



<b>Job title</b>	Human Factors (Biomechanical) Engineer (KTP Associate)	<b>Job family and level</b>	Off scale – KTP Associate Salary
<b>School/ Department</b>	Faculty of Engineering	<b>Location</b>	Casella, Regent House, Wolsley Road, Kempston, Bedford

## Purpose of role

Casella Holdings Limited, has collaborated with the University of Nottingham (UoN) to undertake a [Knowledge Transfer Partnership \(KTP\)](#).

Casella is a global leader in the manufacture and supply of occupational hygiene and environmental monitoring equipment. The instrumentation includes real-time dust monitors, personal sampling pumps, sound level meters, hand arm vibration monitors and environmental units.

You will lead the delivery of a 24-month KTP project to develop a wearable sensor that will gather workers' ergonomic data within the workplace. The data will need to be easily interpreted and communicable to both management teams and their workforces to protect them from developing occupational Musculo-Skeletal Disorders (MSDs) or suffering musculoskeletal injuries.

A key aspect of your role will be to transfer and embed the new knowledge and capability in ergonomic methodologies into Casella, enabling them to develop an MSD sensor, which will facilitate accurate ergonomic data collection over a significant portion of a worker's day. You will have the opportunity to work closely with Casella's broad customer base, identifying the key needs of the management teams and employees and building the wearable system to meet those needs.

Based at Casella in Kempston, Bedford, you will work directly with Casella's Engineering Manager and closely with other Casella employees and stakeholders to navigate between the commercial requirements of Casella and the technical challenges presented by the KTP.

Throughout the project, you will be fully supported by leading academic experts in biomechanics and ergonomics within the Faculty of Engineering [Human Factors Research Group \(HFRG\)](#).

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time</b>
1	<p>Create key objectives for the KTP, understand the customer, and determine success criteria:</p> <ul style="list-style-type: none"> <li>• Undertake a market review on existing commercially available wearable sensors in the field of movement tracking for single/multiple segments of the upper limbs and spine.</li> <li>• Become familiar with current data usage issues and review relevant legislation.</li> <li>• Form a focus group based on the current Casella customer base.</li> <li>• Plan and undertake a study to investigate current customer workstations/environments.</li> <li>• Analyse the movement data from the study and create profiles of each workstation.</li> </ul>	15%
2	<p>Determine desired biomechanical factors, methodologies, and develop a prototype user dashboard:</p> <ul style="list-style-type: none"> <li>• Undertake a review of existing literature on field-based ergonomics and biomechanical analysis.</li> <li>• Determine desired biomechanical variables for measurement and eventual inclusion in a user-interface/dashboard.</li> <li>• Initiate the development of the prototype dashboard based on Casella's customer feedback and test a graphical user interface.</li> </ul>	20%
3	<p>Core validation work of the MSD sensor's accuracy and reliability:</p> <ul style="list-style-type: none"> <li>• Plan and undertake the validation study for the MSD sensor against gold standard movement analysis (optical motion capture) at University of Nottingham facilities.</li> <li>• Carry out further validation of the chosen methods for sensor placement and frequency of data collection.</li> <li>• Analyse the data and make design recommendations.</li> </ul>	25%
4	<p>Implementation of the MSD sensor in identified workplaces:</p> <ul style="list-style-type: none"> <li>• Plan the user testing of the MSD sensor.</li> <li>• Undertake multiple rounds of on-site trials with iterative data analyses and product reviews.</li> </ul>	25%
5	<p>Post-project planning, dissemination, and exploitation:</p> <ul style="list-style-type: none"> <li>• Plan the project continuation beyond the end of the KTP.</li> <li>• Prepare academic papers.</li> <li>• Evaluate and plan the viable financial elements of the final product.</li> </ul>	5%
6	Undertake personal and professional training and development.	10%

## Person specification

	<b>Essential</b>	<b>Desirable</b>
<b>Personal skills</b>	<ul style="list-style-type: none"> <li>▪ Have an excellent command of the English language with written and verbal communication that is clear and easy to understand.</li> <li>▪ Be able to work well in mixed teams, build strong alliances and engage effectively and build credibility with colleagues and stakeholders.</li> <li>▪ Be highly driven, self-starting and pro-active, with the ability to work independently, manage own workload, to meet deadlines and to prioritise tasks.</li> <li>▪ Be enthusiastic and motivated to embed new knowledge and to take full ownership of the project in all respects.</li> <li>▪ Have a professional approach towards work relationships and customer engagement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Have the ability to plan a project, execute the plan and make adjustments according to delays and technical issues.</li> <li>▪ Have the ability to understand, interpret and communicate complex information.</li> <li>▪ Be able to explain technical concepts to non-technical people.</li> <li>▪ Have an awareness and understanding of the commercial drivers of the project and the business impact.</li> </ul>
<b>Knowledge and experience</b>	<ul style="list-style-type: none"> <li>▪ Knowledge of ergonomics/human factors or biomechanics methodology, and application of that knowledge.</li> <li>▪ Numeracy/statistical analysis skills to understand data.</li> <li>▪ Relevant experience in a research environment: familiar with the fundamental methods of scientific research, including, literature review, hypothesis definition and testing, and scientific communication.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Experience of ethics applications.</li> <li>▪ Experience of writing reports and conducting effective bibliographic research. There will be opportunities to co-author peer reviewed journal papers from the work of the KTP.</li> <li>▪ Experience of research design involving the collection of data from human participants.</li> <li>▪ Experience of biomechanical analysis or the application of movement analysis.</li> </ul>
<b>Qualifications, certification and training (relevant to role)</b>	<ul style="list-style-type: none"> <li>▪ A post-graduate qualification in a relevant engineering discipline, such as bioengineering or human factors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ideally an MSc or PhD in ergonomics, biomechanics, or related discipline.</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>▪ Willingness to engage and support the commercial activities related to the dissemination and demonstration of the project outputs/outcomes to stakeholders.</li> <li>▪ Willingness to travel to Nottingham to undertake training and other</li> </ul>	<ul style="list-style-type: none"> <li>▪ Willingness to travel within the UK (attending tradeshow etc.)</li> </ul>

	<p>activities as required for the delivery of the KTP.</p> <ul style="list-style-type: none"><li>▪ Willingness to train and upskill staff to embed the knowledge of the KTP into the company.</li></ul>	
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The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.

## 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

