



|                           |   |                             |   |
|---------------------------|---|-----------------------------|---|
| <b>Job title</b>          | Research fellow in optical metrology with machine learning<br>(Title will be 'Research Associate' where an appointment is made before PhD is completed) | <b>Job family and level</b> | Research and Teaching Level 4<br>(Appointment will be Level 4 Career training grade where an appointment is made before PhD has been completed) |
| <b>School/ Department</b> | Faculty of Engineering  | <b>Location</b>             | Jubilee Campus  |

## Purpose of role

To have specific responsibility for research, for developing research objectives and proposals for a research project in metrology, specialising in developing virtual instrument to quantify measurement uncertainty. The person appointed will be expected to plan and conduct work in the field of optical metrology and develop analysis methods using machine learning model and will be responsible for writing up their work for publication.

The person appointed will have the opportunity to use their initiative and creativity to identify areas for research, develop research methods and extend their research portfolio.

|   | <b>Main responsibilities</b><br>(Primary accountabilities and responsibilities expected to fulfil the role)   | <b>% time per year</b> |
|---|---|------------------------|
| 1 | To carry out research into optical metrology for advanced manufacturing applications, focusing on machine learning model development. To plan and conduct research using recognised approaches, methodologies and techniques within the research area | 55                     |
| 2 | To write up research work for publication and/or contribute to the dissemination at national/international conferences, resulting in successful research outputs.   | 25                     |
| 3 | To identify opportunities and assist in writing bids for research grant applications. Prepare proposals and applications to both external and/or internal bodies for funding, contractual or accreditation purposes.                                  | 10                     |
| 4 | To supervise undergraduate and/or postgraduate students projects, fieldwork and placements, as appropriate. To participate in the assessment of student knowledge and co-supervise projects at Masters level.   | 5                      |
| 5 | To collaborate with academic colleagues on areas of shared interest for example, course development, collaborative or joint research projects.  | 5                      |

## Person specification

|  | Essential  | Desirable   |
|--|--|---|
| <b>Skills</b>  | <ul style="list-style-type: none"> <li>▪ Outstanding scientific programming skills in a relevant language, e.g. MATLAB, Python for machine learning models and algorithm development</li> <li>▪ Excellent oral and written communication skills, including the ability to communicate with clarity on complex information.</li> <li>▪ High analytical ability to analyse and illuminate data, interpret reports, evaluate and criticise texts and bring new insights.</li> <li>▪ Ability to creatively apply relevant research approaches, models, techniques and methods.</li> <li>▪ Ability to assess and organise resource requirements and deploy effectively.</li> <li>▪ Ability to build relationships and collaborate with others, both internally and externally.</li> </ul> | <ul style="list-style-type: none"> <li>▪ Ability to foster a research culture and commitment to learn in others.</li> <li>▪ Hardware and/or software development for optical imaging technologies</li> <li>▪ Image processing expertise</li> <li>▪ Use of dimensional metrological practices, including but not limited to coordinate metrology, surface metrology and uncertainty analysis</li> <li>▪ Creativity and leadership in problem solving</li> </ul>  |
| <b>Knowledge and experience</b>                                      | <ul style="list-style-type: none"> <li>▪ Practical experience in optical measurement technologies</li> <li>▪ Practical experience in the design and implementation of data analysis algorithms for measurement or sensor data</li> <li>▪ Experience with model simulation and validation</li> <li>▪ Extensive knowledge of manufacturing/mechanical engineering and metrological principles</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Good knowledge of optical modelling and simulation</li> <li>▪ Knowledge of reflectance transmission imaging, common aerospace geometries, materials and tolerances</li> <li>▪ Project management skills/experience</li> <li>▪ Previous success in gaining support for externally funded research projects.</li> <li>▪ Experience of developing new approaches, models, techniques or methods in research area.</li> <li>▪ High quality publications in peer-reviewed journals</li> <li>▪ Practical knowledge and experience of photogrammetry and/or machine vision system.</li> </ul> |
| <b>Qualifications, certification and training (relevant to role)</b> | <ul style="list-style-type: none"> <li>▪ PhD (or close to completion) or equivalent in Physics, Engineering, Computer Science or similar topic; or, the equivalent in professional qualifications and experience in manufacturing engineering and metrology.</li> </ul>  |   |

|  |   |  |
|--|---|--|
|  | <ul style="list-style-type: none"> <li>▪ Good first Degree (Or Master's) in Engineering, Physics, Computer Science or related disciplines.</li> </ul> |  |
|--|---|--|



## Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

- Valuing people**                      Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.
- Taking ownership**                      Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.
- Forward thinking**                      Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.
- Professional pride**                      Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.
- Always inclusive**                      Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

## Key relationships with others

