionality reduction of 3D data visualistions** — Wellcome Trust

An ambitious project of my research lab to create the first 2D flat map of the heart, allowing an instant single shot view of 3D cardiac data. As lead in this project, a practical solution was engineered using spatial dimensionality reduction technique, implemented in C++ and demonstrated with live surgical data feed for clinical use. The technique, now pubished in *Karim et al. Computerized Med. Img. Graphics, 2014*, has highly influenced research work in UPF Barcelona

Community engagements

2018	Science exhibition	Sutton Grammar School
2016	Science careers for school children	Sutton Grammar School
2015	Science careers for school children	Sutton High School
2014	Biomedical engineering careers	Sutton Grammar School
2011	Enganging the public in scientific research	London ExCeL Centre