# Cole MacLean

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## EDUCATION

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| **M.Sc. Artificial Intelligence –** Polytechnic University of Catalonia | 2017 |
| **Data Analyst Nanodegree –** Udacity | 2015 |
| **B.Sc. Chemical Engineering –** Queen's University | 2012 |

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## SKILLS

**Programming**

Python (numpy, pandas, sklearn, tensorflow, keras, networkx, openopt, matplotlib, bokeh)

R (dplyr, ggplot2, RJSONIO)

d3.js, SQL, mongodb

**Machine Learning**  Complex Networks, Neural Networks, Computer Vision, Natural Language Processing

**Data Science**  Data Wrangling, Exploratory Data Analysis, Predictive Modeling, Data Visualization

**Engineering**  Technical Leadership, Technical Communication, Fundamental Maths and Physics

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## RESEARCH

Master's Thesis – Thresholded Random Geometric Graphs

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## PROJECTS

Open Source NetworkX Library Spatial Network Model Generators

- Developed, implemented, tested and documented state-of-the-art Spatial Network models from my master's thesis for the open source complex networks NetworkX python library, including jupyter notebook tutorials.

Recurrent Neural Network Based Subreddit Recommender System

- Designed and implemented a Recurrent Neural Network built using tensorflow trained on 30 million Reddit user's comment data, capable of recommending interesting subreddits to users based on their subreddit interaction histories
- System improves baseline model by 500%, comparable to analogous best-in-class recommender systems
- Published python web application using bokeh visualization with over 100,000 actual users

Tesla Supercharger Network Predictive Growth Model

- Developed predictive model in python using Complex Network Theory, SVM Classification and Multi-Attribute Utility Theory to predict the growth of Tesla's Supercharger Network
- Accurately predicts 55% of 22 held-out future Supercharger cities
- Top rated and featured analysis on open source publishing website: beaker.com

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## EXPERIENCE

**Process Engineer –** Cenovus Energy                                     2012-2016

- Managed and analyzed terabytes of daily facility operations data, increasing facility uptime, troubleshooting operational anomalies and optimizing processing units
- Performed Exploratory Data Analysis and modeling to identify $1.5 million in annual operating cost reductions from 2000 process control loops
- Increased facility reliability by applying advanced anomaly detection and signal processing techniques to locate and rectify the cause of 2 major facility upset events
- Acted as technical lead in building the healthy relationship between the remote facility and corporate headquarter teams, interpreting and communicating operational and business priorities
- Increased team-wide competency by teaching introductory programming with VBA to 10 colleagues via weekly tutorials and individual work projects