July, 2023 | Edition

THIRDEYE

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DECODED

MONTHLY FEED OF PROVEN DATA & AI SOLUTIONS

03

PROJECT REFERENCES

How Much Profits Can Generative AI Generate?

Generative AI has the potential to generate $2.6 trillion to $4.4 trillion in value across industries.

PLUS

Industry expert tips on risk mitigation steps in Data & AI Projects.

Editor's Note

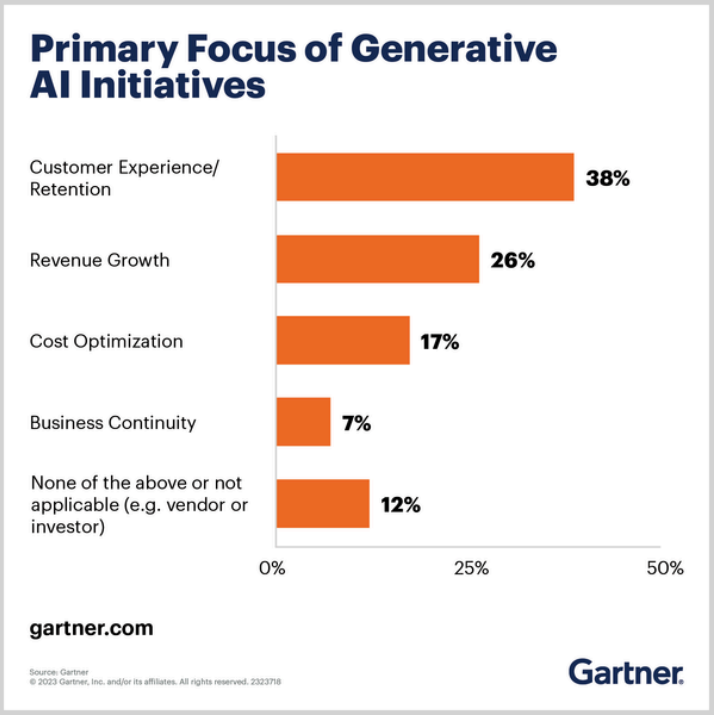
The field of data and AI is rapidly evolving, and it is important to stay up-to-date on the latest trends. By understanding these trends, we can be better prepared to take advantage of the opportunities that data and AI offer. We can also help to ensure that these technologies are used in a responsible and ethical way.

The Latest Trends in Data and AI

The field of data and AI is constantly evolving, with new trends emerging all the time. In this article, we will explore some of the latest trends to watch in 2023.

Generative AI

Generative AI is a type of AI that can create new data, such as images, text, and music. This technology has the potential to revolutionize a wide range of industries, from content creation to product design. For example, generative AI could be used to create realistic images of products that do not yet exist, or to generate new music that is tailored to a user's individual preferences.



Natural Language Processing (NLP)

NLP is a field of computer science that deals with the interaction between computers and human (natural) languages. NLP is used in a wide range of applications, including machine translation, chatbots, and sentiment analysis. For example, NLP could be used to translate text from one language to another, to create chatbots that can hold conversations with humans, or to analyze social media data to understand public sentiment.

Computer Vision

Computer vision is a field of computer science that deals with the extraction of meaningful information from digital images or videos. Computer vision is used in a wide range of applications, including self-driving cars, facial recognition, and medical imaging. For example, computer vision could be used to help self-driving cars navigate the road safely, to identify people in a crowd, or to diagnose medical conditions from images.

Deep Learning

Deep learning is a type of machine learning that uses artificial neural networks to learn from data. Deep learning has been responsible for some of the most impressive recent advances in AI, such as the development of ChatGPT and AlphaGo. For example, deep learning could be used to train AI models that can recognize objects in images, translate languages, or play games at a superhuman level.

Edge Computing

Edge computing is a distributed computing paradigm that brings computation and data storage closer to the end user. Edge computing is becoming increasingly important as the amount of data generated by connected devices continues to grow. For example, edge computing could be used to process data from sensors in real time, to deliver streaming video content, or to provide augmented reality experiences.

