APGCE Asia Petroleum Geoscience Conference & Exhibition
"Asia's Premier Geoscience Event"

PETRONAS

GEOHACKATHON 2024

16 – 18 November 2024

Common Ground Bukit Bintang, Kuala Lumpur

TEAM MEMBERS :

A'LI NAUFAL BIN ALLIAS

MOHAMAD AIDIL IMRAN BIN LAPIRIN

AHMAD NUR IKHWAN BIN HAMID

DZUL DANISH AR-RAHMAN BIN KHAIRULASWARI

MUHAMMAD AL-AMIN BIN MOHD MARZUKI

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The Team

A'li

BACHELOR OF SCIENCE (MARINE GEOSCIENCE) WITH HONOR

UNIVERSITI MALAYSIA TERENGGANU UMT

Aidil

BACHELOR OF SCIENCE (MARINE GEOSCIENCE) WITH HONOR

UNIVERSITI MALAYSIA TERENGGANU UMT

Ikhwan

BACHELOR OF COMPUTER SCIENCE

MMU MULTIMEDIA UNIVERSITY

Amin

BACHELOR OF COMPUTER SCIENCE

MMU MULTIMEDIA UNIVERSITY

Dzul

BACHELOR IN INFORMATION TECHNOLOGY

UNIKL UNIVERSITI KUALA LUMPUR

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2024 EOHACKATHON

HORIZON PROPAGATION MODELLING TO INTERPRET SEISMIC DATA

INTRODUCTION

- Interpreting seismic images to identify geological horizons and faults is a time-intensive task that requires expertise and precision.
- Our aim is to create an optimum model for identifying features from the seismic data
- Method used was haugh transform, and coupled with image and video play
- Segmentation also used to aid in highlighting areas with noise for better classification
- We found out new areas with hydrocarbon potential

PROJECT OVERVIEW

Our project focuses on developing a computer vision model designed to automatically analyze seismic data and highlight critical geological features, such as horizons and potential fault lines.

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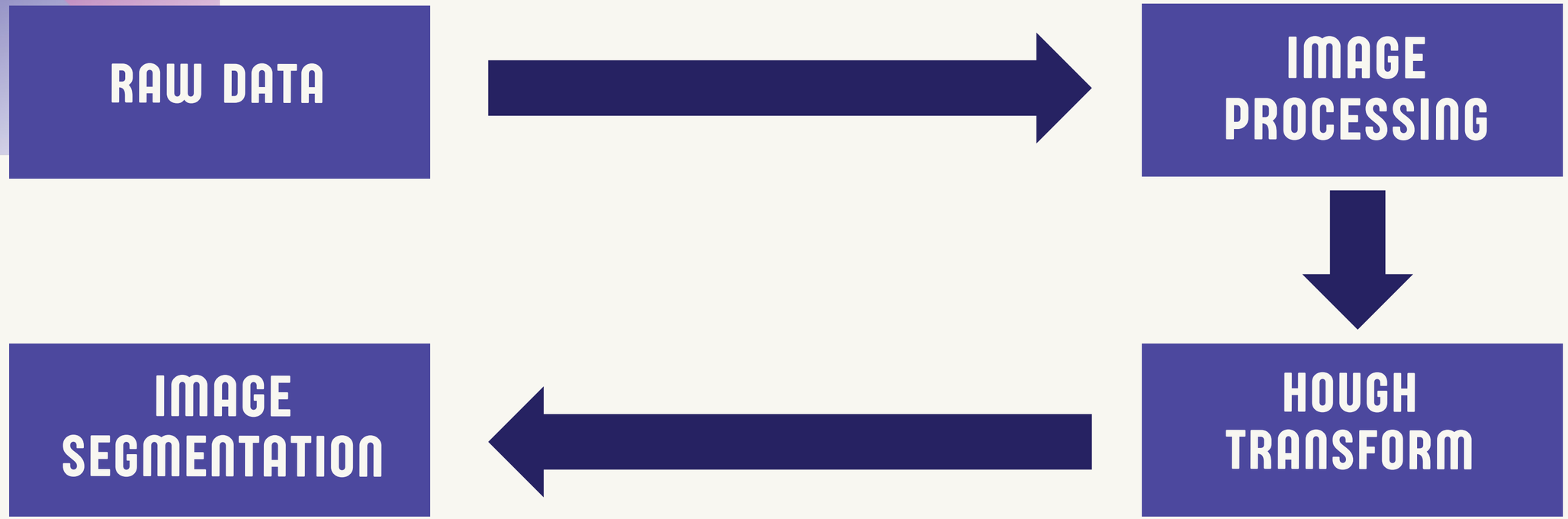
WHAT DO WE EXPECT FROM THIS MODEL?

