



Avowal Data Systems
AI Automation

NATURAL LANGUAGE PROCESSING (NLP)

& TEXT ANALYTICS TRAINING

How Machines Learn to Understand Us



Trainer
Raju K



INDUSTRY RELEVANT CURRICULUM



HANDS-ON PROJECTS



REAL-WORLD APPLICATIONS



CERTIFICATION OF COMPLETION



ABOUT THE TRAINER

Raju Kolikapogu

Technical Architect

With over 20 years of experience, I specialize in architecting projects end-to-end and mentoring teams to success. I am also an expert in providing training for both individuals and corporate teams.



MY SKILL SET:



AI Automation:

Master n8n, Make.com, and Generative AI tools—langchain, RAG to streamline your workflows and boost efficiency.



Chatbots:

Master the art of building advanced chatbots w/o voice using VAPI, Voiceflow, BotPress, and Dialogflow to create seamless and engaging user interactions.



Data Analytics:

Harness the power of AI, Machine Learning, and Python to extract meaningful insights from data and drive business decisions, leveraging tools like Airflow, Spark, and Kubeflow for large-scale data handling.



20+
Years of
Experience



Trained
Individuals &
Corporate Teams

Tools & Data Foundations

1



Introduction to AI, ML & NLP

What is the difference between AI, Machine Learning, and NLP?
Setting up our playground.

2



The Developer's Toolkit

What is Git/GitHub, and why do developers use package managers like pip to install external tools?

3



Data Handling for Text (Pandas Basics)

How do data scientists organize and read large files of text data, like spreadsheets of customer reviews?

4



Visualizing Text Analytics

How can we use simple charts to discover patterns, common words, or average paragraph lengths in text data?



Fundamentals of NLP

1



Regex

Strings & Regular Expressions (Regex)

How do we teach a computer to automatically find and extract things like email addresses, phone numbers, or dates?

2



Hello world!

Text Preprocessing: Tokenization

Why can't computers read sentences like humans?
Breaking text down into tiny word or character pieces (tokens).

3

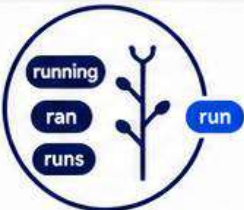


the is at

Stop-word Removal & Text Cleaning

What are stop-words (the, is, at)? Why do we throw them away to help the AI focus on the most important words?

4



running

ran

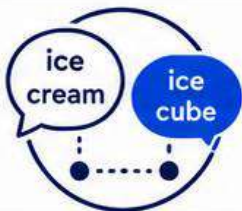
runs

run

Stemming vs. Lemmatization

How do we chop words down to their base form so the computer knows "running", "ran", and "runs" mean the same thing?

5

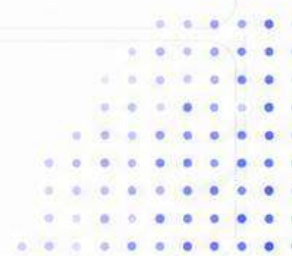


ice cream

ice cube

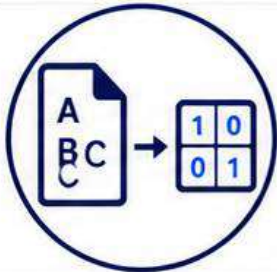
N-Grams (Predicting Word Pairs)

What are N-Grams? How looking at word combinations (like "ice cream" vs. "ice cube") helps AI understand context.



Text Representation

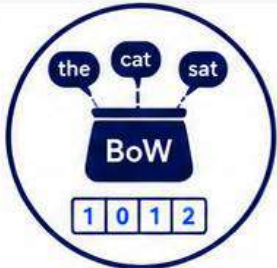
1



Intro to Vectorization (Text to Numbers)

Why do AI models require numbers instead of alphabets?
The basic concept of converting text into numerical grids.

2



Bag of Words (BoW) Implementation

Counting word occurrences to build a baseline mathematical grid of a sentence.

3



TF-IDF Theory (Word Importance)

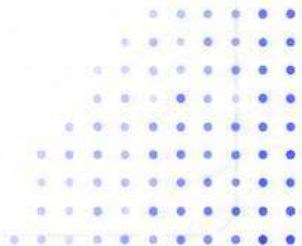
Why are rare, specific words sometimes more important to an AI than common, frequent words?

4



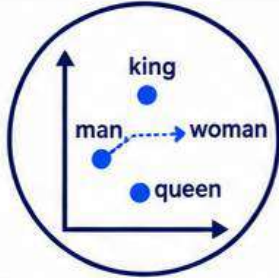
TF-IDF Practical Coding

Using software to automatically find the unique "signature" words in an article.



Text Representation

5



Word Embeddings & Meaning

Moving beyond just counting words. How do we give words spatial meaning so that “King - Man + Woman = Queen”?

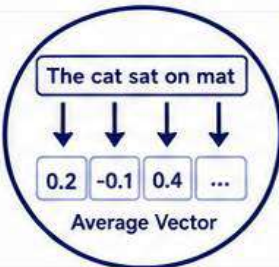
6



Word2Vec Basics (CBOW vs. Skip-Gram)

Understanding the two ways an AI learns word meanings: Predicting a missing word vs. predicting surrounding words.

7



Advanced Text Representation

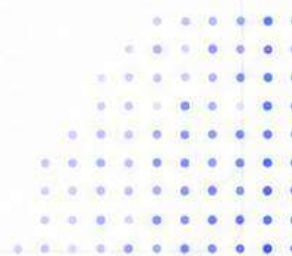
How do we combine multiple word vectors to understand the meaning of an entire sentence? (Average Word2Vec).