PHIL MCCLUSKEY
Editor-in-Chief
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ENTREPRENUER COLUMN

How Much Profits Can Generative AI Generate?

The potential profits that generative AI can generate are vast, and it is difficult to estimate a specific number. However, some estimates suggest that the generative AI market could be worth up to $4.4 trillion by 2028. This is due to the many potential applications of generative AI, which can help businesses to save time and money, improve productivity, and create new products and services.

Dj Das,
Founder & CEO, ThirdEye Data Inc.

TRENDS & VALUE PROPOSITION

Revenue Boosting Magic of Generative AI

Dj Das, Founder & CEO of ThirdEye Data | Photograph by **Prithwish Dey**

SUMMARY

Can it generate revenue? It is a common question asked by all the entrepreneurs when a new technology comes in the the market. I am trying to furnish my findings on Generative AI's revenue generation capabilities in a simple way.

The actual profits that generative AI can generate will vary depending on the specific application and the business that is using it. However, the potential for generative AI to generate profits is significant, and it is an area that businesses should be paying attention to.

Some of the specific ways that generative AI can generate profits include:

AUTOMATING CONTENT CREATION

Generative AI are being used to create content such as text, images, and videos, which helped businesses save time and money. For example, Buzzfeed and Upworthy use generative AI to create content that is shared widely on social media. This content drives traffic to their websites, which they then monetize through advertising.

IMPROVING CUSTOMER SERVICE

Generative AI are being used to create chatbots that can answer customer questions and resolve issues. For example, Amazon and Facebook use generative AI to create chatbots that can answer customer questions and resolve issues. This frees up human customer service representatives to focus on more complex tasks, and it also improves the customer experience.

DEVELOPING NEW PRODUCTS AND SERVICES

Generative AI are being used to develop new products and services by generating ideas, testing concepts, and creating prototypes. For example, Google uses generative AI to generate ideas for new search algorithms, and Uber uses generative AI to create new features for its ride-hailing app.

As generative AI technology continues to develop, it is likely to become even more powerful and versatile. This will open up new opportunities for businesses to generate revenue by automating tasks and improving their operations.

PANEL DISUCSSION

You're cordially invited to join the upcoming panel discussion on "Revenue Boosting Magic of Generative AI".

