The Technological AI's and the desperate Allies

Dr Rajesh Wadhwani
Previously at Zensar Technology

Abstract—

- **Role of religious Java followers, and all its pillars of development together in power**
- **Role of enforced Data, structuring to No SQL with relational support from deported un relational Delta**
- **Role and beauty of delivery engines, with data and bricks serving various modes such as batch, streaming and real time from source to destination in a seamless intimation.**
- **Role and progressive tale of Administration services from faithful Cloud with selflessness and" yes I do proud"**
- **Role of speechless things, from object orientation in an humble attempt to be recognized as human beings**
- **Role of Gen, Gan, Rag, Lang, and Chain, with RNN, ANN and CNN trying to imitate originality and supremacy from masters of Brain.**
- **Machine Learning and Deep Learning libraries, data and pilot's with co repositories pledged and had dedicated their rest APIs of remaining life in service of artificial intelligent queries.**

I. INTRODUCTION

Functional / Operational

- Analytics
- Generation
- Predictions
- Automation

Uses

Areas	Branches
Agriculture	Text Analysis
Medicine	Numerical Predictions
Education	Documents Processing
Governance	Image Processing
Field data processing	Video Processing
	Computer Vision

II. MODELS

Technology	Algorithm		Application
Open AI	Gpt 4 , 5	ChatGPT-Automated process with a perfect and uninterrupted access, to face queries from any face in any phase related to any case with a successful address, acts like a unattended precision trained on a huge amount of testing data with all sort of possible requisition related to the fields and domain in relations, the intents and contents and various entity and names from patents recorded in database with maximum covered extents with further eligibility to get trained if any object left without a meaningful interpretation as an category exempt Open AI- The Technology wise with a GPT algorithm 4,5 as choice developed the application with supporting allies	ChatGPT
Google	Transformer	Neural Network along with all other functions additionally with self-attention , the smart way to corelate context from long sentences the independent words of text, helps in development of more advanced functional concepts with automated workflow of related tasks in supporting aspect, the model incorporated with bigger system applications as an add on feature aspect, Google Gemini development, large language model automating tasks with	Gemini
Anthropic	Transformer		Claude

		rich features of contents, Claude model from Anthropic development trained with Encoder and Decoder concepts to serve generation with additional text and creative features at any extent	

III. TECHNICAL

- Machine Learning and Deep Learning

	AI	Learning science from natural , machine and deep networks along with sources of big data drawings , real world use cases from various fields with a training and testing processes , the Prediction , Classification , Analytic Procession, Creative Generation and Workflow Automation are the major ambitions , neural networks and algorithms are development works, natural language processing and methods of real time and streaming data processing are the the interfacing , Servicing platforms and cloud services are serving arms	
	Ml	Machine Learning to AI's a beginning service with traditional predictions and simple regressive tries, to a multiple and logistic training with a tweaking of parameters	Bigger aims and the designed neural tames, the artificial process for a real problem with a solution address, although a simple or complicated task executed with a redefined programmatic task till a optimum find, defined with terminology sounds like a neurology in technology a redefined, the progressive

		and regularization redefies, development of model fame with a data tame to successfully deliver masters of brain with their desired aim	issues of various kinds amended in base algorithmic programs revised with different types of Neural minds.
Supervised	Lucky data with a relational desire, to be used in a training undergoing with label guidance for future figures considered with predictive acquires or to compete its competency from a testing inspires, further to prove ability, regularity and value impact on a productive, futuristic and predictive facts.		
	Linear Regression	Traditional, numerical, scientific, future with profitable predictions based on single x and single y of historical considerations	ANN
	Multiple Linear Regression	More vigorous regression with similar intentions with multiple x to single y an honorable requisition	CNN
	Logistic Regression	A type of understanding types with a simple and religious person or a zig zag likes, based on likes the prejudiced or	RNN

		justified the categorized to be un categorized.	
Un Supervised	Training and testing process with scientific algorithms for different chase, the able data enough able to face without a lable guidance from profess and equally the problems require to be focused with a independent address trusting data ability in any case even in absence of secure and exceptional recommendation from a rich labelled address		
	K-means	Similar address with a classification of a reliable or comparable face, instead of individually defined a means to group with K number of groups assigned, K a possibility of groups from a large population with sub groups of similar troops, Classification a process with a group assigned or outlying crashing its forever access, the un supervised phase may be that's the reason behind trashed and prejudiced case	LSTM

