

# MIKE NEUDER

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## PERSONAL STATEMENT

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A computer science and math undergraduate studying at University of Colorado at Boulder. I am fascinated by the use of machine learning, mathematical models, and computational science to predict and analyze the behavior of complex systems. I have a solid mathematical and computational background, as well as passion for learning and discovery that allows me to adapt quickly to a variety of research areas. I am looking to obtain a part time position for Fall of 2017 relating to my interests in data and computation.

## EDUCATION

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### University of Colorado, Boulder

*Aug 2015-Present*

B.A. in Computer Science

B.A. in Mathematics

Minor in Statistics

Expected Graduation : May 2019

Deans List

Sewell Esteemed Scholars Award

Overall GPA: 3.8 - Computer Science GPA: 4.0

## EXPERIENCE

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### Laboratory for Atmospheric and Space Physics / Lockheed Martin

Feb 2017 - Aug 2017

*Software Engineering Intern*

*Boulder, CO*

- Joint CU Boulder and Lockheed program in which CU students are trained at LASP to work at Lockheed when they receive security clearances.
- Developed graphical applications using Python and C++ Qt Libraries.
- Wrote interactive terminal applications using Perl and the Curses Module.
- Developed graphical application testing suites using Eggplant Functional and SenseTalk.
- Solved large scale problems using multi-threading and multi-processing techniques.

### Lab of Dr. Michael Mozer

March 2017 - Present

*Research Assistant*

*Boulder, CO*

- Developed neural networks to predict scroll time on mobile phones based on the word statistics of the text on the screen.
- Synthesized data to replicate word statistics for network training examples.
- Built a logistic regression classifier to identify whether mushrooms were poisonous or edible based on 24 mushroom traits.
- Created several convolutional neural networks to replicate the Structural Similarity (SSIM) score of sets of images in order to embody a more accurate image quality evaluation metric.

### Lab of Dr. Elizabeth Bradley

March 2017 - Present

*Research Assistant*

*Boulder, CO*

- Used information theoretic measures of weighted and non-weighted permutation entropy to analyze the information produced by the climate system through water isotopic data collected in ice cores.
- Compared accumulation and weighted permutation entropy to evaluate the relationship between the two values.

- Wrote code in Python to create plots and time series graphs, as well as organize the data and run entropy calculations.
- Analyzed how adjusting parameters in the permutation entropy calculation impacted the correlation coefficient between permutation entropy and accumulation.

### **Spire Manufacturing Solutions**

*Manufacturing Intern*

May 2014 - Aug 2014

*Colorado Springs, CO*

- Operated CNC lathes and mills to manufacture metal components.
- Inspected parts to verify measurements matched specifications prior to shipping the parts.
- Repaired electric discharge machine and programmed machine to cut a custom part.

## **OTHER PROJECTS**

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### **Rubik's Cube Solver**

Wrote a program in C++ that solves a cube from any scrambled position.

### **Python vs C++**

Created benchmark runtimes of programs in both languages.

### **she**

Wrote a web application with Ruby on Rails to simulate a virtual girlfriend.

### **Connect Four**

Created a graphical implementation of the game in PyQt.

### **Hack CU 2017**

Took part in hackathon and modeled the spread of infectious disease.

## **TECHNICAL STRENGTHS**

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### **Programming Languages (Experienced)**

Python, C++, Perl

### **Programming Languages (Proficient)**

Ruby, R, Javascript, Matlab, bash

### **Libraries**

numpy, scipy, matplotlib, tensorflow, scikit-learn, Qt

### **Tools**

git VCS, LaTeX, Linux