

# Alexandre Tytgat

ENTRY-LEVEL MACHINE LEARNING ENGINEER

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## Summary

Scientifically rigorous graduate seeking an opportunity as an entry-level machine learning engineer. I am eager to contribute my abilities in machine learning and data science to solve real world problems. Deeply curious and collaborative, I will bring strong critical thinking, mathematical foundations, and programming skills to the job. Also willing to relocate.

## Education

### Université Catholique de Louvain

Louvain-la-Neuve, Belgium

MSC IN DATA SCIENCE, *Cum laude*.

09/2019 - 09/2021

- Specialization in numerical methods and optimization.
- Relevant courses: databases (SQL, NoSQL), machine learning (supervised learning, unsupervised learning, reinforcement learning, deep learning, CNN, NLP), data visualization, Bayesian statistics.
- Student representative for the academic year 2020-2021.
- Thesis: Study of a new interpretation of the learning process of AI. Received a grade of 16/20. [Online access](#)

### Université Catholique de Louvain

Louvain-la-Neuve, Belgium

MSC IN PHYSICS, *Dropped out*.

09/2018 - 09/2019

- Specialization in statistical and mathematical physics.

### Université Catholique de Louvain

Louvain-la-Neuve, Belgium

BSC IN PHYSICS, *Cum laude*.

09/2015 - 09/2019

- Specialization in mathematical physics.
- Student representative for the academic year 2018-2019.
- Thesis: A new approach to dark matter as a quantum interaction phenomena. Received a grade of 18/20.

## Projects

### Political Comments Classifier

[GitHub link](#)

GOAL : PREDICT THE POLITICAL AFFILIATION OF USERS FROM THEIR REDDIT COMMENTS USING MODERN NLP TECHNIQUES.

Nov. 2020

- Performed the necessary pre-processing of the comments using Gensim and NTLK.
- Created one BERT embedding of the comments and trained a Doc2Vec model to create a second embedding.
- For each embedding, a randomforest was trained to identify the political affiliation of the comments. The BERT model obtained an accuracy of 0.75 on the test set.

### T-cells Identification

[GitHub link](#)

GOAL : USE HAND ANNOTATED DATASETS OF GENE EXPRESSION TO TRAIN MACHINE LEARNING ALGORITHMS IN ORDER TO

May. 2020

AUTOMATICALLY CLASSIFY NEW SINGLE-CELL DATASETS.

- Carried out the data pre-processing, and applied PCA to reduce the number of features from >23.000 to less than a hundred.
- Reduced the bias in the dataset using the SMOTE method to artificially balance the classes.
- Performed 5-fold cross validation over several models (randomforest, XGBoost, etc.), and selected the six best performing ones. A voting system was employed to make the final prediction, resulting in a balanced accuracy of 0.78 on the test set.

### Air quality prediction

[GitHub link](#)

GOAL : PREDICT THE CONCENTRATION OF FINE PARTICLES IN THE AIR OF BEIJING USING METEOROLOGICAL DATA COLLECTED BY

Nov. 2019

THE BEIJING MUNICIPAL ENVIRONMENTAL MONITORING CENTER.

- Data pre-processing: transformed the time and the wind direction features in a way that takes into account their cyclical nature.
- Selected the five most informative features about the target variable to train the model on, as evaluated by the mutual information.
- Trained a one layer neural network on the resulting dataset, and performed a 5-fold cross validation scheme to select the hyperparameters.

## Skills

### Programming Languages

**Experienced:** Python, R, Java. **Familiar:** SQL, Matlab, SAS, C++, AMPL.

### Libraries

NumPy, Pandas, Scikit-Learn, Pytorch, Caret, spaCy, NLTK, Gensim, Doc2Vec, Seaborn, Matplotlib, JAGS, glmnet.

### Tools

Git, Anaconda, Jupyter Notebook, Google Colab.

### Languages

**Native:** French. **Fluent:** English. **Beginner:** Spanish.

### Les Scouts ASBL

Belgium

SCOUT LEADER

09/2020 - PRESENT

- Organized educational and engaging activities addressed to teenagers. Topics included environment protection, refugees in Europe, and conflict management.
- Worked as part of a team to plan events, carry out fundraisers, and oversee camping trips.
- Communication lead of the section. Entrusted to inform, negotiate, and coordinate with the other sections.

### Université Catholique de Louvain

Louvain-la-Neuve, Belgium

LAB TUTOR

02/2019 - 05/2019

- Introduced students to the experimental apparatus.
- Monitored and guided the students to successfully realize the desired observations.
- Charged with grading the lab reports and took the initiative to provide individual feedback after each session.