

NOAH GRAYSON LUNA

Email: nluna@berkeley.edu | **City:** Berkeley, CA 94704
LinkedIn: noah-luna-linked/ | **Github:** <https://github.com/ngrayluna> | **Website:** <https://ngrayluna.github.io/>

SUMMARY OF QUALIFICATIONS

Recent M.S. Graduate from Top-tier University with experience in: developing and implementing Deep Learning algorithms for non-traditional applications, working on collaborative projects with international team, processing and handling time-series data, scientific analysis, and experience working at a renowned laboratory.

Developed Understanding in:

Python | TensorFlow | Deep Neural Networks | Machine Learning
Time-Series Data Analysis | Data Analysis | Digital Signal Processing | Scientific Programming

EDUCATION

Master of Science in Geophysics

Graduated: August 2019

Joint degree from Technical University of Munich &
Ludwig-Maximilians-University

Bachelor of Arts in Geophysics

Graduated: December 2014

University of California, Berkeley

ONGOING ML PROJECTS

Denosing Seismic Data with Deep Neural Network Autoencoders

Improve the signal to noise ratio (SNR) of broadband seismic stations in California using a Deep Learning approach.

- We are using denosing autoencoder architectures to remove noise from seismic data.
- To do this, we are downloading seismic data with high SNR from Northern California and adding noise from the stations with low SNR
- All work is done in Python.

Collaborator: Dr. Qingkai Kong, Assistant Data Science Researcher at UC Berkeley Seismology Lab & Berkeley Divisions of Data Science

NotCake iOS App

iOS App which uses Convolutional Neural Network and pretrained weights from YOLO frameworks for detecting cake objects in photos. In the time frame I have given I am also learning how to use Xcode and how to write in Swift.

- To do this I am giving myself 1 month to download data set, process, and train DNN to detect images of cake when using an iOS APP
- Within this month I am creating from scratch front-end as well using Swift 5 and Xcode 11.
- The Deep Neural Network pipeline is exclusively in Python. The iOS App. will be written in Swift 5.

COMPLETED ML PROJECTS

Identifying Seismic Waves with Convolutional Neural Networks

Demo on how to apply deep neural networks to seismic data. The demo demonstrates one approach of how to train a DNN to identify the first phase in a seismic wave caused by an earthquake.

- Created walk-through demo of how to train a CNN to identify the first seismic phase generated by an earthquake using real seismic data.
- Demo includes how to download, pre-process, build model (using Keras), and how to train the model.

Single Station Location with 4 Degree of Freedom Seismometers with Convolutional Neural Networks

Identify phase arrivals found in recorded time-series recordings for future single station earthquake locations.

- Our data set consists of rotational and translational motions (6 Degrees of freedom). 6Dof can be used to earthquakes using a single seismic station.
- Dataset consists primarily of synthetic waveforms generated by an online database of source functions.
- Given the success in their in the field of computer vision and time-series data, we chose CNN.

Chatbot using LSTM Network

Chatbot is trained on upvoted answers and their associated parent (original question) from Stack Overflow.

- Used SQL to query the Stack Overflow database to get desired data from mass data dump.
- Future work: train on data set with shorter dictionaries therefore requiring less parameters.

PROFESSIONAL EXPERIENCE

Student Scientist/Entry Software Engineer, Ludwig Maximilians University

01.2018 – 01.2019

Converted seismology topics into tangible machine learning products. Worked with an international team of post docs, professors, and PhD students to host a workshop about machine learning in the field of seismology. Converted MATLAB code into Python.

Machine Learning Speaker for Munich Earth Science School Conference

- Developed Jupyter Notebooks on Recurrent Neural Networks for programming session.
- Presented a talk and held a Python Jupyter Notebook programming session on Recurrent Neural Networks to professors, post-docs, and Ph.D students from around the world.

Entry Software Engineer

- Ran earthquake simulations using pre-existing mesh, velocity, and rupture parameters using SiesSol software on high performance computers to simulate the '94 NorthRidge Earthquake.
- Converted earthquake simulation classroom code from MATLAB code into Python.

Research Associate, UC Berkeley Seismology Lab

25.06.2015-21.09.2017

Provided immediate support to IT, Operational, and Engineering Staff of the Berkeley Seismological Laboratory and its various seismic networks. Aided in web development tasks.

Seismic Data Analysis

- Provided timely and accurate information to state and federal agencies, media, and the public by reviewing results for fit and robustness of the automated moment tensors produced by the lab.
- Remotely re-centered and calibrated inertial masses of Streckeisen Broadband Seismometers (STS-1 and STS-2).

Berkeley Seismological Laboratory Website

- Developed web pages for the Berkeley Seismology Lab
- Updated and created new webpage for the California Integrated Seismic Network (CISN) using Bootstrap library framework.