	Principle Component Analysis (Dimensional Reduction)	A Method again un supervised and sort of prejudiced, with a sharp analytical observation of every property claiming its dimension with a perfection, to reduce it tale with just acquisition from recommended only quality exceptions to participate in scientific process of principal component analysis with specific to dimensional reduction for a prediction perfection	TRANSFORMER, GANS

IV. NEURAL NETWORKS

Neural Network Components / Architecture		Nervous System Human Brain
Input Layers	Data Feed	Mission, Vision and Ambitions
Processing		Brain Storming
Code (Neurons)	Hidden Processing Layers	Nerves and curves Abilities, Capabilities, Activities

Weights Biases Activation Front Prop Loss Back Prop Learning Rate Over fit/ Underfit		Conditional Probabilities and Resourceful Sustainability's Ambiguities and Possibilities Motivation, Inspiration, Acceptation and considerable Exceptions Preparation, Execution Analytical Directions, Diagnostic conclusion, Realizing mis execution Triggering Re execution, Hopes for acceptance with inclusion Quality of Brain and supporting veins, Severity and adaptability Praise and Success
Inferences, Insights	Output Layer	Solutions and Decisions

V. TYPES OF NEURAL NETWORKS

Neural Networks		
ANN	Artificial Neural Networks	General Neural Network for basic predictive analytical and regression work
CNN	Convolutional Neural Networks	Advanced Process for Image analytics and other classification, identifications, recognition access
RNN	Recurrent Neural Network	Neural Network requiring a long memory process, to replace gradients of vanishing access on the way to introduce the options of gates for smooth access
LSTM	Lost Short Term Memory Neural Network	Network with Gates, more sophistication to the process with a seamless flow and the strategic waits
Transformers		The Advanced mechanism of Self Attention, introduced transformers with greater extension, the way to resolve context between a long processes or sentences of text.

Encoders		Inputs to the Neural networks from uni direction, the process executed in bi direction, in order to generate meaningful context to feed network with a better decoding text, BERT- Binary Encoder representation transformer are the soft processes serving purpose of transformation feeding for further process of decoding with delivering accesses
Decoders		Decoding only process enrich replies to all forms of relevant querieing addresses, GPT - Generative Pre Trained algorithms to empower the power of ChatGPT with a prompt of wisdom.
Encoder and Decoders		Two-way process accepting input feeds with grace, relevant search from possible sources of all the similar case, and do face gentle queries with smiling face, BART and T5 are couple of addresses
GANS		The GANS , the positive and negative with encountering returns, the goods of bads and the worst of bests to compete till resulting with a equal numbers of merits in final tests, GENERATIVE ADVERSIAL NEURAL SYSTEM- with generator of pseudo facts and discriminator of tallying it with reality of facts till a level of bisect where goods accepts bads and worst marries bests and doesn't dare to proceed further with more such sort of differentiating in terms of quality aspects.

VI. NATURAL LANGUAGE PROCESSING

NLP	The neat and clean intents, with natural exempts, language of artificial attempts till possibilities of processing extents, in order to computerized the art, science and expressions of humaneness.