- The model will output seismic images with key features, such as horizons, clearly marked for easier analysis.
- Time spent interpreting seismic data will be significantly reduced.
- Geoscientists can focus on strategic decision-making instead of routine interpretations.
- The tool is designed to handle a wide range of seismic datasets, including noisy or incomplete data.

METHODOLOGY



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RESULT

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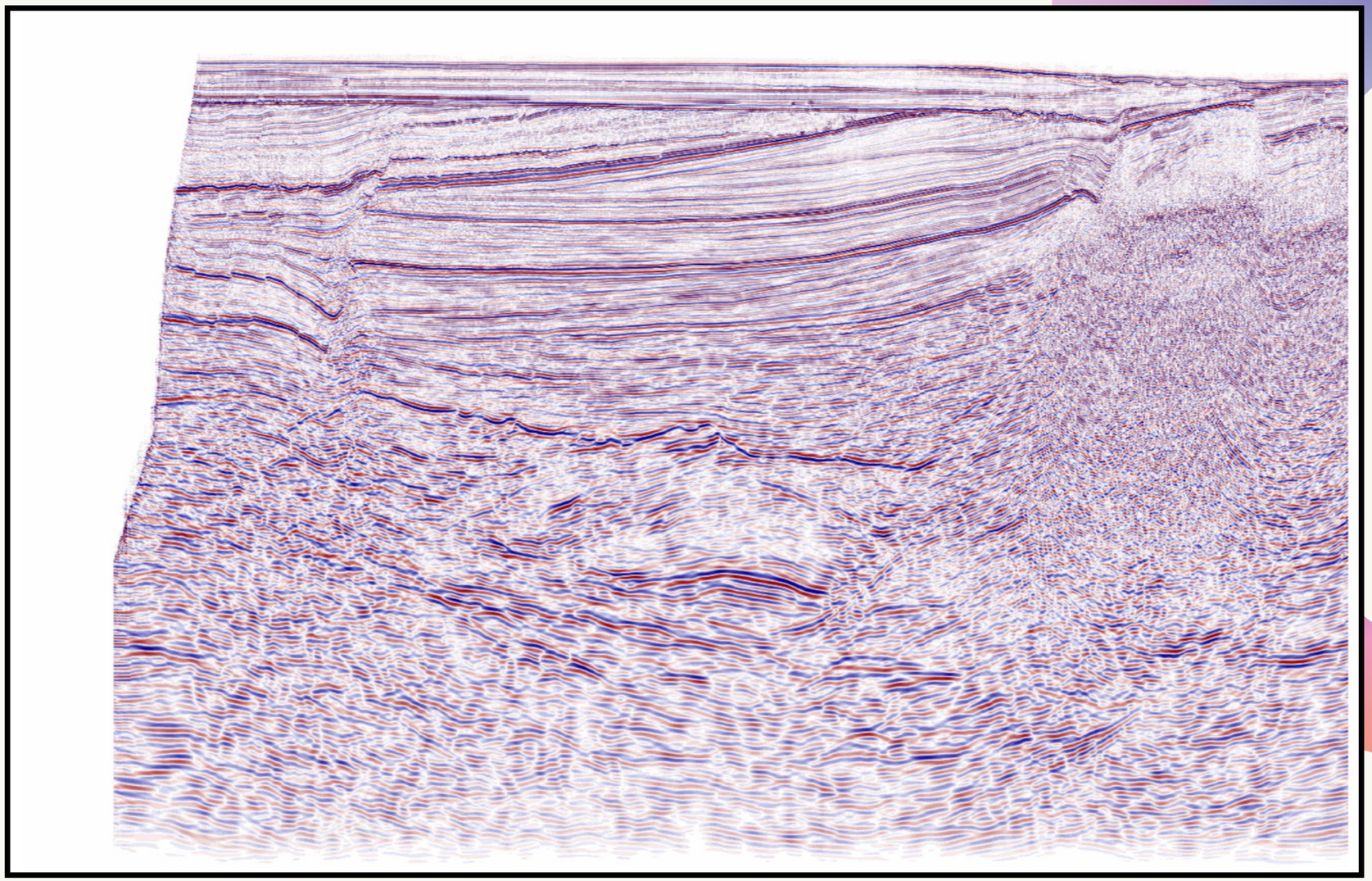
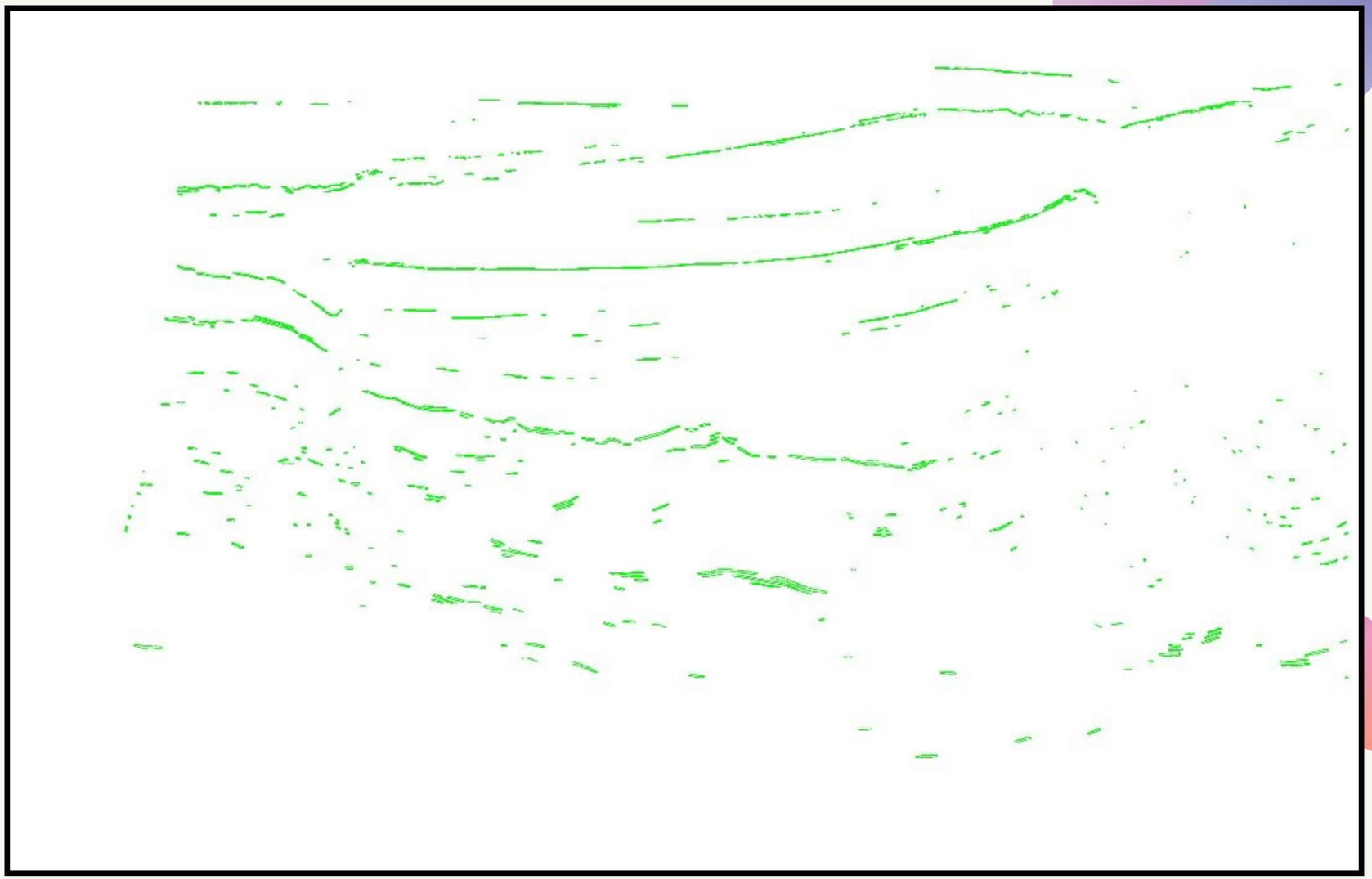
The original seismic image



