Thunderstorm Identification for LIGO LEE CAPISTRAN, BRINA
MARTINEZ, University of Texas Rio Grande Valley, GUILLERMO VALDES,
Louisiana State University — h $-abstract-$\pardScattered laser light, undesirably
reflected from vibrating surfaces, generate noise that affects the sensitivity of the
Laser Interferometer Gravitational-Wave Observatory (LIGO).These surfaces, such
as the walls of the vacuum chambers enclosing the detectors, can be vibrating due to
locally created seismic activity such as thunderstorms, trains, or other anthropogenic
activities. In this work, we used a previously written script to extract features of
noise believed to originate from thunderclaps and run them through machine learn-
ing techniques to identify acoustic noises. We used K-Nearest Neighbors to train
the data that is later implemented in determining whether the acoustic signals being
picked up are that of a thunderstorm or not. Determining the source of disturbances
is important in the constant development and maintenance of LIGO's infrastructure
and data quality control.\pard-/abstract-\

Lee Capistran
University of Texas Rio Grande Valley

Date submitted: 04 Jan 2021   Electronic form version 1.4