

Research Role Profile

Job Title:	Space Qualified Metrology Engineer – KTP Associate (Neptec (UK) Ltd)
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Responsible to:	Company Supervisor and Knowledge Base Supervisor
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Responsible for:	n/a
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Job Summary and Purpose:

The successful candidate (the Associate) will work on a new and exciting Knowledge Transfer Partnership (KTP) project to The development of space qualified metrology instruments to allow satellites to fly in very tight formation and allow small satellites to be launched relatively inexpensively in order to marry up in space forming a large structure such as a telescope. The Associate will be central to guiding the technology development and instrument build to schedule and within budget and will work closely with Engineers at Neptec (UK) Ltd and Academics at the University of Surrey.

The KTP Associate will have the unique opportunity to work with [Neptec \(UK\)](#); an experienced spaceflight engineering company and the world leading [Surrey Space Centre](#) at the University of Surrey to bridge the gap between research and satellite application. This in addition to being invited to attend the International Space University (ISU) Summer Camp (*a 9-week Space Studies Programme*) potentially in Israel for 2016; this would normally cost in the region of £30k and is an incredibly rare and highly prized opportunity.

The project will provide Neptec (UK) with the capabilities to improve their processes needed for metrology engineering in space and to improve its low cost solutions in new markets, and will also enable the company to extend its services to current and new clients, aiming to differentiate itself from others by the quality and accessibility of its services.

The successful candidate will be appointed as a KTP Associate, be based at Neptec (UK) in Harwell, Oxfordshire, and be employed by the University of Surrey on behalf of the Knowledge Transfer Partnership (KTP) for the 36-month project. The Associate will be required to travel in and around the South East and occasionally more widely.

This is a rare opportunity that comes with a substantial training budget to develop some of the missing skills and/or experience; including two residential courses on leadership and management, and the benefits associated with Innovate UK (KTP scheme) and includes access to the University of Surrey's learning and development programme.

In addition to the above, the Associate will collect and interpret data to generate high impact research papers which will be presented at conferences and published in high impact journals.

The Associate will develop both their management and business skills as well as their technical skills and this unique project will develop the Associate's skill set on a live and challenging space industry environment.

This role offers the successful candidate a unique opportunity to grow their commercial exposure, develop new skills and acquire new knowledge of the space sector, the business

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setting and the marketplace.

Main Responsibilities/Activities

The Associate will have a wide-ranging and exciting portfolio of responsibilities to to conceive and perform system level calibration of its metrology system on this and other possible similar future missions.

The main key competences and expected capabilities of the Associate are:

Data Processing:

- Develop data processing algorithms
- Analyze performance with simulation tool
- Generate test data and provide support for software verification

Calibration:

- Develop preliminary calibration plan
- Identify and procure lab equipment and tools to gather the lab data required for calibration
- Develop kinematic relationships between relevant hardware components
- Participate in the ground calibration of HAMS units at Neptec
- Incorporate calibration algorithm into simulation tool
- Select and adapt global optimization routine for estimating calibration parameters
- Plan for in-flight calibration validation / verification
- Support ground tests of HAMS after integrated on spacecraft

Project design and definition

- Development Review to validate design against user requirements
- Detailed design
- Pass of Design Reviews
- Engineering Model Manufacture
- Test Reviews
- Flight Model development, build, test and calibration
- Flight Model integration with spacecraft
- Evaluation and marketing

This includes interfacing with, and reporting to, a variety of stakeholders to bring university knowledge and techniques to industry and to share and embed the knowledge developed with all parties; as well as managing these parties to ensure that the project reaches its full potential.

The successful candidate will require excellent communication and work package management skills to ensure the product is developed and built to schedule and within budget.

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The Associate will need to be a proactive self-starter who flourishes in a fast-paced environment.

Experience, Qualifications and Professional Memberships:

The Associate should have a Masters and Undergraduate degree, or equivalent experience, in Engineering or Physics or a closely related discipline.