RESULT

Potential Horizon line after the image processing and Hough Transform



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RESULT

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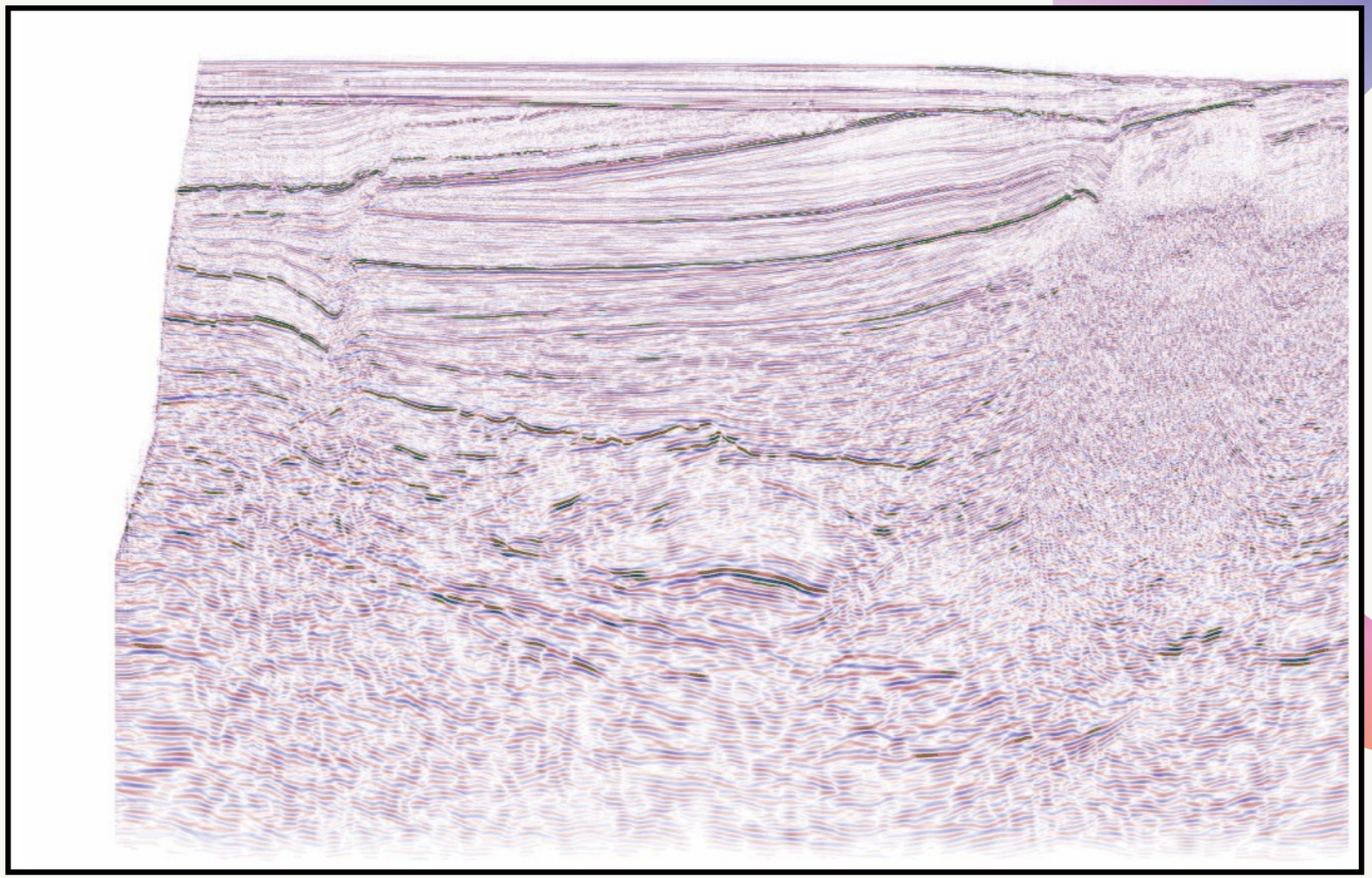
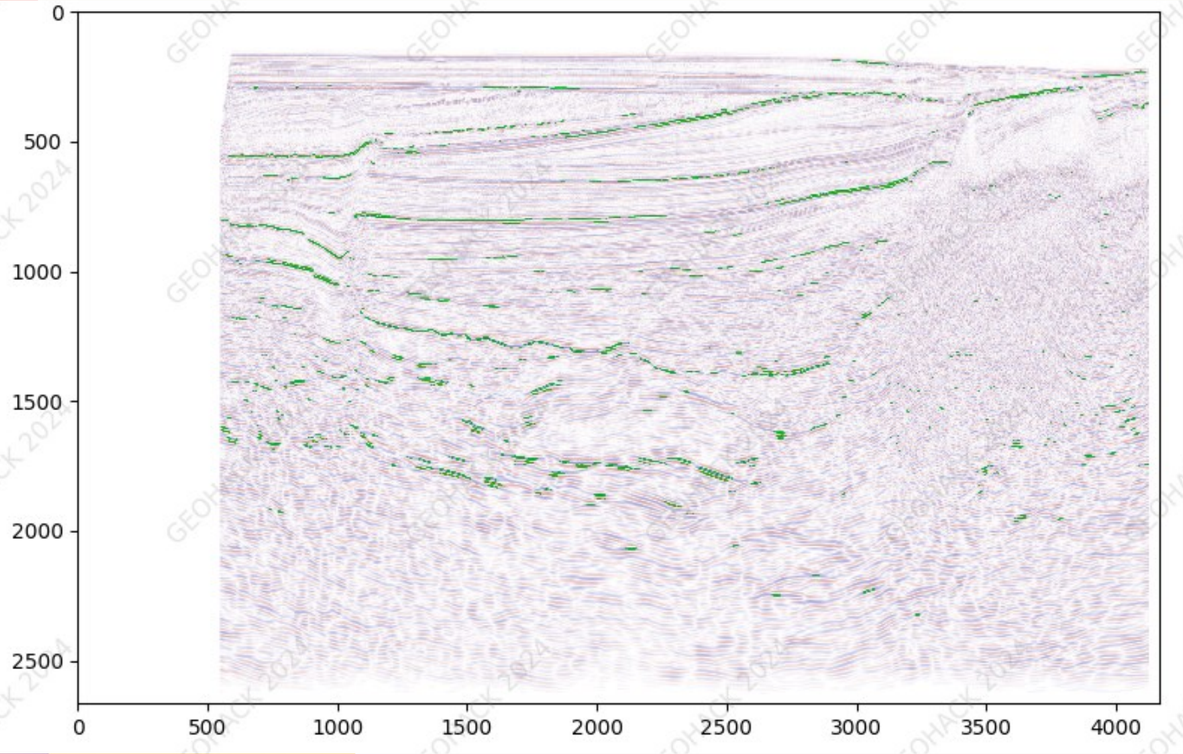
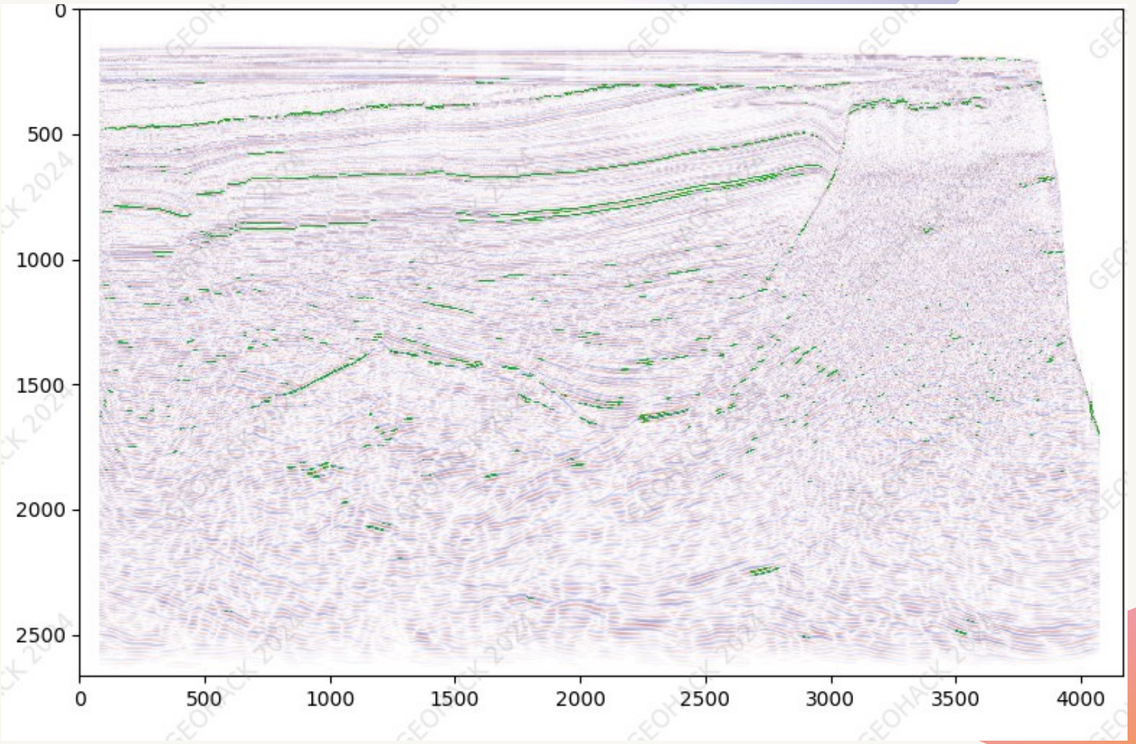
Final overlaid image

