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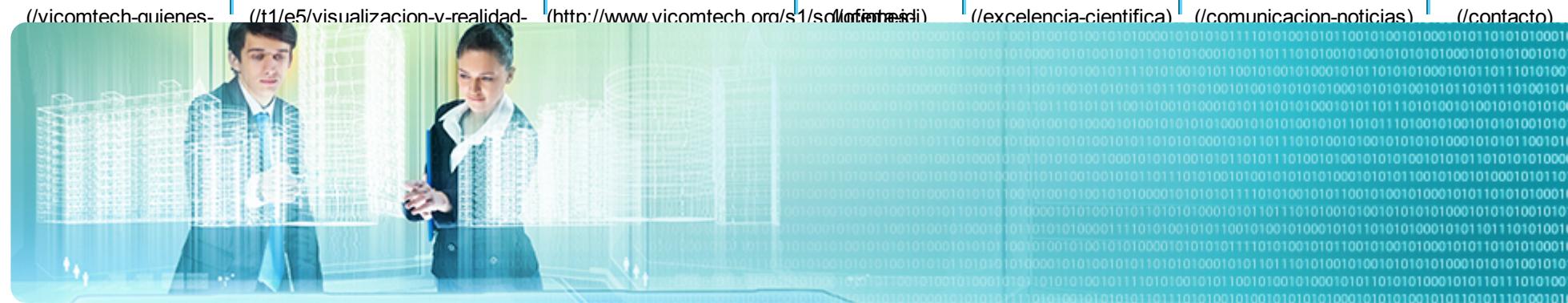
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Hardware-accelerated Web Visualization of Vector Fields. Case Study in Oceanic Currents

Tipo

Inproceedings

Fecha

2012-02-23

Autores

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Libro

IVAPP-2012

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BibTeX

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@Inproceedings{  
author = {Mauricio Aristizabal and John Edgar Congote and Álvaro Segura and Aitor Moreno  
and Harbil Arregui and O. Ruiz},  
title = {Hardware-accelerated Web Visualization of Vector Fields. Case Study in Oceanic  
Currents},  
booktitle = {IVAPP-2012},  
publisher = {SciTePress},  
editor = {Paul Richard, Martin Kraus, Robert S. Laramee and José Braz},  
address = {Rome, Italy},  
date = {2012-02-23},  
year = {2012},  
month = {February},  
pages = {759-763},  
keys = {  
Line Integral Convolution, Hierarchical Integration, Flow Visualization, WebGL  
},  
abstract = {  
Visualization of vector fields plays an important role in research activities nowadays.  
Increasing web applications allow a fast, multi-platform and multi-device access to data. As  
a result, web applications must be optimized in order to be performed heterogeneously as  
well as on high-performance as on low capacity devices. This paper presents a hardware-  
accelerated scheme for integration-based flow visualization techniques, based on a  
hierarchical integration procedure which reduces the computational effort of the algorithm  
from linear to logarithmic, compared to serial integration methodologies. The contribution  
relies on the fact that the optimization is only implemented using the graphics application  
programming interface (API), instead of requiring additional APIs or plug-ins. This is  
achieved by using images as data storing elements instead of graphical information  
matrices. A case study in oceanic currents is implemented.  
},  
ISBN = {978-989-8565-02-0},  
ISI = {Yes}  
}
```



XHTML 1.0 Válido

CSS2 Válido

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