Agenda

- **Introduction**

- **Augmented Analytics Explained**

- **Augmented Analytics Benefits**

- **Use Case**

ABOUT NCR

$6.9B

Trailing 12 month revenue

1,270

PATENTS HELD BY NCR

20,000+

SERVICE PROFESSIONALS

in 90 countries around the world

34,000

PROFESSIONALS

7th

MOST REPUTABLE BRAND IN TECHNOLOGY

15M+

DIGITAL BANKING USERS

TOP 100

TECHNOLOGY INNOVATORS

100,000+

SITES USING

Aloha Platform

8M

SERVICE REQUESTS REMOTELY RESOLVED
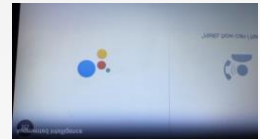
136 years as a technology innovator

Scenario – AI technology being helpful!

- It is August 15, 2020 and you are juggling a million things!

- You really need a haircut as you are going to be on a video call

- You ask your 'virtual assistant' to call and make your appointment between 10 am and noon.

Scenario – AI technology with extreme outreach

- Facial recognition is widely used

- Cameras are linked to personal profiles
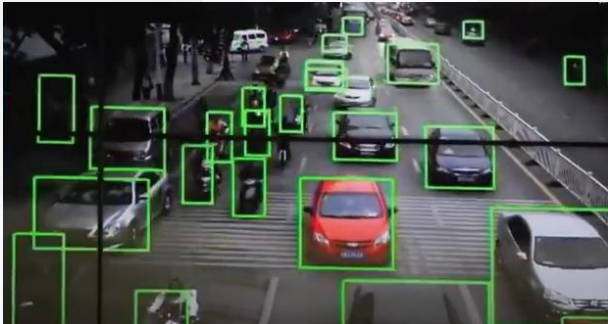
- What if this technology isn't used responsibly?

- What if your face can be matched with your location data?

What is Augmented Analytics?

- Artificial Intelligence (AI) driven analytics

- Automates insights using natural-language generation and machine learning by looking at the entire analytics process

- Find insights faster by working with the data in a more natural way.
- Forces us to be smarter about the data we are collecting to automate insights and make better business decisions

Traditional BI vs. Augmented Analytics

Traditional BI Analytics

Get the data → Connect to Data Source → Data Preparation → Perform Analysis → Transform Rules → Visualize Findings → Present Findings → Distribute Information
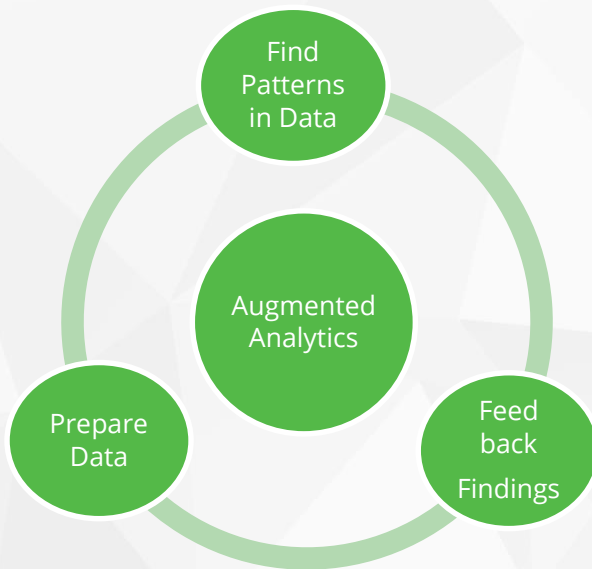
Augmented Analytics

- *Natural language queries*
- *Algorithms find relevant patterns*
- *Models are autogenerated*

- *Algorithms detect schemas and catalog and recommend enrichment, data lineage and metadata.*

- *Insights are narrated in natural language*
- *Visualizations focus users on what is actionable.*
- *Feedback loop on findings*

Find Patterns in Data

Augmented Analytics

Prepare Data

Feed back Findings

Augmented Analytics

Rapidly analyze all data across all possible dimensional combinations and quickly identify factors that are contributing or distracting from the growth of your company

Augmented Analytics Use Cases

Anomaly Detection

- Detect anomalies automatically
- Discover outliers causing the anomaly

Augmented Analytics Use Cases

Trend Detection

- Save time by automatically identifying trends

Trend detected: ROI ↑

+225% last month

— Trend ⋯⋯ ROI

Costs →   Conversion Value ↓

Augmented Insight Delivery

Insight Delivery

- Track the result of actions

- Measure effectiveness of the outcome

Cognitive Computing

- Cognitive Computing is the ability to analyze, interpret, reason and learn and simulate human intelligence

- Cognitive Computing applications include **speech recognition, sentiment analysis, and facial profiling**

- Cognitive computing moves big data analytics from data-driven to value-driven

Natural Language Processing

Natural language processing (NLP) is a field of AI that gives machines the ability to read, understand and derive meaning and context from human languages

Natural Language Processing Explained

With natural language processing, a computer can recognize written and spoken words and put it in the ***right context, like conversing with a person***

Practical Application of NLP: Pre-Trained Models

Open API's GT3

This large-scale transformer-based language model has been trained on 175 billion parameters

Google's BERT

NLP model developed by Google in 2018 performance on 11 NLP tasks including the very competitive Stanford questions dataset

Microsoft's CodeBERT

Built upon a bidirectional multi-layer neural architecture for code search & code documentation generation

ELMo

This is deep contextualized word representation that can model syntax and semantic of words as well as their linguistic contexts

What is Natural Language Generation (NLG)?

