# **A blue rectangle with white text Description automatically generated** Job Description

**Role Title:** Graduate in Digital Transformation (KTP Associate)

School of Engineering and Elite Electronic Systems

**Salary / Salary Range: £30,000 to 32,000**

**Academic Supervisor responsible for Associate Probation & Line Management:** Senior Lecturer in Mechatronics, Engineering & Control

# **Post location:** At company premises in Enniskillen

**Full time/Fixed Term for two years**

**COMPANY BACKGROUND**

Set in the beautiful countryside of Fermanagh, Elite Electronics systems was established in 1986. We are the leading provider of Sub-Contract Electronic Manufacturing Services, to a diverse customer portfolio of innovative and successful companies in the UK, Ireland and internationally.

Elite adhere to ISO13485:2016 medical device manufacture, ISO9001:2015 quality management systems, and IS027001:2013 information security, covering both standard and complex products.

Employing over 200 people in 70,000 sq. ft. facility, Elite utilise state-of-the-art equipment to provide complete turnkey manufacturing, excellent quality and flexible scheduling.

**Our Purpose**

To improve the lives we touch and the world we live in.

**Our Culture and Values**

We have created an inclusive and diverse culture. We are agile, fast-paced and flexible which creates a dynamic and exciting work environment across our business.

Elite has created an honest and open ecosystem based on trust which empowers our high-performing teams to flourish and have a lasting impact on the business. We have developed a tribe of talented associates eager to help each other and the company achieve its vision through Elite’s openness to new ideas and initiatives.

**WIN TOGETHER** - We’re stronger when we work together Collaborate together, win together Think big and move fast with a pioneering spirit.

**DELIVER WOW** - Be passionate and always deliver excellence Energise, engage and inspire others Own it – if it’s mine, it’s up to me.

**THRIVE ON CHANGE** Be open to new possibilities. Don’t shoot down new ideas Great, just isn’t good enough Don’t be afraid to suggest new ideas or a change in direction.

**DO THE RIGHT THING** - Be open, honest, ethical and genuine Look after the environment. There is no Planet B.

**KTP JOB PURPOSE**

The KTP Associate will embark on an exciting journey, working within a highly successful and aspiring business, to tackle the complex task of building a smart sensor and data analysis system for fault detection in a Surface Mount Technology (SMT) manufacturing process, which leads to a Digital Twin to enhance yield reliability and quality.

This job involves utilising AI, advanced data analytics techniques, and IoT to create a robust system capable of enhancing performance accuracy and real-time monitoring. The Associate will gain a deep understanding of the physical aspects of the actual SMT system. This will necessitate a grasp of fundamental control knowledge, including modelling and signal processing analysis of actuators and sensors measurements that are critical for developing an accurate Digital Twin that mirrors the behaviour of the physical SMT assembly process and integrates seamlessly with existing machine software platforms. Additionally, the Associate will delve into machine learning methods to optimise control strategies and fine-tune the performance of the Digital Twin. For fault detection and isolation, the Associate will devise feasible schemes that can effectively identify issues within the SMT process based on the data collected from sensors and actuators.

In a dynamic and fast-paced working environment, the Associate will need to advocate for the project's importance and convince stakeholders of its value, and thus highlighting the potential benefits it brings to the business. Considering the innovative and complex nature of the project, the Associate should be prepared to encounter unknown technical challenges along the way. These challenges will serve as opportunities for personal and professional growth, allowing the Associate to enhance their technical knowledge and expand their competencies.

**Main Duties**

1. Designing and developing a smart sensor and data analysis system aimed at detecting faults in the SMT manufacturing process. This includes designing and implementing the necessary hardware and software components.
2. Designing, simulating, and implementing various control strategies best suited to be integrated with the current physical setup.
3. Monitoring, obtaining, and curation of data from actuators and sensors for the purpose of fault detection and isolation within the SMT process.
4. Analysis of data via machine learning integration to improve control strategies and fine-tune performance of fault detection and isolation scheme.
5. Integration of the control and fault detection schemes to create and design a Digital Twin that would accurately replicate the real-world SMT process.
6. Improvement and learning of the Digital Twin system to continuously improve production quality and yield over time.

This job description is neither exhaustive nor exclusive and may be reviewed in the future depending upon operational requirements and staffing levels.

# Personnel specification

**Post:** Graduate in Digital Transformation (KTP Associate)

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| **Selection criteria** | | | **Evaluation method** | | **Supplementary criteria** |
| **Application** | **Interview** |
| **Education and Professional Qualifications** | **Essential** | A minimum of a 2:1 in BEng in Electrical or Electronic Engineering or equivalent. |  |  |  |
| **Desirable** | Master's of PhD in Electrical, Electronic Engineering, IoT or equivalent. |  |  |  |
| **Previous Experience/ Training** | **Essential** | Previous experience in a busy, fast paced, and demanding environment with the ability to work accurately and within strict timescales. |  |  |  |
| Proficient in the use of Microsoft Office (Word/Excel, Outlook etc) programming skills in C, JAVA, Python, MATLAB, etc. |  |  |  |
| **Desirable** | Knowledge of latest Industry 4.0 technologies. |  |  |  |
| Experience in Manufacturing. |  |  |  |
| Experience within Electronics. |  |  |  |
| Experience in developing data analytics using machine learning technology. |  |  |  |
| **Job Related Achievements** | **Essential** | Experience of delivering outputs from previous relevant project or activities. |  |  |  |
| **Desirable** | Experience of successful participation in projects related to automation or IoT. |  |  |  |
| **Research and Analogous Activities** | **Essential** | Ability to develop analytics technologies for data/information integration and simulation. |  |  |  |
| **Desirable** | A track record of research publications or reports in fault detection, digital twin, or relevant disciplines. |  |  |  |
| **Interpersonal skills** | **Essential** | Excellent communication & Interpersonal skills. |  |  |  |
| Proven track record of delivering a project. |  |  |  |
| Self-motivated and organised with the ability to work to tight deadlines. |  |  |  |
| Excellent levels of accuracy & attention to detail. |  |  |  |
| Able to successfully multi-task within a busy environment. |  |  |  |
| **Presentation skills** | **Essential** | Experience in presenting results of relevant projects or work. |  |  |  |
| **Other Factors** | **Essential** | Access to transport. |  |  |  |
| Ability to travel if required. |  |  |  |

