

Toward an IoT framework for camera image velocity gaging

Poster Session: Community for Data Integration Workshop

Boulder, Colorado June 3–7, 2019

Thanks for your interest in our poster! Here you can download a copy of the poster, see links on how you can get more information on our IoT project, or directly interact with the USGS Surfboard. Also, be sure to comment on this blog post if you have questions or comments! The SurfBoard is striving to serve the USGS the best we can, and the more interaction with users in interested folks like you we get, the better.

Abstract

The USGS [Surface Velocity Workgroup](#) (SurfBoard) is developing and testing computerized video-based approaches to measuring streamflow during floods from video-derived stream velocities (image velocimetry). Often, hydrographers cannot safely capture flood streamflow data at streamgages during the event because of dangerous site conditions or event timing. Image velocimetry offers a solution to this need for measurement of flood streamflows because it allows hydrographers to measure streamflow remotely. To this aim, the SurfBoard has partnered with USGS [Cloud Hosting Solutions](#) to develop an Internet of Things (IoT) provisioned image velocity streamgage that applies existing equipment and processing elements to edge computing using the Amazon Web Services (AWS) IoT and [GreenGrass](#) Core software. The work has two objectives:

1. Prepare and test an IoT framework that replicates the existing image streamgage workflows in the AWS cloud.
2. Translate selected existing processing algorithms into cloud-based programs (AWS Lambda functions) within the IoT framework.

Insights gained are being used to build a decision matrix aimed at leveraging IoT applications for other streamgages and sensors in the network. Image velocimetry measurements using an IoT approach are being tested at 2 gages. Initial development and testing results have been promising.

Collaborators

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Poster

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Full Proposal Narrative



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More information about...

- The [Surfboard](#) and what we do
- Surface Velocity Gaging concepts for [image velocimetry](#) and continuous Doppler [velocity radar](#)
- [Our work](#) with CDI
- Forums for surface velocity [general discussion](#) and [software](#) help, and idea sharing (requires [registration](#))
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