# Gurkamal Deol

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## EDUCATION

### UNIVERSITY OF GUELPH
Master of Bioinformatics
Sept 2017 | Guelph, ON

### WESTERN UNIVERSITY
Bsc. in Genetics and Pharmacology
June 2017 | London, ON

### COURSERA | DEEPLEARNING.AI
Deep learning Specialization
Sept 2019

Neural Networks and Deep Learning
Improving Deep Neural Networks
Structuring Machine Learning Projects
Convolutional Neural Networks
Sequence Models

## SKILLS

### LANGUAGES
Python
R
SQL
HTML and CSS
Shell

### MACHINE LEARNING
Scikit-Learn
glmnet
CARET
Tensorflow
RDKit

### TOOLS
Unix
postgreSQL
Github
Virtual Box
Jupyter

## EXPERIENCE

### CYCLICA | Bioinformatics Developer (co-op)
April 2019 - Present | Toronto, ON

- Sanitized and collected over 17 million records for molecular compounds to create a private database removing the need to rely on commercial equivalents.
- Built a pipeline written in python by utilizing Pandas, Numpy, and RDKit to perform molecular similarity searching
- Implemented a PostgreSQL chemical cartridge to perform similarity searching through 70gb of data.
- Assembled a database of 17 million compounds using PostgreSQL, optimized querying, and calculated molecular fingerprints for substructure similarity searching.
- Wrote a python script to convert drug names to their SMILES string counterparts
- Developed a unique web app useful to researchers by using the Flask micro-framework to host and execute the drug converting script

### WESTERN UNIVERSITY | Research assistant
April 2016 – June 2017 | London, ON

- Thesis Project: Detecting Prostate Cancer Using Tumor-Activatable Minicircles Encoding the Biomarker SEAP
- Data collection using: Bioluminescence imaging of cells; Western blotting; BCA assays; Immunocytochemisty; PSA testing - ELISA kit.
- Producing Minicircles - Steps include transgene cloning, DNA extraction/isolation; cloning, plasmid purification.

## PROJECTS

### PREDICTING ENVIRONMENTAL CARCINOGENS | github/gdeol4

- Conducted a novel case study using molecular fingerprints as features to classify compounds as carcinogens.
- Demonstrated how to deal with class imbalance using the ADASYN algorithm and sk-learn.
- Utilized the logistic regression, k-nearest neighbor, and gradient boost algorithms from sk-learn.
- Highlighted the importance of parameter tuning and implementing it for the knn and gradient boosting classifiers.
- Thoroughly explained and implemented accuracy metrics such as AUC scores, f1-scores, and confusion matrices through Seaborn visualizations.

### DRUG DECODER | github/gdeol4

- Created a web app which convert common drug names to their SMILES (molecular structure) format to help scientists reduce manual searching time.
- Wrote the drug conversion processes in python, utilizing the Pandas and Numpy libraries.
- Used Flask to create the web app with secure form submissions and ability to delete all uploaded data for privacy.