# Machine Learning Engineer Nanodegree

## Capstone Proposal

Lilit Sargsyan

March 31st, 2018

## Proposal

### Domain Background

Sharing your thoughts online about things you care can be difficult. The threat of abuse and harassment online results on many people stop to express themselves and give up seeking different opinions. According to Pew Research Center3, 27% of American internet users chose not to post something online after seeing someone being harassed. Toxic language makes it hard to discuss important issues.

The Conversation AI1 team, a research initiative founded by Jigsaw2 and Google are working on tools to help improve online conversation. Their research aims to help increase participation, quality and empathy in online discussions. One area of focus is the study of negative online behaviors, like toxic comments (i.e. comments that are rude, disrespectful, or otherwise are likely to make participant to live the conversation).

There is an online competition going on Kaggle4 to help to solve one of the aspects of this problem.

1 <https://conversationai.github.io/>

2 <https://jigsaw.google.com/>

3 <http://www.pewinternet.org/2017/07/11/online-harassment-2017/>

4 <https://www.kaggle.com/c/jigsaw-toxic-comment-classification-challenge>

### Problem Statement

\_(approx. 1 paragraph)\_

The problem that we are going to solve in this project is connected with finding toxic comments in online discussions. One of approaches to solve this problem involves people facilitating discussions, but this is time consuming and requires a large workforce, that’s why we need machine learning methods to do it. The model I’m going to build will detect toxic comments and assign to it a type of toxicity like threat, obscenity, insults, and identity-based hate.

### Datasets and Inputs

\_(approx. 2-3 paragraphs)\_

In this section, the dataset(s) and/or input(s) being considered for the project should be thoroughly described, such as how they relate to the problem and why they should be used. Information such as how the dataset or input is (was) obtained, and the characteristics of the dataset or input, should be included with relevant references and citations as necessary It should be clear how the dataset(s) or input(s) will be used in the project and whether their use is appropriate given the context of the problem.

### Solution Statement

\_(approx. 1 paragraph)\_

In this section, clearly describe a solution to the problem. The solution should be applicable to the project domain and appropriate for the dataset(s) or input(s) given. Additionally, describe the solution thoroughly such that it is clear that the solution is quantifiable (the solution can be expressed in mathematical or logical terms) , measurable (the solution can be measured by some metric and clearly observed), and replicable (the solution can be reproduced and occurs more than once).

### Benchmark Model

\_(approximately 1-2 paragraphs)\_

In this section, provide the details for a benchmark model or result that relates to the domain, problem statement, and intended solution. Ideally, the benchmark model or result contextualizes existing methods or known information in the domain and problem given, which could then be objectively compared to the solution. Describe how the benchmark model or result is measurable (can be measured by some metric and clearly observed) with thorough detail.

### Evaluation Metrics

\_(approx. 1-2 paragraphs)\_

In this section, propose at least one evaluation metric that can be used to quantify the performance of both the benchmark model and the solution model. The evaluation metric(s) you propose should be appropriate given the context of the data, the problem statement, and the intended solution. Describe how the evaluation metric(s) are derived and provide an example of their mathematical representations (if applicable). Complex evaluation metrics should be clearly defined and quantifiable (can be expressed in mathematical or logical terms).

### Project Design

\_(approx. 1 page)\_

In this final section, summarize a theoretical workflow for approaching a solution given the problem. Provide thorough discussion for what strategies you may consider employing, what analysis of the data might be required before being used, or which algorithms will be considered for your implementation. The workflow and discussion that you provide should align with the qualities of the previous sections. Additionally, you are encouraged to include small visualizations, pseudocode, or diagrams to aid in describing the project design, but it is not required. The discussion should clearly outline your intended workflow of the capstone project.

-----------

\*\*Before submitting your proposal, ask yourself. . .\*\*

- Does the proposal you have written follow a well-organized structure similar to that of the project template?

- Is each section (particularly \*\*Solution Statement\*\* and \*\*Project Design\*\*) written in a clear, concise and specific fashion? Are there any ambiguous terms or phrases that need clarification?

- Would the intended audience of your project be able to understand your proposal?

- Have you properly proofread your proposal to assure there are minimal grammatical and spelling mistakes?

- Are all the resources used for this project correctly cited and referenced?