Defence Innovation Challenge 2020

Artificial Intelligence Track

AUTOMATIC REAL TIME SPEECH ANALYSIS:

In the battlefield, a lot of communication happens through radio channels. Even though armies have the technology to intercept enemy radio channels, it is currently tough to detect - translate the voices in real time if it is in another language.

As of now, the intercepted messages are listened manually by human operators to extract valuable information. Operators at times face difficulties to segregate voluminous number of calls and inevitably drop information. Therefore there is a need of automatic tagging them based on automatic voice identification through A.I and subsequent scale of model for database on profiling which would enable quick decision making and counter action in a battle scenario.

PRIZE MONEY:

- 1st position - INR 2 Lacs
- 2nd position - INR 1 Lac
- 3rd position - INR 50,000

TASKS:

1. **Translation**
   A language agnostic NLP model for translating any input language to a set of output languages for easy comprehension. More weightage in evaluation for the variety in languages it can translate (English not considered)
2. **Speaker Identification**
   Ability to categorize speaker voice based on either predefined voice database (supervised) or auto-tag without prior knowledge (unsupervised)

JUDGEMENT CRITERIA:

- Accuracy of voice identification and classification at scale
- Language Translation Capabilities in Real Time
- Originality of source code
- Intuitive User Interface

DIC TIMELINE:

1. *First Round: (due on 4th November 2019)*
   - For the first round of the Defence Innovation Challenge, the participating team will have to submit a complete flowchart of their A.I application with information on what algorithms will be used in a **pdf** document and it's associated references from which the information was sourced.

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Teams which can send an early prototype of their original source code (in .zip format) will be evaluated with higher priority but it is not mandatory.

- Out of all submissions, 5 teams will be selected to go to the final round based on a marking scheme provided by our knowledge partners

2. *Final Round:* (on 3rd January 2020, first day of the Defence Tech Summit at IIT Madras)
   - For the final round, the teams will have to be ready with the working application for real time testing and evaluation by our panel of judges along with a presentation highlighting the entire process
   - Three winners will be chosen by a panel of judges during the final round.
   - Teams which get selected for final rounds will be given additional datasets to fine tune their model.

RESOURCES TO GET YOU STARTED:

- Mozilla Common Voice - **for translation tasks only -** https://voice.mozilla.org/en/datasets
- https://towardsdatascience.com/a-data-lakes-worth-of-audio-datasets-b45b88cd4ad
- A Collection of Single Speaker Speech Datasets for 10 Languages - https://github.com/kyubyong/css10

NOTE:

Since the tasks involve handling of sensitive data, the solution should not contain any usage of public APIs which involve a 3rd party service or server. The application should not be internet-based and all computation must be done within the local machine