

Supporting Statement

Several themes have emerged in my life that makes me well suited for a career in academia: a passion for research and teaching, radiation applications engineer, and a strong desire to improve the lives of others in a tangible manner.

Radiation detection and measurements in industry and medical fields provide ample opportunities to foster my passion for research.

My interest in applying my knowledge of physics of radiation, radiation detection and measurements in oil and gas, medical imaging techniques, health physics and image processing that began through a PhD scholarship at Cardiff University, which I was granted from University of Tripoli. I joined Cardiff University between 2014-2018, where I developed a system for detecting the calcification in the abdominal aorta at the early stage based on the validated vertebral fracture assessment test (VFA). The results of this research were published in high-impact scientific conferences and under revision for journals. In addition to this and as a part of my study, I have worked at Cardiff University Hospital to investigate the performance of the Hologic dual energy x-ray absorptiometry in the detection of abdominal aortic calcification using a phantom which was designed for this purpose.

Currently, my concern is about many national issues, in which the most important are the radiation risk and increasing the tumor cases due to the misuse of several applications of radiation in my country.

I worked in the Radiation Measurements Center with my colleagues to investigate the radiation exposure within the medical centers as well as in oil industry. In addition, I have been nominated as radiation protection officer by the IAEA since 2006 at the University of Tripoli.

Karima Mohamed Ali Elmasri

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Academic Qualifications

- **PhD in Engineering (Medical physics)**, University of Cardiff, UK, 2018
- **MSc in Medical Physics**, University of Tripoli, Libya
- **BSc in Nuclear Engineering** – University of Tripoli, Libya

Working History

Academic experience:

- May 2022, Head of Nuclear Engineering Department, University of Tripoli.
 - September 2020-September 2021: **Scientific Consultant**- (Part time)- the Centre of Radiation Measurements and Triaging CRMT.
 - January 2019: **Lecturer** – University of Tripoli, Nuclear Engineering Department, Libya.
 - May 2014– Mar 2018: **PhD Researcher**, Cardiff University, Wales, UK
 - 2016- 2017: **Computer Laboratory Coordinator** – Cardiff University, Wales, UK.
 - 2008– Mar 2013: **Lecturer** – University of Tripoli, Nuclear Engineering Department, Libya.
 - Mar 1997 - 2008: **Teaching Assistant** – University of Tripoli, Libya.
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Industrial experience

- 2006- Radiation Safety Officer at the Nuclear Engineering Department.

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- Oct 2007– Dec 2008: Physicist – National Institute of Oncology, Sabrata, Libya.
 - Second Coordinator, Contact point and technical expert in Early Warning Gamma Dose Rate Monitoring System INT9185 project in Libya.
 - Sep 2020-Sep 2021: Director of the radiation measurements Departments, CRMT, Tripoli, Libya.
 - A member of Emergency Preparedness and Response Standards Committee (EPreSC), 2021 for 3 years.
 - A member of the Scientific Committee of the Conference on the Environmental Impact of Pollution, 2021.
 - Head of the Norm Measurement Committee in the Slough Floating Tank of Mellitah Company, 2021.
 - Reviewer at the third Conference of Environment, Misrata, 2022.
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Knowledge and Skills:

Teaching Activities:

- Radiation detection and measurement courses
 - Radioactivity in the environment courses
 - Training of Nuclear Engineering students on radiological survey, samples collection, and analysis of NORM contaminated samples
 - Radiation measurement Laboratory courses
 - Supervision of university graduation projects on NORM in the oil industry
 - Supervision of university graduation projects Dose Calculation in Radiation Therapy
 - Supervision of university graduation projects Quality Assurance in CT and Radiography
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Advanced knowledge in the following Clinical related skills:

- Data collection
- Statistical analysis

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Software packages and Programming skills:

- Electron Gamma shower package EGS.
 - Gamma vision & Gene2000
 - Orang machine learning package.
 - Matlab image processing package.
 - Computer programming and tools: Matlab
 - ImageJ and MAZDA package
 - SPSS Package
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Laboratory related skills:

- Radiation Detection Instrumentations
- Analysis of Food and Environmental Samples
- TLD system
- Dual energy X-ray absorptiometry modality

