# MIKE NEUDER

(719) 659 · 3861 ◇ michael.neuder@gmail.com ◇ Personal Webpage

## PERSONAL STATEMENT

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 and industrial areas.

## EDUCATION

**University of Colorado, Boulder** *Aug 2015-Present*
B.A. in Computer Science
B.A. in Mathematics
Expected Graduation : May 2019
Deans List & Sewell Esteemed Scholars Award
CU Data Science Team Member
Overall GPA: 3.82 - Computer Science GPA: 3.97

**University of Oxford, Oxford** *Jan 2018-June 2018*
Visiting student at Mansfield College
Hilary and Trinity Terms of 2018
Coursework in Probability, Graph Theory, and Economics

## EXPERIENCE

**Lab of Dr. Michael Mozer** March 2017 - Present
*Research Assistant* *Boulder, CO*

- Developed neural networks using word processing and language analysis to predict reading behavior.
- Synthesized data to train complex networks on a range of tasks.
- Built classifiers and clustering analysis tools using to train models on unlabeled data.
- 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.

**Laboratory for Atmospheric and Space Physics / Lockheed Martin** Feb 2017 - Nov 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.

**Spire Manufacturing Solutions** May 2014 - Aug 2014
*Manufacturing Intern* *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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|---|---|
| **Image Quality Analysis** | Code written for machine learning and image analysis research. |
| **Numerical Experiments** | A series of numerical analysis experiments written in python. |
| **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, Java |
| **Libraries** | numpy, scipy, matplotlib, tensorflow, scikit-learn, Qt |
| **Tools** | git VCS, LaTeX, Linux, Jupyter Notebooks |