28th July, 04 pm PST

REGISTER HERE

From This Month's Challenge Vault

PROJECT REFERENCES

Utility, Energy, Oil & Gas Industry

Image Quality & Anomaly Detection Platform

Healthcare Industry

Pharmacy Route Optimization System

Information Technology Industry

Deep Learning based File Conversions

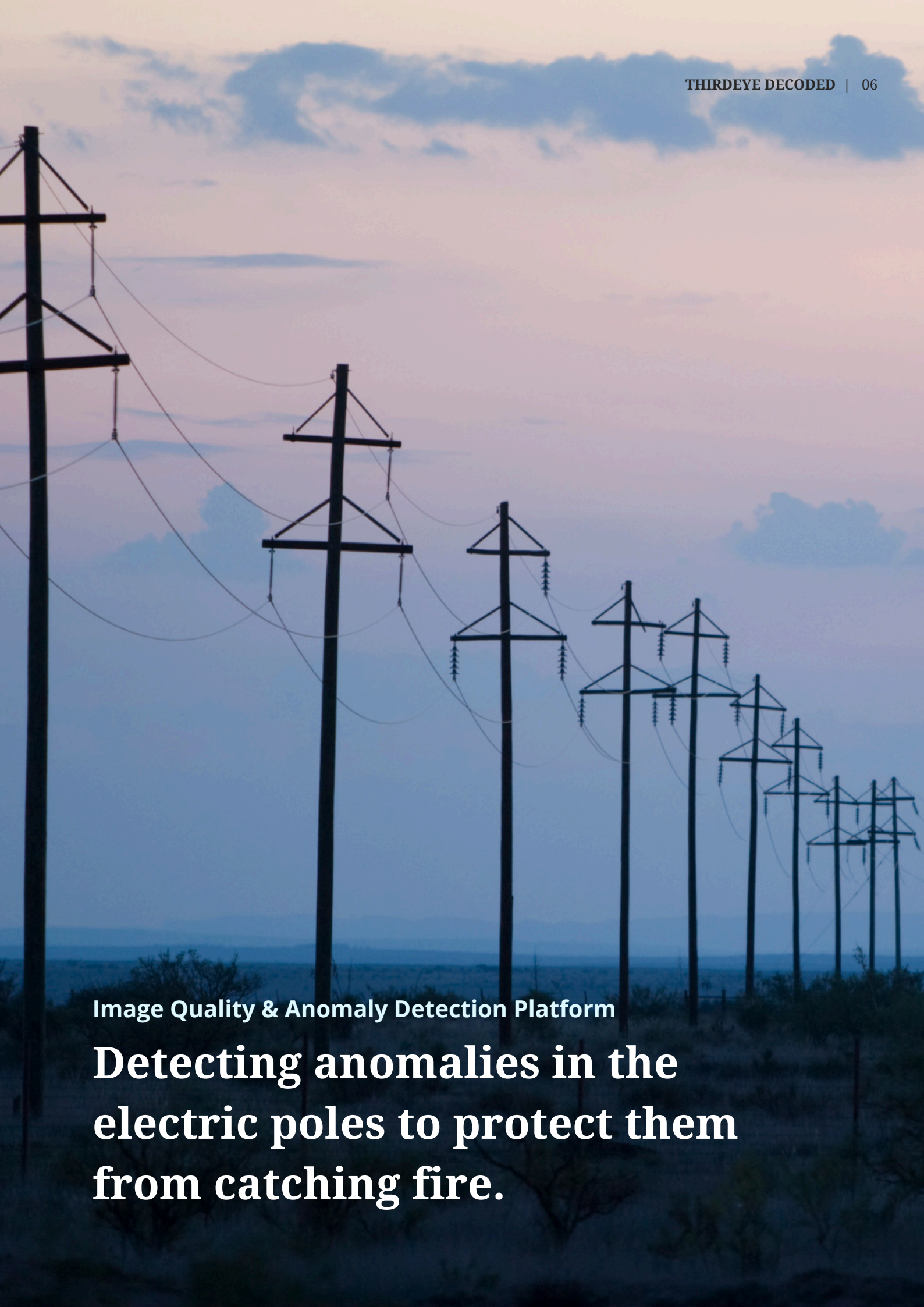


Image Quality & Anomaly Detection Platform

Detecting anomalies in the electric poles to protect them from catching fire.

SAVING LIVES WITH AI TECHNOLOGIES

Across the U.S., there are 3,000 incidents of utility poles catching fire each year, many of which are caused by leakages and damages to a pole that went unaddressed for too long.

01 **PROJECT REFERENCE**

Such damages can be hugely expensive when not dealt with: The average cost of a pole fire on a distribution line is $25,000. But it's not just money that's saved when pole fires are avoided — it's lives and homes, too.

The client wanted to build an end-to-end platform that picks up third-party provided images of electric poles to detect the quality of the image for further downstream consumptions.

Once the quality of the images are determined to be adequate, channel these images for anomaly detection.

CHALLENGES & SOLUTIONS

CHALLENGES

EXPECTED OBSTRUCLES

We faced some natural challenges during the analysis of drone-captured images of electric poles for anomaly detection despite full support from the client:

- **Image Quality:** The quality of the images varied depending on numerous factors such as weather conditions, the distance between the drone and the pole, and the camera settings. This made it difficult to detect anomalies, especially when they were small or subtle.
- **Environmental factors:** The environment around the pole had also affected the quality of the images. For example, when the pole was located in a wooded

area, the trees cast shadows that obscured the pole and made it difficult to see any anomalies.

- **Pole condition:** Most of the pole was old or damaged, it was difficult to detect anomalies because the pole's normal appearance was already been abnormal.