Training and courses:

- Medical Imaging summer school (MISS 2016) in Favignana-Sicily, Italy from 31th July to 6st Aug 2016
 - Medical Imaging summer school (MedICSS) in London UCL August 2016.
 - Image theory, Perceptions and Processing, 20th Feb 2018, The Royal Marsden & ICR
 - Diagnostic Radiology and CT, 21st -23rd Feb 2018, The Royal Marsden & ICR
 - Training Course on radiation monitoring and data sharing through IRMIS in nuclear and radiological emergencies, 5-9 September 2021
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Relevant Regional and international institutions and organizations

- The International Atomic Energy Agency (IAEA)
- Arab Atomic Energy Agency (AAEA)
- Libya Environment General Authority

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- Libyan Atomic Energy Establishment
 - Medical and health in Sabratah, Libya
 - Centre of Radiation Measurements and Training (CRMT)
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Publications:

- **Conference and Workshops Presentations:**

- Prof. Nouri A. Droughia* , Eng. Alia Elmashatb , Eng. Abdorazak El-Zourganya Eng. Karima El-Masric, “Nairobi Determination of Dose Rates from Natural Radionuclides in Porcelain Dental Materials”, The Eastern Africa Association for Radiation Protection (EAARP) 2010.
1. Elmasri, K., T. Giaddui, and S. Abugrain. "Monte Carlo modeling of 6 MV photon beam produced by the elekta precise linear accelerator of Tripoli medical centre using beamnrc/dosexynrc." (2012).
 2. U. Elghawi, T. S. Barka, F. Abutweirat, and K. Elmasri, “Studying of Naturally Occurring Radioactive Materials (NORM) in Oilfield (A / 100) South East of Libya,” 2013.
 5. Presentation at All-Wales Medical Physics and Clinical Engineering Summer Meeting 2015.
 6. Elmasri K., Hicks Y., Yang X., Sun X., Pettit R., Evans W.(2016), Automatic Detection and Quantification of Abdominal Aortic Calcification in Dual Energy X-ray Absorptiometry, Procedia Computer Science, 96 , pp. 1011-1021.
 7. Presentation at the 21th International Conference on Knowledge Based and Intelligent Information and Engineering Systems, York, UK, (2016).
 8. Poster Presentation at the Medical Image Computing Summer School (MedICSS), UCL University, London, UK, 2016.
 9. Poster Presentation at Medical Imaging Summer School MISS, Faviana, Italy, 2016.
 10. Poster presentation at All-Wales Medical Physics and Clinical Engineering Summer Meeting 2017.
 11. Evaluation of Automatic Method for the Detection and Quantification of the Abdominal Aortic Calcification Using Dual Energy X-ray Absorptiometry, The Libyan Conference on Automation and Robotics (LCAR-2021) No. 1, July 7-8, 2021 Tripoli/ Libya.
 12. Keynote speaker at the fifth meeting in the series of the International Conference of International Conferences on European Environmental Policy and the case of Cyprus mines (EEPCCM-2001), Radioactive Waste Management.
 13. Karima Elmasri, 2021, Establishing the Environmental Radiation Monitoring and Early Warning System (ERMEWS) in Libya, International Conference on the Development of Preparedness for National and International Emergency Response (EPR2021) 11–15 October 2021 | IAEA Headquarters Vienna, Austria.
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Publications Under Preparation:

1. Kaima Elmasri, Yulia Hicks, William Evans, ²Rebecca Pettit, The Evaluation of Vertebral Assessment Fracture Images for Aortic Calcification Detection, 2022.
 2. Iman Morajea Abdulkarim, Karima Elmasri, Assessment of Image Quality Parameters for Computed Tomography in Tripoli, Libya ,2022.
 3. DETERMINATION OF NATURAL RADIOACTIVITY LEVELS AND RADIATION HAZARDS FOR SOIL SAMPLES FROM OIL FIELDS IN SIRTE BASIN, LIBYA, Libyan Journal of Ecological & Environmental Sciences and Technology (LJEEST),2022
 4. قياس تراكيز المواد المشعة الطبيعية في عينات الرخام والجرانيت من السوق الليبي، 2022.
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