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Wireless sensor networks for monitoring coastal erosion

Carlene Campbell

University of Wales Trinity Saint David, UK

Huge amounts of money are spent every year to protect beaches against destructive processes such as erosion, which is becoming an increasingly common and destructive process worldwide due to rising sea levels. As such a means to monitor and predict the effects of processes affecting the coastline has the potential to yield significant savings by making it possible to predict coastal processes ahead of time, thus allowing alleviative or preventative measures to be taken before it is too late. Current methods of monitoring coastal erosion are restricted to measurements of affected areas. Whilst this makes it possible to quantify the effects that erosion have on the coastline, it only provides a partial view of this phenomenon, due to the inability to measure what is occurring beneath the sea's surface. Wireless Sensor Networks (WSNs) are an enabling technology in this regard, providing a means to monitor locations that cannot easily be reached manually, automatically and over a long time-period. This presentation will provide an overview of the applications of WSNs in coastal monitoring, with a focus on an ongoing research project concerning the design of a novel floating WSN capable of measuring sediment movement beneath the sea's surface using sound pulses. This system will have global application in gathering previously unavailable data on the effects of coastal erosion beneath the sea's surface. By enabling the collection of this important data, this system will contribute significantly towards predicting the long-term evolution of the coastline worldwide.

Biography

Carlene Campbell received her PhD degree in Wireless Sensor Networks from the School of Engineering and Information Sciences at Middlesex University, UK, her MSc in Telecommunications and Computer Network Engineering at London South Bank University, and her BSc in Computer and Management Studies at the University of Technology, Jamaica. She currently lectures on the Computer Networks course at University of Wales Trinity Saint David (UWTSD), UK. She is Director of Research Degree for the Faculty of Architecture, Computing and Engineering (FACE). He is currently supervising two full-time PhD students and is actively engaged in research with an interdisciplinary research project which combines wireless sensor networks (WSN) and monitoring coastal erosion. She has contributed in a number of research publications in conferences and international referred journals. He is Editorial Member and Reviewer for number of scientific-professional journals. She has experience as Internal Examiner for PhD course.

carlene.campbell@uwttd.ac.uk**Notes:**