SCOPE & SOLUTION

MEETING THE BUSINESS REQUIREMENTS

The business value proposition of this anomaly detection system through image analysis in the energy industry is twofold:

- **Safety:** By detecting anomalies early, engineers now can prevent outages and other safety hazards. This saves lives and money.
- **Reliability:** By ensuring that the electric grid is operating properly, anomaly detection is helping enterprises to improve reliability and reduce downtime. This improve customer satisfaction and reduce operational cost.

To address the challenges we opted for the following solutions:

- **Image preprocessing:** This involves using techniques such as image enhancement, occlusion and noise removal to improve the quality of the images.
- **Feature extraction:** This involves identifying features that are indicative of anomalies. These features have then been used to train the machine learning model to detect anomalies.

TECHNOLOGIES LEVERAGED

Tensorflow

Tensorflow had been one of the primary tools we used for model building, deploying and serving.

Learn More

Google Vertex AI

Vertex AI helped us for data cleaning, feature extraction, data augmentation, and model training.

Learn More

Azure Function Apps

Azure Function Apps had been used to ingest data, build push notifications for anomaly detection.

Learn More

Forbes

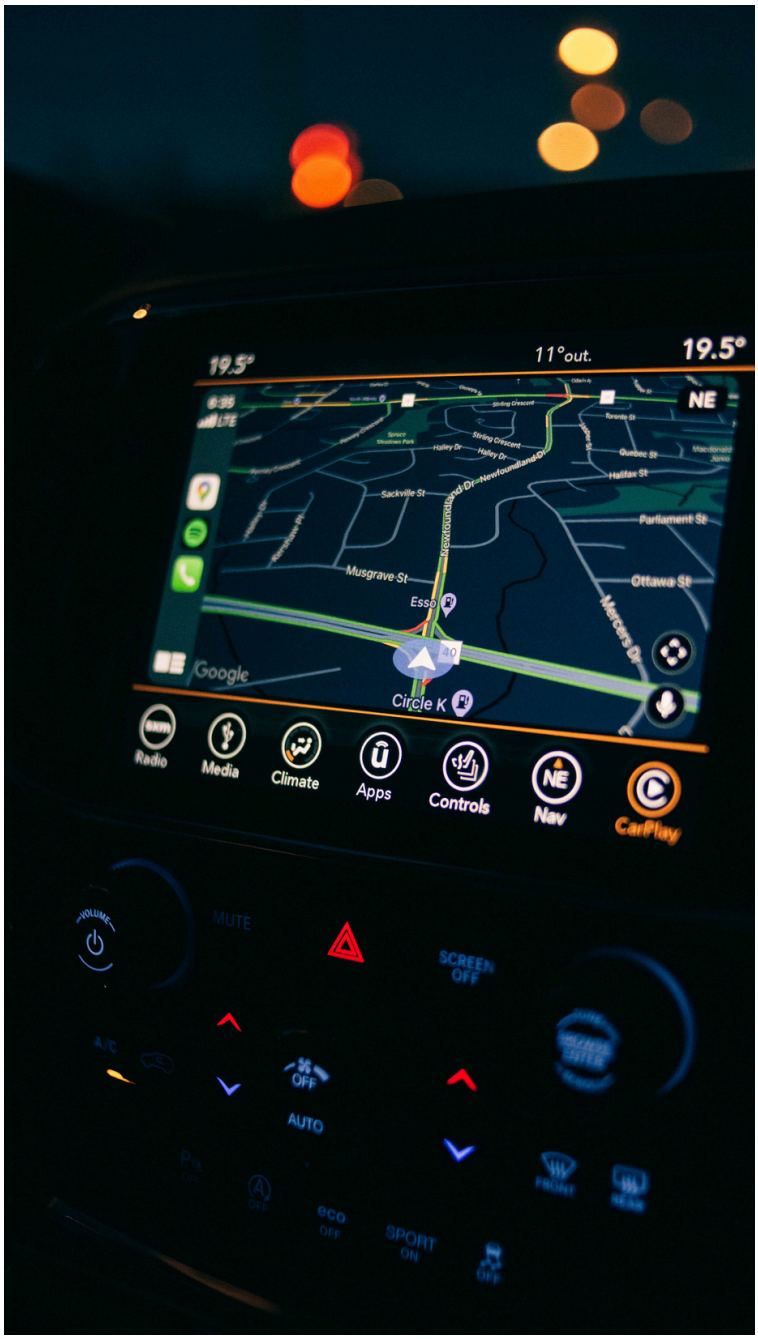
HOW AI-POWERED PREVENTIVE MAINTENANCE SAVES LIVES, TIME AND MONEY FOR THE UTILITY SECTOR

