Jul 12th, 10:50 AM - 11:10 AM

Location, identification, and low complexity tracking algorithms with an image compression strategy for a long term multi-tracking application

Ramon Reig-Bolaño  
_Digital and Signal Processing Research Group, University of Vic – Central University of Catalonia_, ramon.reig@uvic.cat

Pere Marti-Puig  
_Digital and Signal Processing Research Group, University of Vic – Central University of Catalonia_, pere.marti@uvic.cat

Moisès Serra-Serra  
_Digital and Signal Processing Research Group, University of Vic – Central University of Catalonia_, moises.serra@uvic.cat

Follow this and additional works at: https://scholarsarchive.byu.edu/iemssconference

Part of the _Civil Engineering Commons_, _Data Storage Systems Commons_, _Environmental Engineering Commons_, _Hydraulic Engineering Commons_, and the _Other Civil and Environmental Engineering Commons_

Reig-Bolaño, Ramon; Marti-Puig, Pere; and Serra-Serra, Moisès, "Location, identification, and low complexity tracking algorithms with an image compression strategy for a long term multi-tracking application" (2016). _International Congress on Environmental Modelling and Software_. 6.  
https://scholarsarchive.byu.edu/iemssconference/2016/Stream-C/6

This Event is brought to you for free and open access by the Civil and Environmental Engineering at BYU ScholarsArchive. It has been accepted for inclusion in International Congress on Environmental Modelling and Software by an authorized administrator of BYU ScholarsArchive. For more information, please contact scholarsarchive@byu.edu, ellen amatangelo@byu.edu.
Location, identification, and low complexity tracking algorithms with an image compression strategy for a long term multi-tracking application

Ramon Reig-Bolaño, Pere Martí-Puig, Moisès Serra-Serra
Digital and Signal Processing Research Group, University of Vic – Central University of Catalonia UVic-UCC (pere.marti@uvic.cat, ramon.reig@uvic.cat, moises.serra@uvic.cat)

Abstract: A biological experiment that requires a continuous tracking of a group of 10 to 20 fish specimens was designed to obtain empirical data to estimate biological energy models from specimen’s activity. The surface in which specimens can move is enormous (2.5m x 5m) in comparison to the sizes of the individuals and it is mandatory to work with high resolution images in order to cover all the area. Furthermore, as each experiment must work uninterruptedly during fifteen days the cost of storing and post-processing all the generated information in its rough form is prohibitive, incurring into a big data problem. The proposed approach deals with the need of implementing a real time processing and in this paper we present the computer vision algorithms used to locate and identify specimens and track them along the time series of images. Additionally, in order to verify all experiments, we have designed a compression strategy to save the relevant information of each frame that makes possible to store it in a sustainable way, but with the property that could be partially reversible, enabling to display back a reconstructed reproduction of the fishes’ movements.

Keywords: low complexity tracking; underwater computer vision; data compression

ACKNOWLEDGMENTS

This work has been possible with the IP cameras of Japoco Acuzzi and José Antonio García del Arco from the ICM-CSIC and has been supported by the Spanish Government project PHENOFISH: El síndrome de la pesca: cambios multi-escala inducidos por las respuestas de los peces a la pesca. Soluciones tecnológicas with references: CTM2015-69126-2-R.