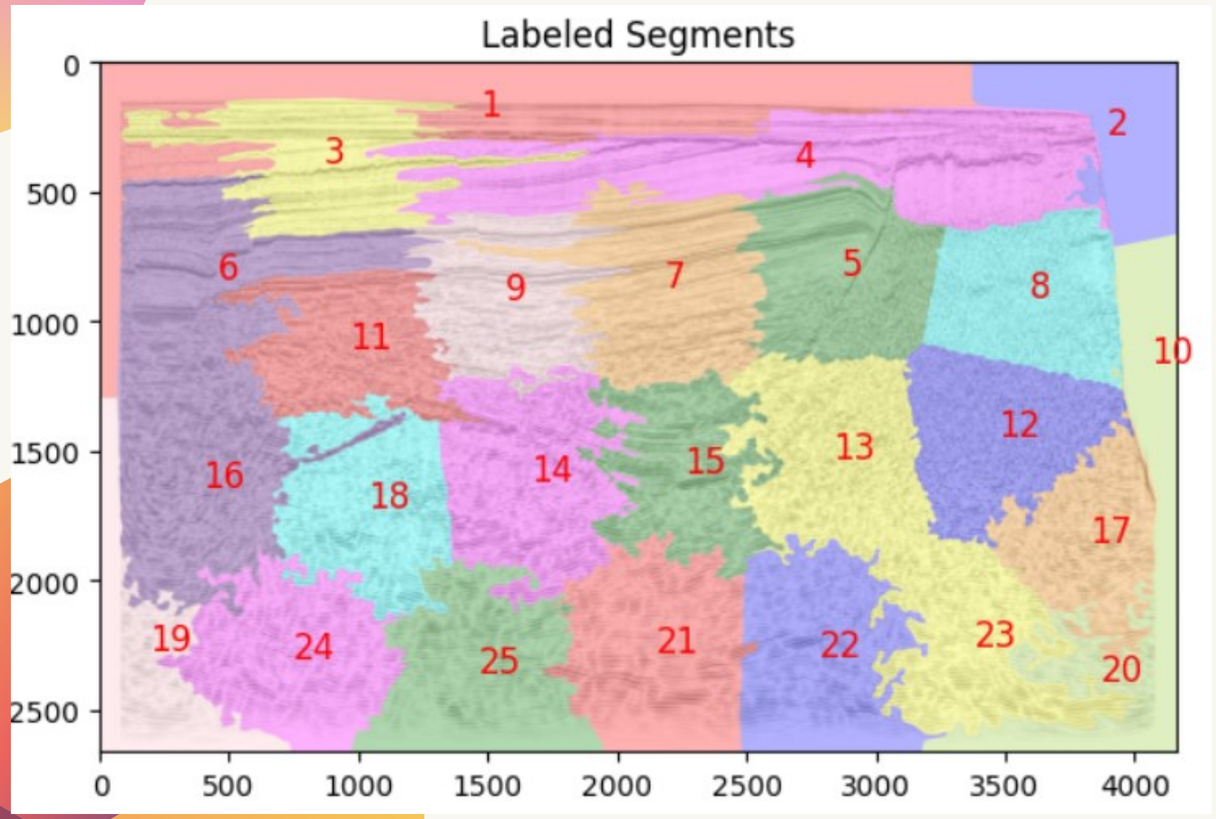


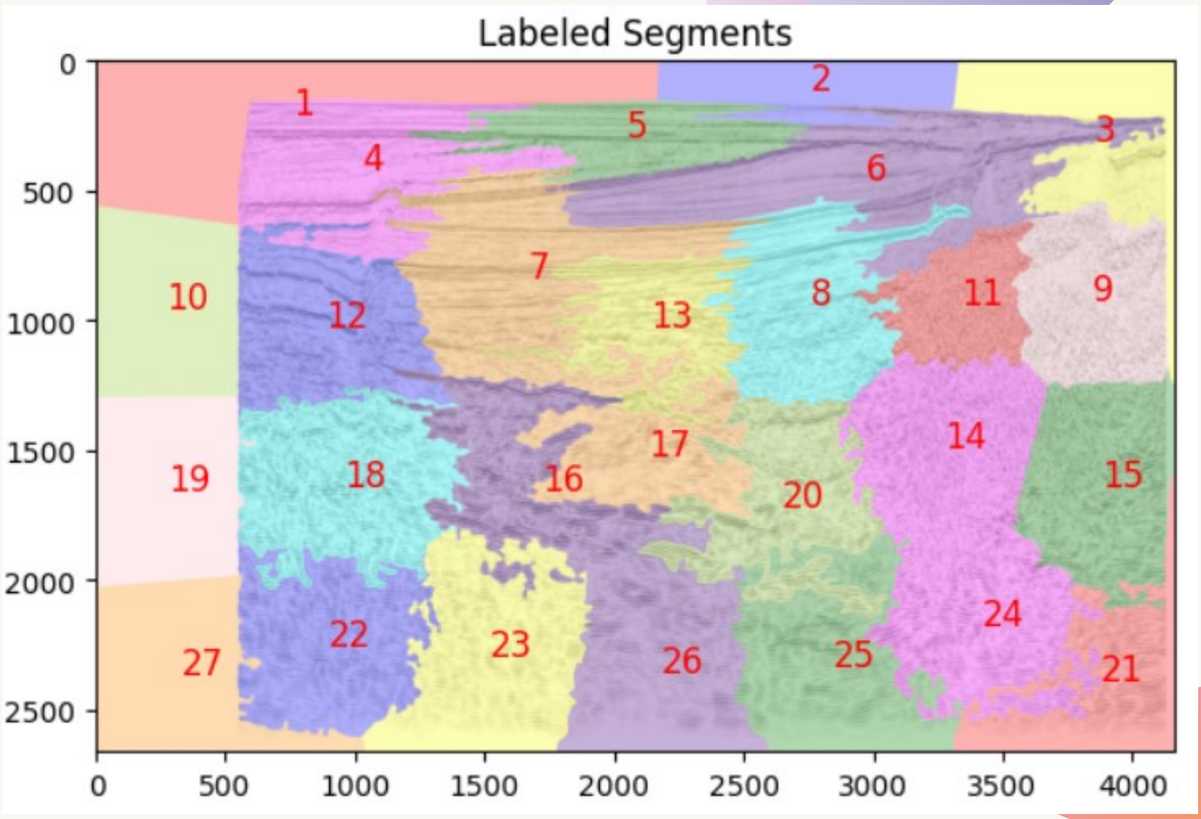
VISUALIZATION OF RESULTS ON HOLDOUT DATA (Image Play+Hough Transform)





VISUALIZATION OF RESULTS ON HOLDOUT DATA (Segmentation)





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GEOLOGICAL PLAUSABILITY

- The model will output seismic images with key features, such as horizons, clearly marked for easier analysis.
- Interpretation and descision making will be faster.
- The tool is designed to handle a wide range of seismic datasets, including noisy or incomplete data.

- The data will show us that there are 3 obvious horizons, and several not obvious horizon.
- which might indicate the potential reservoir for hydrocarbon because they might be small fault

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Conclusions

A presentation is a formal or informal communication method that involves conveying information, ideas, or a message to an audience. It often employs visual aids such as slides, charts, graphs, or multimedia elements to support and enhance the spoken content.

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Thank you