8



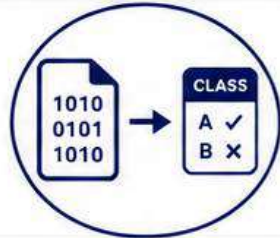
Live Lab: Vectorizer Comparison

Comparing all text-to-number methods we learned. Knowing when to use Count, TF-IDF, or Embeddings.



Deep Learning for NLP

1



Intro to Machine Learning & Classifiers

How does an algorithm look at text numbers and make a decision? Understanding basic classification.

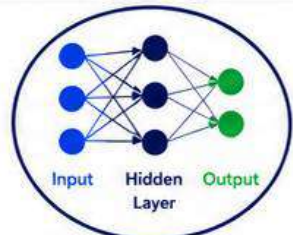
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Why Traditional ML Struggles with Order

Why standard models fail when the order of words matters (e.g., “not good, bad” vs. “not bad, good”).

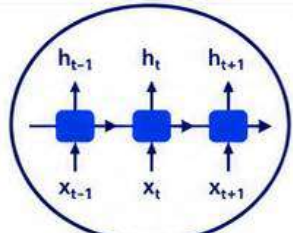
3



Introduction to Neural Networks

What is a Neural Network? A high-level visual look at input layers, hidden neurons, and outputs.

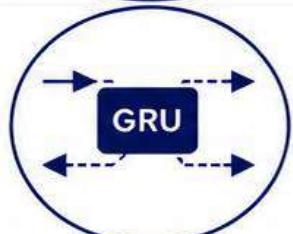
4



RNNs & LSTMs (Memory Networks)

High-level intuition: How Recurrent Neural Networks track text order, and why LSTMs act as a memory conveyor belt.

5



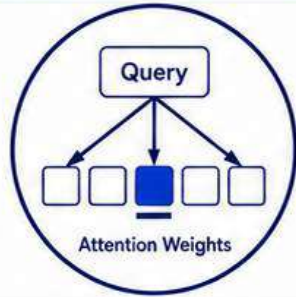
GRU Networks & Bidirectional Flows

What are GRUs? How reading text both forwards and backwards gives an AI a complete view of a sentence.



Deep Learning for NLP

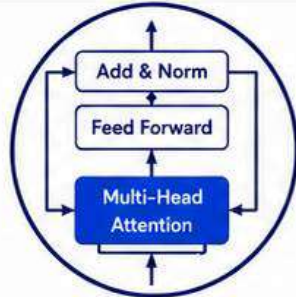
6



The Attention Mechanism

Why do we throw away traditional memory gates for “Attention”? How an AI learns to focus on specific words in a sentence.

7



Transformers Architecture Overview

The architecture that changed everything. How a Transformer looks at an entire page of text at once instead of word-by-word.

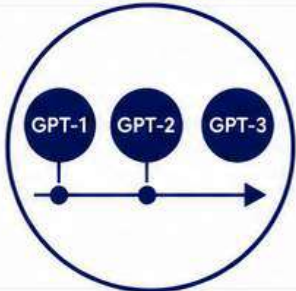
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Meeting BERT (The Context Master)

What is BERT? How Google trained an AI model to read text bidirectionally to understand deep human context.

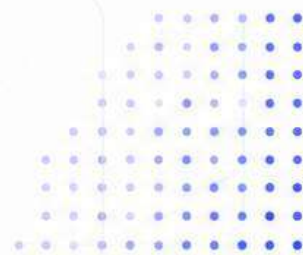
9



Generative Models (GPT Evolution)

The shift from understanding text (BERT) to generating new text (GPT). An overview of GPT-1, GPT-2, and GPT-3.

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Real-World Case Studies

1



Sentiment Analysis (EDA)

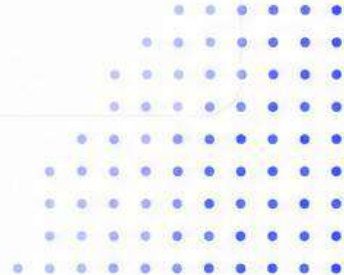
Setting up a major practical project: Analyzing the famous IMDB Movie Review dataset to read customer emotions.

2



Building the Sentiment Classifier

Training a model to automatically read a movie review text and decide if it is “Positive” or “Negative”.



Chatbots & Applications

1



Building a Text Chatbot Interface

How do we turn backend Python code into a beautiful, clickable web application that anyone can use in a browser?

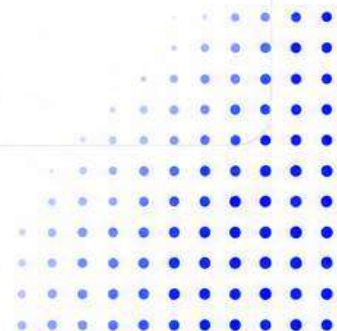
Avowal Data Systems

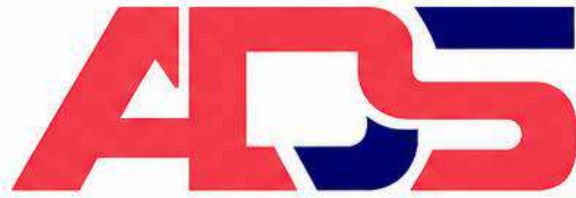
2



Grand Finale & Interview Prep

Connecting your NLP engine to the web interface.
Reviewing core interview terms and preparing for your advance course.





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AI Automation

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