Pharmacy Route Optimization System

Determining the best routes for delivery vehicles based on total miles and time for delivery from N-given addresses.

ROUTE MAPPING SOLUTION TO SAVE TIME AND INCREASE REVENUE

AI-based route mapping solutions offer a number of potential benefits for businesses. However, there are also some challenges that need to be considered before implementing these solutions.



Let's explore the some statistical data to understand the market scenario and it's need:

- The global market for route optimization software is expected to grow at a CAGR of 10.9% from 2020 to 2025, reaching a value of $12.416 billion by 2030.
- A study by the University of California, Berkeley found that route optimization can reduce fuel consumption by up to 20%.
- University of Tennessee found that route optimization can reduce delivery times by up to 15%.

02 PROJECT REFERENCE

CHALLENGES & SOLUTIONS

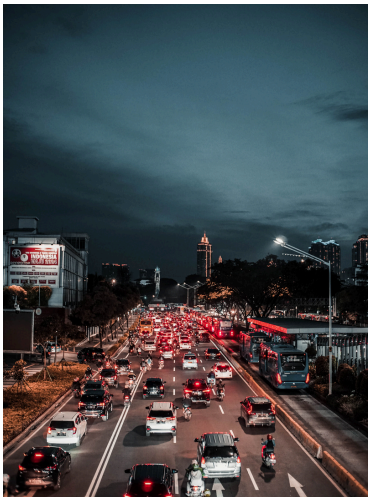
CHALLENGES

VARIOUS HURDLES

Let's divide the challenges into two sections - Industry Level and Technical Level.

Industry Level Challenges:

- **Transportation:** In this industry, route optimization is used to plan the routes of vehicles such as trucks, buses, and cars. The need for real-time data is important in this industry, as traffic conditions can change rapidly.
- **Logistics:** The logistics industry, route optimization is used to plan the routes of shipments such as packages, freight, and food. The need for real-time data is also important in this industry, as customer orders can change frequently.



Technical Level Challenges:

- **The dynamic nature of the environment**

The environment in which the system will be used is constantly changing.

- **The lack of data**

In some cases, there is not enough data available to train the AI model.

SCOPE & SOLUTION

CROSSING THE HURDLES

Solving Industry Level Challenges

- **The need for real-time data:** This can be addressed by using a variety of data sources, such as traffic sensors, weather reports, and customer orders. The system must be able to access and process this data in real time.
- **The need to account for multiple objectives:** This was addressed by multi-objective optimization algorithm. This type of algorithm are used to find a route that optimizes multiple objectives, such as fuel efficiency, delivery time, and customer satisfaction.

Solving Technical Level Challenges

- **Data collection and preparation:** This was addressed by using a variety of data collection methods, such as surveys, GPS tracking, and sensor data. The data was cleaned and prepared before it was used to train the AI model.
- **Model training:** We used Google Maps API and a large dataset of historical data. The model was trained for a long period of time in order to learn how to optimize routes.

TECHNOLOGIES LEVERAGED

django

We choose django to create complex web applications that can handle a large number of requests.

Learn More

Google Maps API

It was used for variety of data sources to calculate routes, including traffic data, and road conditions.