The University will conduct a shortlisting exercise based on the written information you have provided.  The initial shortlisting exercise will be based on the identified criteria from the personnel specification.  The University reserves the right to supplement these shortlisting criteria using additional essential and/or desirable criteria from the personnel specification at subsequent stages of the shortlisting process. **Application is by submission of a completed application form by the closing date.**

*Late applications will not be accepted*

**Further Particulars of Knowledge Transfer Partnerships**

**1. KNOWLEDGE TRANSFER PARTNERSHIPS**

Knowledge Transfer Partnerships (KTP) are based on partnerships between the Knowledge Base e.g. Universities, colleges & research organisations and companies who need access to specialist skills and knowledge in order to innovate. Knowledge Transfer Partnerships aim to raise the level of industrial performance and improve industrial methods by effective use of resources and the implementation of advanced technology and innovative new ideas. It also aims to develop able graduates for careers in industry. In each Knowledge Transfer Partnership, staff from the Knowledge Base (University) participate in a company plan intended to achieve substantial and comprehensive change in techniques and procedures. The academic staff contributing to the Partnership are assisted by high calibre graduates recruited as KTP Associates. The Associates are normally based full-time at the company's premises and work in collaboration with company and academic staff on tasks within the Project.

Each Knowledge Transfer Partnership is overseen by a Local Management Committee, which includes representatives from both the industrial partner and the academic partner, together with a N.I. Adviser from the Technology Strategy Board. A senior company executive usually chairs the Committee.

Ulster University has been involved in many successful partnerships and Associates meet and work with colleagues on other Knowledge Transfer Partnerships on a regular basis.

**2. KTP ASSOCIATES**

For individual Associates the scheme may be seen as a programme to develop their potential with a view to careers at a senior level in industry. More immediately the purpose of the Associate will be to assist in developing innovative solutions so that industry may be better able to advance strategically.

The Partnership will endeavour to create the conditions where Associates can develop their full potential and where it can be seen that their contributions are effective at a strategic level.

The KTP Associate will be set well defined but demanding tasks which will be chosen to match their skills, but it is to be expected that the nature of the tasks will require new skills to be developed and new techniques to be learned.

A high level of personal initiative is seen as a prerequisite for any KTP Associate. They will be guided and advised while pursuing a particular line of investigation by skilled practitioners of relevance to the project.

In the first instance they will be assigned an Academic Supervisor who understands fully the tasks which have been set and who is expert in this field. The Supervisor-Associate relationship will be analogous to the supervisor-research student relationship.

Of equal importance is the relationship with the Company and Company management to whom the Associate is assigned. The Associate and his/her supervisor may be regarded as assistants to the management team working on strategic projects designed by the company for the duration of the project. Company management will have a significant role in the definition of the tasks and the progress to their accomplishment.

**3. INDUCTION, TRAINING AND FORMAL RECOGNITION OF ASSOCIATE’S DEVELOPMENT**

At the start of the Project the Associate will undertake a short induction. The purpose of this will be to prepare the Associate for his/her tasks in the Company and will give an understanding of how the Partnership will work, provide contact with personnel involved, and give essential information about the academic and industrial partners.

To meet the requirements of the Project, the selected Associate may be required to attend courses and conferences and to travel to specific sources of knowledge and expertise. The experience and personal development which is anticipated is considered of primary importance.

Through collaborating with supervisors and through involvement with the work tasks, for the Associate, the learning process is expected to be continuous. Associates from the various Knowledge Transfer Partnerships periodically network and meet together to share experiences and learn from one another. The Associates will be expected to prepare reports and give formal presentations of progress to Management.

**3.1 Further Academic Qualifications**

Associates are encouraged to gain a further academic qualification (part-time mode) in his/her specialist field. The level and nature of the qualification will depend on existing qualifications and the length and academic challenge of the KTP. Possibilities include a post-graduate diploma, or a masters degree.

Those who wish to register for a further degree will be given appropriate Academic and Company support. For KTP Associates, the course fee for enrolling on Ulster University courses is normally waived.

**3.2 Recognition as a Professional in your Specialism**

The nature of the Associate’s existing academic qualifications and of his/her work as a KTP Associate, normally entitles membership of the professional institution most relevant to that specialism. For example: Engineers will be able to join one of the engineering institutions such as the Institution of Engineers and Technology and IT specialists can join the British Computer Society etc. By joining the most appropriate professional institution, this will open up networking and educational opportunities as well as starting on the path of gaining professional recognition. Such recognition usually requires proof of knowledge and professional experience. The experience gained by working on a KTP project may well count towards the professional experience requirement, and this is simplified when the Associate joins the institution at an early stage of the KTP. The costs of membership are covered by the Associate Development Budget.

**3.3 Accreditation**

As a KTP Associate you have the opportunity to complete a Level 5 Award Certificate or Diploma in Management and Leadership. This is an accredited qualification from the Chartered Management Institute. The CMI Level 5 in Management and Leadership is a nationally recognised qualification which requires the Associate to attend two residential KTP Training modules in England.