Computer= Human	Natural language processing, accepting prompts to teach computer a phase with intendent human facing
Understanding	Simplicity and soberness in activities, human language full of love , respect and beautiful pretty, the dumb machines and the feeling less vision , with techy touch in a collaborative mission , the oath of decision with a comparative precision, to steal feelings extra ordinary and with Centre of attraction, in order to train un used and un utilized resources from resting to outstanding position, vocal or type of local texts, gradually to processes images to and from text , the audio's and visuals streaming files consumed, processed and trained to fill the cores in power of forces with a learning heals, those never had been in power with such sort of extra ordinary skills.
Analysis	The Analytical phase, new instead of a machine learning extended to deep learning with a hierarchy of neural networks from ANN, CNN, RNN to transformer with all three forms encoding, decoding and both with same address
Generations	The Generation, with a bag of encodings in a thoughtless acceptation, targets to fulfill and enrich mean repository for next generation.
Creativity	The Natural objective, with a impact effective, development of Models with a bright future perspective, image resolution with a looking attractive, words spoken with a mind creative, the technical eyes with a lash protective and a leading roar with an self-understood directive.

Methodology	The natural subjective with Language , image , audio and visuals to virtual presence in a role attentive, with processing chronology from tokenisation , lemmnization, stemmization, n gram contextual representation, grammatical prepositions, name and entity recognition, parsing with solution and vectorization, worth to syntactic and semantic realization, with a diverse quality of translation, value like summarization, adaptations to transformation, along with dreams and imagination to deliver the contents with purity for next generations.
Translation	Accepting inputs from a source encoder, to deliver language from desired decoder

Summarization	Power of one liners or phrase, the complexity and supremacy of a sentence, applying techniques and methods for contextual reference, to deliver a summarized meaning that makes some meaning and sense
Generation	Generation with a creation, generation with generalization, generation with modification, generation for inspiration, generation able categorization, generation a classification, generation oriented with decision, generation amending constitution, generation with a vision, generation with imagination, generation visualization, generation with mission and generation with wings for flying ambition
Transformation	The Modified differences between Generation and Transformation , Generation from reference and adherence whereas transformation from inference, Generation from inspiration while transformation from realization, Generation an original vision while transformation is a version, Generation with planning and preps while transformation to lead by example perhaps, Generation with a secure care while transformation a repository from shares, Generation an advanced gap however transformation trying to fill gap. The Verified similarities Generation with abilities and transformation a potential capability, Generation with a born goals and transformation with winning goals, Generation a pure technical process and transformation an adoption with grace
Animation	Animation a continuous recurrent, rewinding from currents to possible fronts, encode and decode with neural networks code for development of a model anthropism's claude. Image classification and summarization the mandatory parts of Animation
Imagination	Imagination a quality with a rare social acceptability, Imagination suppose a dream mission learning with deep technology a dare to turn it to reality and means.
Vision	Vision not available with every then and one with ability to empower its power decision, Intelligence with deep excellence, empowered and powered to turn facts into no existence and the selects with proven importance, technology involved the social and relational circuits with 360 degrees revolved

Speech	Reach from neurons to pump and de pump blood clots to heart and deep till it possible can and been, The power to teach and the power to overrule the breach, the waves and frequency the natural honey and the melodious tone fancy, technically possible with mixing and fixing prophecy.
Sentiment analysis	A Deep heart and the areas around till outskirts, the impact and the effect, intacts and the attacks, the idiot neurons of Intelligence with extra brilliant mind that reflects with a interpreting aspect, those never have been to that reach with a concern connect, False positives to Negative false facts and Positive true to True negative with a judging eye to blind acts. The Technology with a Generative phase and from god's grace in a emerging and taking over trace optimizing the Judgements with Sentiments from true face to encountering chase, the process involved, reference, n gram and context of sentence to a tokenized text, applying biases and weights, admitting losses propagated with various learning rates to decide the feels and fates handing over to greats with power to act being judging hats

VII. NATURAL LANGUAGE PROCESSING METHODS

Methods	Acts with reference to protects, the human rights from a misleading and mis judged tracks, a step-by-step process preprocessing to storage with meaningful and to the point querying access, the stages of world from sentence Segregation feelings to semantical checks and grammatical healings
Tokenization	Tokenization a process from a monopoly of a long sentence to each and every word with and a relevant address and a fair importance
N Gram	The N Grams, unigram, bi gram and multiple grams, the combination of words with a weighted charm, although no harms still to derive contextual means, the own impact of each gram has in processing feels.
Stemnization /Lemnization	Extractions to remove stop words and parts of speech from a phrase, word or a sentence with a intention to let each word find its own world and importance to serve contextual sense.