Learn More

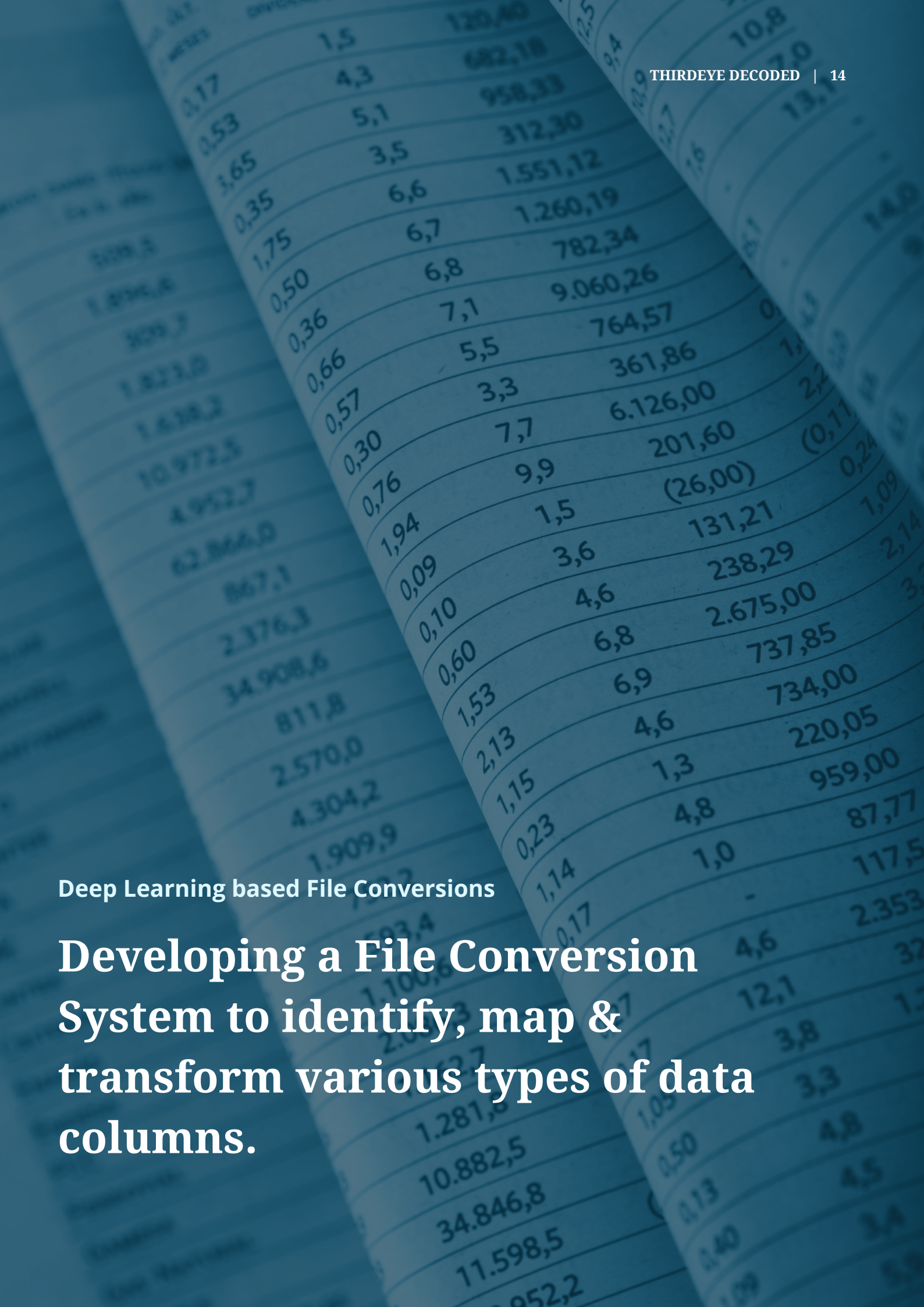
Azure Cloud

Azure Cloud was a good choice to deploy the model in a secure, scalable and flexible environment.

Learn More

In-House

HOW ROUTE MAPPING SOLUTIONS CAN ENHANCE BUSINESS OPERATIONS



Deep Learning based File Conversions

Developing a File Conversion System to identify, map & transform various types of data columns.

