

# New tech to authenticate citizen journalists' cellphone footage

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Bogdan Carbunar, right, principal investigator on a research project to create an app in support of citizen journalism, with Ph.D. student Mahmudur Rahman

Cellphone video increasingly plays a role in reporting the news. From encounters with police in the United States to the fate of people worldwide threatened by war, terrorism, repressive governments or any

number of other manmade tragedies and natural disasters, individuals armed with mobile technology are capturing realities that might otherwise never see the light of day.

But what if what you see is not what you get? How can [followers of social media](#) be sure that [footage](#) presented as real and unedited has not been manipulated or outright fabricated?

Bogdan Carbunar, a professor in the School of Computing & Information Sciences, used those questions to launch his research into new technology to make fraudulent [video](#) easier to detect.

"Individuals equipped with feature-rich mobile devices effectively become the real-time eyes of the rest of the world, providing invaluable insights into remote, hard to access sites and events," he says. "In critical, socially charged settings, however, it is difficult to ascertain and assert an acceptable level of trust."

Today, the ordinary person's unfiltered eyewitness recording—a key component of citizen journalism—is an important complement to, or often a replacement for, the type of coverage once exclusively the domain of professionals. But where the reputation of a news agency might have served as a measure of the integrity of a news video—such reputations themselves having come into question in recent months—little exists to help viewers discern the authenticity of amateur footage.

That could change with Carbunar's work. Armed with a quarter-million-dollar grant from the National Science Foundation, he and two graduate students are developing an app that should offer Internet viewers a barometer of trustworthiness.

"People already do some visual verifications," Carbunar says of the basic

scrutiny that viewers bring to videos. "The app provides an additional, automatic verification step that does not require a human to verify and say, 'oh, this looks genuine.'"

The technology is based on something called sensor data, information that most cell phones and other mobile devices already collect automatically. Wherever wireless technology exists, sensor information such as the time, the date, global positioning and even temperature are recorded. As a user sends email and text messages and posts online, the device shares the data. That information establishes the device's history.

Carbunar will be looking at that history and more-sophisticated data to help confirm that a specific video has truly been captured on a particular user's mobile device. For example, most phones and tablets house motion sensors. The accelerometer and gyroscope sense a device's orientation; when a user moves a device up, down and to the side or rotates it, the phone records that movement along the x, y and z axes. Most importantly for Carbunar, the stream of data that is generated allows a comparison between the device's movements and the footage that the device purportedly captured at a specific time. Someone claiming, then, to have shot original video should have corresponding data to back up the claim.

An existing video taken from the Internet and passed off as new, for example, would not have any accompanying sensor data. And simply re-recording an existing video during playback and then uploading it as a new post would generate motion-sensor and other data incompatible with the imagery on the screen. Likewise, editing work would be detectable.

Ideally, Carbunar says, both users and platforms such as YouTube would buy in to the technology. The app would ensure that the motion-sensor data is captured and stored securely during video recording, and it would allow the data file to be uploaded (but not made public) at the same time

that a video is posted on YouTube or another video sharing platform. The latter would be responsible for running an analysis of all the sensor data using an algorithm Carbunar and his team are devising. That analysis would determine the likelihood that a submitted video was captured by a mobile device at the time and place stated by the user.

Carbunar envisions the possibility of YouTube devising some kind of rating system or a stamp to indicate authenticity. Ultimately, he would like to see something similar to the "Amazon Verified Purchase" tag, which associates a product review with a documented purchase.

Fred Blevens, a professor in FIU's School of Journalism & Mass Communication, appreciates what a tool like Carbunar's could offer to the discerning viewer. "Anything that is going to serve to validate the authenticity of material, whether video or print or some other artifact, is certainly to be lauded," he says. "It would be hard to argue against something that is seeking to promote veracity."

But, adds Blevens, who teaches a course on news literacy, any such attempt to encourage the truthful, accurate dissemination of information has value only if the public cares enough to pay attention. "It does put a burden on the consumer to use it," he says.

Provided by Florida International University

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