- Software that translates structured data into "narratives" that explain data in a human-like manner at a rapid pace

- NLG platforms automatically create linguistically rich descriptions of insights found in data

- Makes information easier to understand and more engaging

Natural Language Generation Models

Markov Model

The Markov chain was one of the first algorithms used for language generation. This model predicts the next word in the sentence by using the current word and considering the relationship between each unique word to calculate the probability of the next word

Recurrent neural network (RNN)

Neural networks are models that try to mimic the operation of the human brain for language generation.

LSTM

Long short-term memory (LSTM) was introduced. Though similar to RNN, LSTM models include a four-layer neural network

Transformer

Transformer consists of a stack of encoders for processing inputs of any length and another set of decoders to output the generated sentences
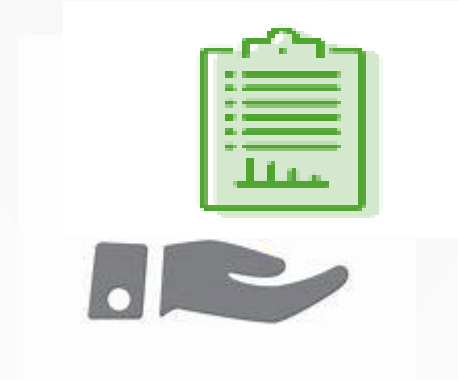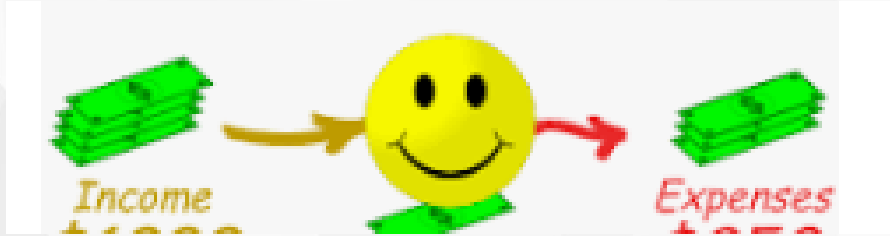
Why NLG?

Natural language generation is ideal for increasing data literacy in the organization

Data is generated and consumed at a rapid pace

Carpe Datum – seize the data and scale your Analysis!

Augmented Analytics Use Case- our journey

POC: Automated Commentary on dashboards that measure performance of sales and revenue

Use Case Overview

Automated Commentary Writing in NLG Tool

- Analysts spend time preparing commentary in preparation for monthly management review meetings

- Researched natural language generation tools that could be used to auto generate commentary on frequently used data visualizations

Forrester

THE FORRESTER NEW WAVE™
Natural Language Generation For Analytics
Q4 2018

Problem Resolution

- How to reduce time to insight and action for dashboard
- How to eliminate misinterpretation and incorrect action

Let your data tell the story

- Generate dynamic narrative that is part of the data viz

- Narrative is highly contextual and reads like the expert that sat down and wrote it

- Enhance the current dashboard's usability
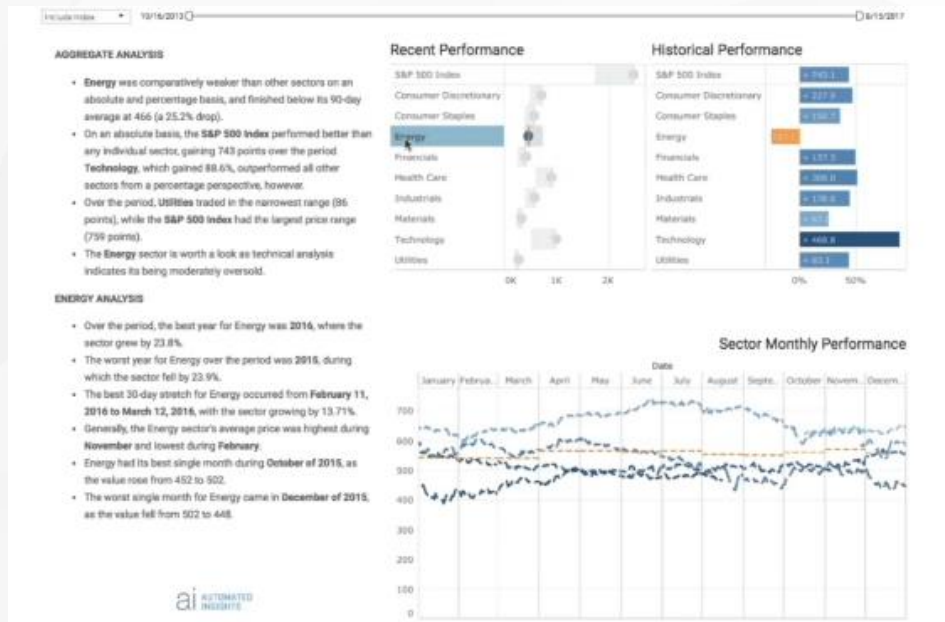
Conclusions

Carpe Datum!

Create compelling Data Visualizations!

Use NLG to makes data easy to understand!

THANK YOU!

Prital Ullal

linkedin.com/in/pritalullal

DSATLCONF | data science ATLANTA conference 2019

References

https://towardsdatascience.com/ai-and-cognitive-computing-fc701b4fbae7

https://www.mygreatlearning.com/blog/natural-language-processing-infographic/

https://www.youtube.com/watch?v=IIaYk2hIYKk

https://analyticsindiamag.com/top-8-pre-trained-nlp-models-developers-must-know/

https://analyticsindiamag.com/top-8-pre-trained-nlp-models-developers-must-know/

https://peopleconscience.com/2017/06/12/how-natural-language-processing-can-empower-human-resources/

https://www.rtinsights.com/augmented-analytics-benefits-and-use-cases/

https://www.sisense.com/whitepapers/augmented-analytics-the-future-of-business-intelligence/

https://www.rtinsights.com/augmented-analytics-benefits-and-use-cases/