Innovate UK

Results of Competition: Jiangsu-UK Industrial Challenge Programme - Infra

Competition Code: 1704_IS_JIANGUK_IS

Total available funding is £10M

Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.

Participant organisation names	Project title	Proposed project costs	Proposed project grant
Faiveley Brecknell Willis City University of London Sengenia Limited	Smart railway/metro transportation using optical fibre sensing and Internet of Things (IoTs)	£306,606 £149,500 £43,722	£153,303 £149,500 £30,605
Project description - provided by applicants			

The increasing demand for improved efficiency and reliability in the rail industry worldwide drives the market for advanced asset and fleet management tools, including remote diagnostics (or prognostics) and better asset planning, offering real value-for-money to operators. Remote monitoring of railway electrification has proved to be a major technical challenge as the AC lomotives are powered at 25kV and travel at speeds up to 350 km/h under all weather conditions. The current measurement systems available have shown limitations due to the requirements of insulation of both their power delivery and data transmission. Their failure has severe consequences and causes a widespread traffic disruption. This project addresses the above challenges by exploiting the ideal insulator nature of the optical fibre itself through integration of optical fibre sensors into the current-collecting pantographs for better monitoring and control. This is further underpinned by the 'Internet of Things' which enables the 'things' (sensors) to exchange data collected via the Internet and supported by effective data processing and implementing intelligent algorithms, allowing a smart transporation network thus to be created for predicting failures, making diagnoses and triggering maintenance.

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UbiPOS UK Limited University of Nottingham Geomatic Ventures Limited	Cloud-based Intelligent Structural Health Monitoring Platform for Long-span Bridges - iSHM	£306,100 £149,043 £42,857	£214,270 £149,043 £30,000
Project description - provided by applicants			
Bridges are among a nation's key infrastructure assets. The closure or collapse of bridges results in significant economic losses (circa £650K for one lane closure of the Forth Road Bridge) or heavy casualties (32 killed and 17 injured in the Seongsu Bridge collapse in1993). It is critical to develop an intelligent structural health monitoring (iSHM) system to ensure the safety and serviceability of bridges during their life time, particularly for long-span bridges due to their significance, high construction costs and susceptibility to wind-induced and fatigue damage. iSHM is a collaboration between the Chinese partners in Jiangsu - an economic powerhouse of China, who possess rich experiences in designing and installing SHM sensory systems and detailed knowledge of and access to the Chinese SHM market, and the UK team led by UbiPOS and supported by the University of Nottingham, who are the developers of world leading SHM solutions and data strategies empowered with cloud-based computation and big data analytics. Remote sensing images, hydrological data and third party data will be extensively used for comprehensive monitoring of selected bridges along the Yangtze River as demonstrators of iSHM for exploiting world wide opportunities in SHM applications.			

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Vision Semantics Limited Queen Mary University of London	Developing and Commercialising Intelligent Video Analytics Solutions for Public Safety	£499,750 £149,969	£348,045 £149,969
Project description - provided by applicants			
Effective automatic intelligent video analysis of large scale data from public spaces is an important tool in the fight against crime and for safeguarding public safety. Yet, it is challenging to extract critical information from very large scale unstructured surveillance videos with a very high ratio of mundane data subject to severe visual ambiguity and clutters. For example, the Scotland Yard viewed 6,000hrs of CCTV footage in order to search the London 7/7 bombings terrorists. Automatic video analytics capable of rapid processing (faster than real-time) of very large surveillance data is critically required in a global market including China and the UK. Whilst there are video analytics systems in the market, the challenge for domain-transferable video abnormal event detection with people and vehicle re-identification (search) in multi-source open data is still unsolved. This project will develop innovative and scalable systems for abnormal event detection with joint person and vehicle search in unconstrained public spaces. The system will achieve 80% detection rate of 5 abnormal events and 3x more accurate than human experts and 100x faster than real-time for searching people/vehicles in large scale data from distributed urban spaces. Our goal is to increase the analyst productivity by a factor of 5.			

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Ilika Technologies Ltd	Self-sensing wind turbine composite blades for structural health monitoring (SMARTBLADE)	£349,989	£244,992
University of Chester		£149,712	£149,712

Project description - provided by applicants
Wind energy is one of the leading renewable sources to replace fossil fuel in order to tackle the environmental and climate crisis challenges that the world is facing. China and the UK together contribute to ~40% of the world's ~500 GW wind power capacity. However, the ever-increasing operation and maintenance (O&M) cost has become a critical constraint for the sustainability of wind energy growth - global cost estimated to reach US$17bn pa by 2020.The primary objective of this project is to develop an integrated smart composite to be incorporated into the wind turbine blades. The smart composite will be able to perform autonomous structural health monitoring of the blades, to detect the early signs of damage and enable predictability in maintenance scheduling and prevent the icing of the blades, to ensure operational efficiency, whilst also self-sustaining the power supply of these functionalities without need for battery replacement.The composite will be integrated with various types of macro fibre piezoelectric composite transducers used as vibration sensors and energy harvesters, micro-fabricated solid-state batteries and printed electronics. This will open up new technological possibilities in the design, manufacturing and operation of wind turbine blades to improve their operation.

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JJ Bioenergy Limited	A 'Heat Generation-Storage-Supply' Energy System for Utilisation of Off-peak and Curtailed Renewable Power	£274,983	£192,488

Project description - provided by applicants
This project is an industrial research for an energy system which proposes to generate heat from off-peak and curtailed renewable electricity, store in composite Phase Change Materials and supply heat at peak loads.

Note: you can see all Innovate UK-funded projects here
https://www.gov.uk/government/publications/innovate-uk-funded-projects Use the Competition Code given above to search for this competition's results