

RANDOM NUMBER GENERATION AND REGRESSION ANALYSIS REPORT

COURSE NAME
INTRODUCTION TO DATA SCIENCE WITH PYTHON

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SUBMITTED TO
DR. AJIT KUMAR MAJUMDER

PROFESSOR, DEPARTMENT OF STATISTICS
JAHANGIRNAGOR UNIVERSITY

SUMMITTED FROM

MD JAHIDUL ALAM

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Introduction: Natural language processing (NLP) is the ability of a computer program to understand human language as it is spoken. NLP is a component of artificial intelligence. Natural language processing frequently involve speech recognition, natural language understanding, and natural language generation. In the late 1980s and mid-1990s when "statistical revolution" happened, much natural language processing research has relied heavily on machine learning.

Natural Language Processing: Natural language processing is a subdivision of a field of linguistics, computer science, information engineering, and artificial intelligence concerned with the interactions between computers and human (natural) languages, in particular how to program computers to process and analyze large amounts of natural language data.

Natural Language Processing Works Procedure: NLP entails applying algorithms to identify and extract the natural language rules such that the unstructured language data is converted into a form that computers can understand.

Steps in natural language processing: The five phases of NLP involve lexical (structure) analysis, parsing, discourse integration, semantic analysis, and pragmatic analysis. Some well-known application areas of NLP are Optical Character Recognition, Speech Recognition, Machine Translation, and Chatbots.

Uses of NLP: Natural language processing helps computers communicate with humans in their own language and scales other language-related tasks. NLP can be used for personal development, phobias, and anxiety. NLP uses perceptual, behavioral, and communication techniques to make it easier for people to change their thoughts and actions. NLP is used in many fields, including business, sports, art, health, marketing, education and politics, in fact, anywhere that involves human endeavor. NLP is widely used in business. For example, NLP makes it possible for computers to read text, hear speech, interpret it, measure sentiment

and determine which parts are important. A few examples of NLP that people use every day are:

- Spell check
- Autocomplete
- Voice text messaging
- Spam filters
- Related keywords on search engines
- Siri, Alexa, or Google Assistant

Importance's of NLP: The most widely used NLP application is machine translation which helps to overcome the language barriers. As the amount of information available online is increasing day by day, the need to access and process it becomes more important. The NLP techniques are very useful for sentiment analysis.

NLP platform: The platform provides a deep integration with the Microsoft Bot Framework and can be used by other bot platforms. Google Natural Language API. Google Natural Language (NL) API is a recent addition to Google Cloud focused on NLP and NLU capabilities.

NLP tools: Natural Language Processing (NLP) tools help process a flow of unstructured data from disparate sources. Due to the fact that Python programming language is one of the best suited for NLP. NLP applications, we had a chance to research many available options and chose 5 heroic NLP tools that can be of use for anyone. I. CoreNLP from Stanford group II. NLTK, the most widely-mentioned NLP library for Python III. TextBlob, a user-friendly and intuitive NLTK interface IV. Gensim, a library for document similarity analysis V. SpaCy, an industrial-strength NLP library built for performance

Applications of natural language processing:

As we showed, neural networks have many applications such as:

- Text classification
- Information extraction
- Semantic parsing
- Question answering
- Paraphrase detection
- Language generation
- Multi-document summarization
- Machine translation and
- Speech and character recognition

NLP's troubles: Natural Language processing is considered a difficult problem in computer science. It's the nature of the human language that makes NLP difficult. The rules that dictate the passing of information using natural languages are not easy for computers to understand.

Conclusion: By "natural language" we mean a language that is used for communication by humans such as English, German, or Korean. The most widely used NLP application is machine translation which helps to overcome the language barriers.