Context and relation	Generative and models of Large Languages works religiously with words methodology and re arranges, the n gram with a bidirectional processing charm, tokenization wih a segregation, syntactic process with a pure access, semantic phase with a true meaning chase, the objective context from a nearby word or a world of whole lot of long sentences of text.
Vectorization	Vectorization a process of a coded contraction to relate and corelate with a numerical connection for a storage and query exception
Semantic	The sub process in Natural Language Processing, from a liable and hope less world to a word of meaningful accessing with grammtical and parsing processing
Syntactic	The prepositions and stop words from unnecessary tracks, removed for a contextual in a syntactic NLP task processing preps

VIII. LLMS

- Language Chain
- Retrieval Augmented Generation
- Co-Pilot

<table>
<tr><td colspan="2">LLMS - Large Language Models developed with diverse functions, serving generation, creation and modification of text in different languages with translation, the addon features for virtual assistance such as chat bots with avriety of contents, support and knowledge serving importance. ChatGpt , Gemini and Claude are some of the examples automated with a language chain along with Retrieval augmented Generation, Co-pilot add on serving 365 Integration with a enrich upgradation</td></tr>
<tr><td>Lang Chain and Components</td><td rowspan="4">Language Chain automates workflows for larger models of languages, incorporating agents along with application models edges, memorizing various states during a workflow incorporating Retrieval Augmented Generation features with a seamless knowledge flow along with internal repository connected with external available sources of knowledge rows information, together with databases of vectors stores, all together</td></tr>
<tr><td>Automation Workflow for LLMS</td></tr>
<tr><td>Agents</td></tr>
<tr><td>Models</td></tr>
<tr><td>Memory State</td><td></td></tr>
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RAG Storage Execution Automation	serving purpose of automated execution with a seamless continuity assures, the modules arranged within a systematic plain , a model with different components forming a automation lang chain

RAG External Source Knowledge Retrieval Retrieval Vector Databases Augmented Generation Lang Chain	The Co-existence of knowledge, sources along with internal integrated functions with external retrieval options, available for all sort of large language models for a lang chain workflow automation adoption. Retrieval stands for retrieving information, Augmented works merging retrieved information based on questioning query extraction, generation stands for creative texts queried information along with the retrieved facts.

Co Pilot An enRich feature Additional Tuning impact Git hub Integration Analytics and Analysis support Smart Code and Documentation support Microsoft Microsoft 365 Integration	Co-polit, an enrich feature with additional impact, options to serve with supporting effect, similar role with a knowledge and information stored and enroll, in the databases, with option to query based on various different requirement and cases, serving analysis, analytics and a coding support for Microsoft, 365 and github integration with content generation and additional extent ion, Smart generated code based on logic and data flow logical load.

IX. DATA ACQUISITION

Data Sources

IoT	Group of luxurious and basic things in a vital role, Under world circuit approved , registered and enrolled, internet with a twin device identification permitted to create cloud with virtual sessions, Revealed to serve with a social aim and concealed with a research and development tame, A wide source to gather information , objects and devices involved to render beats, pulses, frequencies, waves and inflation from heart , farms and electronics of personal belongings and sensations. Materialistic and huge monetary returns favored with servings and handsome earns. Architecture- Sensing and messaging Queues from a heart beat and neurological skews, the egdes of gateways approving diagnostic ways, the big hubs analyzing information with batches and subs, the reporting consumes with motives learning and controlling resumes and zooms
Web	Web World wide a source of information side, the AI crawls and the surfing scrolls, social sites and the insights, the business analytics or the networks of politics, the products and sales in volumes or units of scales, information from real sources or the information required for purpose of testing sources, internet provides free and paid both sort of accesses
Domain Specific Sources	Inhouse Databases or the clouds data lakes with information accesses depends on the choice of implementation phases and addresses
Artificial Data Simulation Generation (GAN)	The pseudo information for the purpose or testing and comparison with the help of neural networks named as GAN