Ideally the Associate will have a PhD or equivalent experience in Engineering or Physics or related disciplines, especially optical instrumentation.

English Language at minimum IELTS 7.0 (or a degree qualification studied in an English speaking country e.g. USA or UK) or native English speaker.

The successful candidate will be able to demonstrate all or some of the following competences:

- Optical bench instrumentation and data processing.
- Optical alignment and calibration (modeling & reporting).
- Instruments simulations and error budgets.
- Signal processing and software development.
- Mathematical modeling and analytical skills.
- Compliance with test deadlines and synthesis skills.

The following additional skills would be seen as extremely advantageous:

- Knowledge of applied laser technologies.
- VHDL or Verilog programming for FPGA.
- Python, Matlab, and/or Labview.
- Zemax or equivalent for optical design and analysis.

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Knowledge and Skills:		
	Essential	Desirable
Masters and Undergraduate degree or equivalent in Engineering or Physics or a closely related discipline	X	
PhD in Engineering or Physics or related disciplines, especially optical instrumentation		X
Strong attention to detail leading to a structured, logical approach to experimental design and accurate record keeping.	X	
Enthusiasm for the scientific process and embracing new ideas and concepts.	X	
Strong organisation and communication skills (oral and written).	X	
Strong interpersonal skills and ability to communicate and work with stakeholders at all levels including directors, project managers, scientists and engineers in industry and at the University of Surrey	X	
Knowledge of space, metrology and optical instrumentation will be highly beneficial, as will knowledge of electronics		X
Creative and self-motivated.		X
High level of technical skill, experience and self/project management.	X	
Personal Attributes:		
<p>The successful candidate will be a pro-active, self-starter with excellent communication skills and a real interest in bringing together engineering and business expertise. They will have the ability to interface with a number of multi-level professionals and must be able to work independently, demonstrate excellent analytical skills and commercial understanding (budget and schedule constraints).</p>		

Relationships and Contacts
<p>The post holder will work closely with the Knowledge Base Supervisor (University) and Company Supervisor and liaise with the University KTP Office and central KTP management where appropriate. The post holder will also have the opportunity of networking with other KTP Associates and will be expected to meet regularly with professionals from Neptec Design Group who will provide feedback on the scope and progress of the project.</p>

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Special Requirements

The post holder must be prepared to work outside normal working hours when required and must be interested to identify and undertake further studies of benefit to the project and their career progression.

The post holder must be willing to travel between the company site and the University of Surrey in Guildford as well as to other destinations.

Background Information

The project is funded through Innovate UK's KTP scheme and by Neptec (UK) Ltd. Knowledge Transfer Partnerships are collaborative projects between a university and a company partner providing the opportunity to fast-track careers by benefiting from business based training and personal and professional development, whilst managing and driving a project within a company.

The post holder will be based primarily at Neptec (UK). Contact with the supervisors will be maintained through regular meetings in the workplace and visits to the University of Surrey.

The working hours and annual leave entitlement will be that of Neptec (UK) Ltd.

- Annual leave entitlement is 20 working days + 8 public holidays
 - The holiday year runs from the 1st January to 31st December each year.
 - You are required to save 3 or 4 days of your leave entitlement for the Company's Christmas shut down, depending on when Christmas Day falls.
 - Leave must be agreed with the line manager as early as possible who will always try to accommodate the request but the needs of the business may have to take precedence.
- Normal working hours will be a minimum of 37.5 hours per week, to be worked between 9am and 5pm from Monday to Friday.
 - In general, the timing for the working day shall be flexible providing that a minimum of four hours are worked in any working day, attendance is five days per week, and all 37.5 hours are worked in the same week.
 - A break of at least twenty minutes is required each day
 - Working hours shall be arranged having regard to workload and to departmental requirements.
 - All hours must be approved with the line manager.

Employees are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:
 - Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand on all sites where you work
 - Following local codes of safe working practices and the University of Surrey Health and Safety Policy and that of your workplace
- Ensure that confidentiality is maintained at all times