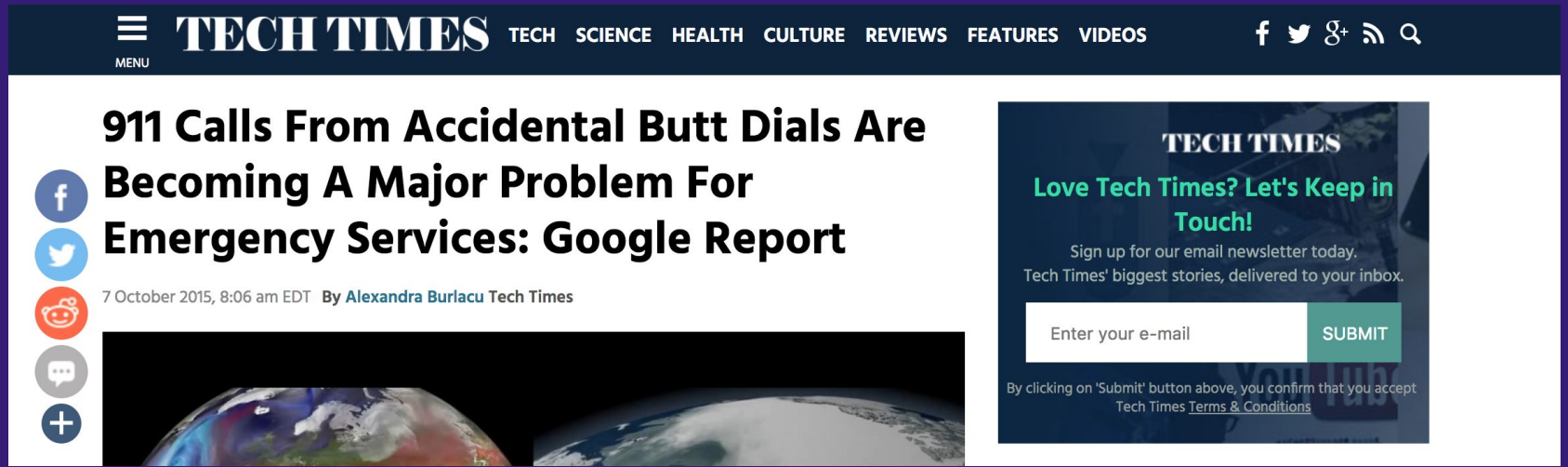
Pocket Dial vs. Regular Call Classification Using CNN

by Natalie Lebedeva

Filtering pocket dials vs. regular calls: problem definition



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911 Calls From Accidental Butt Dials Are Becoming A Major Problem For Emergency Services: Google Report

7 October 2015, 8:06 am EDT By Alexandra Burlacu Tech Times

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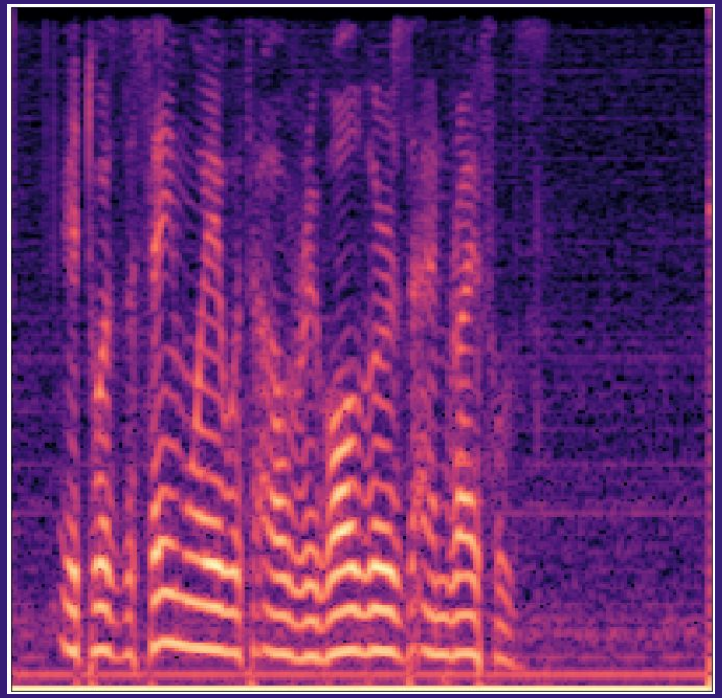
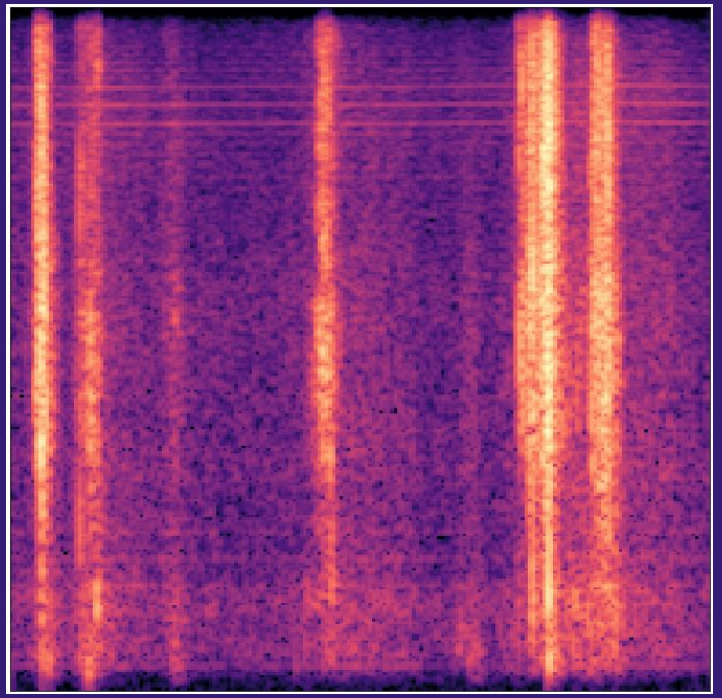
"In fact, while the full scope of the problem is unknown, the FCC reported that roughly 70% of 9-1-1 calls at New York City's PSAPs are made by wireless devices, and that at least 50% or more are the result of pocket dialing," Google notes in its report. "Furthermore, the Washington County Consolidated Communications Agency (WCCCA) reported that pocket dialing accounted for 30% of wireless 9-1-1 calls in 2014."

Data: 5-second audio files converted to spectrograms.

Classify:



vs.



Convolutional Neural Network architecture

Layer (type)	Output Shape	Param #
conv2d_1 (Conv2D)	(None, 113, 113, 8)	2056
max_pooling2d_1 (MaxPooling2	(None, 7, 7, 8)	0
conv2d_2 (Conv2D)	(None, 4, 4, 128)	16512
max_pooling2d_2 (MaxPooling2	(None, 1, 1, 128)	0
flatten_1 (Flatten)	(None, 128)	0
dense_1 (Dense)	(None, 128)	16512
dropout_1 (Dropout)	(None, 128)	0
dense_2 (Dense)	(None, 1)	129

Total params: 35,209
Trainable params: 35,209
Non-trainable params: 0

Dependencies:

- keras (TensorFlow)
- numpy
- matplotlib
- librosa
- PIL