X. INTERNET OF THINGS (IOT)

IoT		
Architecture		
Perception Layer		
Sensors		Sensors are the information spies , to pass the data from privacy to the network of allies
Actuators		Virtual images of real devices, with power to off or resume choices
Middle Layer		

Edge Devices		Edge devices deliver data from nearby devices to Network hubs with server devices
Network Layer		
Iot Hubs		The main server to process information delivered from devices wherever
Storages		The Databases or data lakes, from raw information to information with formatted preps

XI. DATA STREAMING

Streaming - The information and data acquisition with a continuous and real time infusion, the process involve the components such as brokers assigned as nodes with data exchange intents , zookeeper acts as resource and scheduling service which can handles the availability and execution of tasks without a miss, the consumer subscribe request for data acquisition producers when initiates and publish data for further consumption, The topics are the storage or tables partitioned with spaces , where producers publish data for further processing phases, the data capacity , limits and shards efficiencies can be parameterized based on the incoming sources of periodic windows configured sliding, session or with tumbling frequencies	
Components	
Kafka	Streaming services from Apache open-source accesses
Brokers	Cluster of kafka nodes, broker is one of the node
Zookeepers	Scheduling agent, resources and task with data processing and delivering intents
Consumers/Producers	The Data source is a producer and the target bases is consumer
Publish / Subscriptions	Publish a data with consumption intents, subscription a process with consuming extents
Topics	Topic is a table with a storage able , to accept data for further consumable

XII. NEURAL NETWORKS / MACHINE LEARNING / DEEP LEARNING LIBRARIES

Python Machine Learning and Deep Learning Libraries	
SciKit	For traditional models with algorithmic tasks, simple or logistic regression asks
Keras	Keras Library works for neural Networks
Pytorch	Transformers with advanced feature covers
TensorFlow	
Jax	

XIII. SPARK

Spark	
Core	Core Spark with a environmental setup installation, meta data, governance, security and configuration
SQL	Spark -SQL comprises data accesses with Rows and Columnar choices
Streaming	Spark Streaming for Data incoming
Mlib	Spark software diary has it's own Machine Learning Library
Pyspark	Spark Implementation in python for processing and algorithms
Architecture	
Client/Server Cluster	Client server Architecture with Master and worker node's structure
Worker's nodes	Spark cluster nodes, dedicated with tasks the worker nodes
Executors	Scheduled jobs creators executed by a process called executors

XIV. SPARK COMPONENTS AND METHODS

Components		Methods	
RDD	Resilient stands for immutable, distributed on cluster nodes stable, set of rows and columns within a dataset, processed and resides in memory with a concept of lazy evaluation theory	Transformations	Spark Context and drivers with data transformation tasks, such as map, filter and group by asks
DAG	The Workflow Graph with nodes and edges to connect tasks on each behalf	Actions	Actions tasks to deliver results with final tasks such as reduce and collect asks
Nodes	The Tasks are in form of nodes, edges are the connectors connecting each node with if else condition, successful conclusion upon previous execution		
Edges			
Fault Tolerant	A Recovering function, in case of failure with the help and support of DAG interrelated conjunction		

XV. AI CLOUD SERVICES

AWS Services	Azure Services	Google Services
Bedrock Deep Learning	Azure Open Ai	Vertex Ai Development
Sagemaker Machine Learning	Azure Search AI	Google Studio Development
Rekognition Image	Intelligent Documents	Gemini LLM Model
Lex Chatbots	Vision Computer	
Polly Text to speech	Speech	
Transcribe Speech to Text		
Comprehend Analysis		

XVI. A SAMPLE AI PREDICTION CODE

```python
from sklearn.linear_model import LinearRegression

# 1. Initialize and train the model
model = LinearRegression()
model.fit(X_train, y_train)

# 2. Predict using the trained model
predictions = model.predict(X_test)
```

XVII. THE SKLEARN LIBRARY SPECIFICATION WITH CODE LOCATION

