

# LABORATORY EARTHQUAKE ANALYSIS

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<sup>2</sup> Add Los Alamos, USGS and or Kaggle here?

**Abstract.** Earthquakes cause deaths and damage.

Given improved data collection and processing technologies; predict the time remaining for imminent laboratory earthquakes more precisely than  $r2 .89\ 90\ \%$  Confidence and other statistical facts which was previously accomplished by Los Alamos National Laboratory<sup>3</sup>

We analyze the data for patterns using geological subject matter expertise, statistical methods and natural intuition. We design a statistical algorithm to model the patterns and predict the time remaining until a laboratory earthquake will occur for given test data. We compare predicted versus actual time remaining to determine our accuracy.

The evidence of this experiment suggests *null hypothesis, statistical results with pvalue or confidence interval and relevant t scores* we can predict impending laboratory earthquakes

*"Be careful not to accidentally plagiarize. DO NOT use figures from other publications. Even if you cite it; you are getting into areas where copy-right issues arise."*

## 1 INTRODUCTION

1 Paragraph Motivation (Sets General problem domain)

1 Paragraph Problem Statement (Specific Problem solved by the work)

2-3 paragraphs on solution

1 Paragraph on main results (plural)

1 Paragraph on main conclusions (plural)

1 Paragraph on paper organization

Data was attained from a Kaggle Competition sponsored by the Los Alamos National Laboratory: [www.kaggle.com/c/LANL-Earthquake-Prediction](http://www.kaggle.com/c/LANL-Earthquake-Prediction). The data in this competition is the result of a laboratory simulation.

**This is another section.** We assume that  $H$  is  $(A_\infty, B_\infty)$ -subquadratic at infinity, for some constant ...

*Notes and Comments.* The first results on subharmonics were ...

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<sup>3</sup> Rouet-Leduc Bertrand, Hulbert Claudia, Lubbers Nicholas, Barros Kipton, Humphreys Colin J., Johnson Paul A. (2017, July 15). Machine Learning Predicts Laboratory Earthquakes. Retrieved from <https://doi.org/10.1002/2017GL074677>

## **2 TUTORIAL MATERIAL**

Paper should be tutorial in nature Audience is data scientists of varying levels of knowledge. Keep newer students in mind

## **3 DATA**

Must have section that defines data Use tables and figures to illustrate data attributes

## **4 METHODS AND EXPERIMENTS**

Define algorithms, methods and experiments DO NOT give play by play of everything we did Dont put code in paper; if anything put in appendix. Put versions of software but nop one cares about how to use technology; just state what we did.

## **5 RESULTS**

Results of experiments Use tables and graphs Use tables and graphs Use tables and graphs Don't forget explanations

## **6 ANALYSIS**

Analyze results. These are NOT conclusions.

## **7 ETHICS**

Discuss ethics of your problem You MUST have ethics section.

## **8 CONCLUSION**

Draw conclusionS (plural, more than one conclusion- minimum of 3) This is NOT a summary section.