

## SUNDAY

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## IN HOT PURSUIT

Bid for FBI building sets off regional competition

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PHOTOS BY ADRIAN SANCHEZ-GONZALEZ/CHRONICLE

Robert Maher, electrical and computer engineering professor at Montana State University, works on an audio clip inside a sound studio on April 15 at Montana State University. Maher, who has worked with audio software engineering companies, works with attorneys as an audio forensics analyst, using software he has created.

## HEARING AID

Attorneys, investigators tap MSU professor's audio forensic expertise

By **WHITNEY BERMES**  
Chronicle Staff Writer

A call from a defense attorney about a decade ago turned out to be a fateful one for Robert Maher.

The attorney asked for a little help from Maher, a professor and head of the Montana State University electrical and computer engineering department.

The defense attorney had a 911 recording in which gunshots could be heard in the background. The attorney's client and the police disputed who shot first.

"And the timing of when the shots were fired was something that was important in the case," Maher explained.

What the attorney wanted to know is if it was possible to take the recording of the gunshot and figure out exactly which gun it was.

"He was imagining a kind of fingerprint of the gun sound that you could match up. At the time, I said I didn't think it was possible. But I didn't know," Maher said.

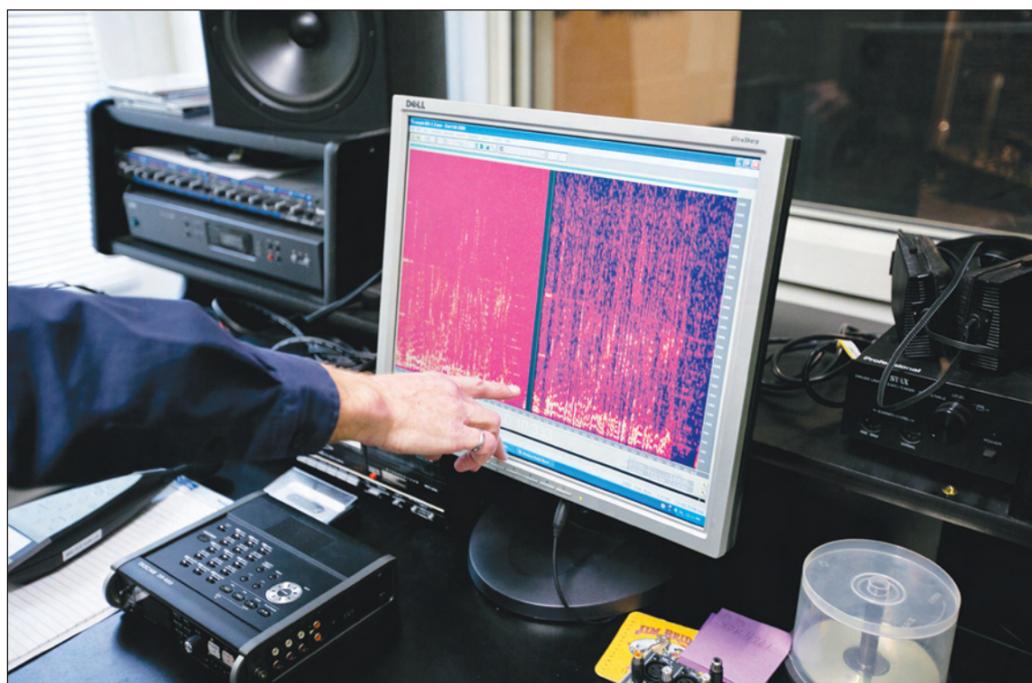
Like any academic, Maher decided to do his own research on the topic and became an expert in the field. After publishing multiple papers on audio forensics and gunshot acoustics, Maher has become a go-to guy for attorneys and investigators to give guidance on the subject.

Maher's background is in electrical engineering, primarily audio engineering, working with things from microphones, amplifiers and loudspeakers to audio recorders and sound for computer games. Audio forensics is a branch of that.

Audio forensics, Maher explains in one of his publications, is the analysis and evaluation of audio recordings that may ultimately be presented as evidence in court or another official venue. This type of evidence, Maher writes, is typically obtained as part of a civil or criminal law enforcement investigation or as part of accident investigations.

Maher receives at least a couple of calls a month from attorneys and investigators across the country, he said.

The majority of the requests he gets are to authenticate an audio recording and determine if it has been tampered with or to clean up and improve the quality of a recording.



A majority of the recordings Maher is asked to analyze are 911 calls, whether they are a person talking to dispatch or dispatch conversing with law enforcement. But he also deals with law enforcement recordings, such as a detective interviewing a suspect.

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"A lot of what I do is a lot more education. It's more helping the attorneys understand what's possible and what makes sense from a scientific standpoint," Maher said.

So what kind of cases does Maher provide his expertise on?

"Many of these cases are nasty situations," he said.

One case Maher recalls is a murder. One of the victims had managed to make a 911 call, Maher said. The recording is of the perpetrator saying some threatening things that lead up to the murder.

"It's a capital case, so it's a very serious situation," he said.

Then there was a case out of Chicago where there was a discrepancy about the official police timeline of a shooting. Analysis of a 911 recording showed

events happening in a way that didn't match the official timeline.

"You could hear a call from the dispatcher that came after a report from the officer, where in the original report those were switched," Maher said. "Once those questions started getting raised, I think it raised questions about a lot of other aspects of the investigation that had been kind of sloppy."

Regardless of the emotional intensity of certain cases, Maher said his role as an expert witness is to be impartial and provide facts and to help a jury better understand a piece of audio.

"We're an advocate of the truth," he said. "I'm not trying to make the attorney's case."

And it's a role that Maher relishes. As a professor at a land grant university, providing service and giving back is part of the gig, Maher said.

"I think it's part of the job to share this knowledge and expertise as much as possible," Maher said.

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