USING DEEP LEARNING FOR FILE CONVERSION SYSTEMS

File conversion systems are used to convert data from one file format to another. This can be a valuable tool for organizations that need to move data between different systems or applications. However, traditional file conversion systems can be limited in their ability to handle complex data sets or to ensure accuracy.

A study by Gartner found that deep learning-based file conversion systems can achieve an accuracy of up to 99%. This is significantly higher than the accuracy of traditional file conversion systems, which typically range from 80% to 90%.

Another study by Forrester found that deep learning-based file conversion systems can reduce the time it takes to convert data by up to 50%. This is because DL models can learn to identify and map data columns automatically, which eliminates the need for manual intervention.

CHALLENGES & SOLUTIONS

CHALLENGES

LOCK AND KEY

Gartner identifies four key challenges of file conversion systems:

- Data quality: File conversion systems can introduce errors into data if they are not properly configured.
- File format compatibility: Not all file conversion systems support all file formats.
- Performance: File conversion systems can be slow, especially when converting large files.
- Cost: File conversion systems can be expensive, especially for enterprise-level deployments.

We faced some additional challenges while developing deep learning based file conversion systems:

- Data availability: It was difficult to obtain the data necessary to train deep learning models. This is because some was confidential and subject to privacy regulations.
- Model accuracy: Deep learning models can be very accurate, but they can also be sensitive to noise and outliers in the data.

SCOPE & SOLUTION

LEVERAGING DEEP LEARNING EXPERTISE

We developed a Deep Learning based File Conversion System that leverages Deep Learning techniques to identify, map & transform various types of data columns.

The Models had have the ability to standardize various data fields into company's standard format for further downstream consumption. The solution included the followings:

- Training Data and Feature Selection
- Model Training, Testing and Retraining
- Validating Outcomes

There are various deep learning techniques that can be used for file conversion systems:

- Convolutional neural networks (CNNs)
- Recurrent neural networks (RNNs):
- Autoencoders:

The specific technique that is used will depend on the specific application. For example, our goal was to convert text from one format to another, so we used RNN techniques.

We choose the Autoencoders techniques too as there was a specific need to compress the data for smooth operation.

TECHNOLOGIES LEVERAGED

Tensorflow

We used TensorFlow API to create and execute data flow graphs, to export models to a variety of formats.

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Python

Python was the programming language to develop data processing applications.

Learn More

COLUMN TYPE IDENTIFICATION, MAPPING & TRANSFORMATION USING DEEP LEARNING

MySQL

It was used as open-source relational database management system (RDBMS).

Learn More

It's important to use generative AI responsibly and ethically. We need to be aware of the potential risks associated with this technology.

Andre Ng, the Founder & CEO of Landing AI, has recently stated that Generative AI is one of the most exciting and promising areas of AI research today. It has the potential to revolutionize the way we create content, interact with the world around us, and even solve some of the world's most pressing problems. We need to be aware of the potential risks associated with this technology, such as bias and discrimination.

EXPERT COMMENTS ON GENERATIVE AI

"Generative AI is a powerful tool that can be used for good or evil. It's important to use this technology responsibly and ethically. We need to be aware of the potential risks associated with generative AI, such as the creation of deepfakes and other forms of harmful content. We also need to ensure that generative AI is used in a way that respects human rights and values."

Michael Chui,
MD, McKinsey & Company

EXPERT TIPS

AT A GLANCE

AI THAT WORKS FOR YOU

01

AI Adoption is Increasing Rapidly

According to a recent report by McKinsey & Company, the number of AI-adopting organizations reaching 75% by 2025.

02

The Benefits of AI Automation are Significant

AI automation can free up human workers to focus on more strategic and creative work. A recent study found that AI automation could potentially add $13 trillion to the global economy by 2030.

03

There are Challenges to Generative AI

GAI has the potential to revolutionize the way we create and consume content. But we need to ensure that generative AI models are fair and unbiased.

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RECENTLY MENTIONED ON

UTILITY DIVE

DATAVERSITY

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