





16 - 18 November 2024

Common Ground Bukit Bintang, Kuala Lumpur

### Challenge 2



Bunga Raya # 5

Saiful | Jay | Thong | Karthi | Kaijie

**Sponsored by:** 







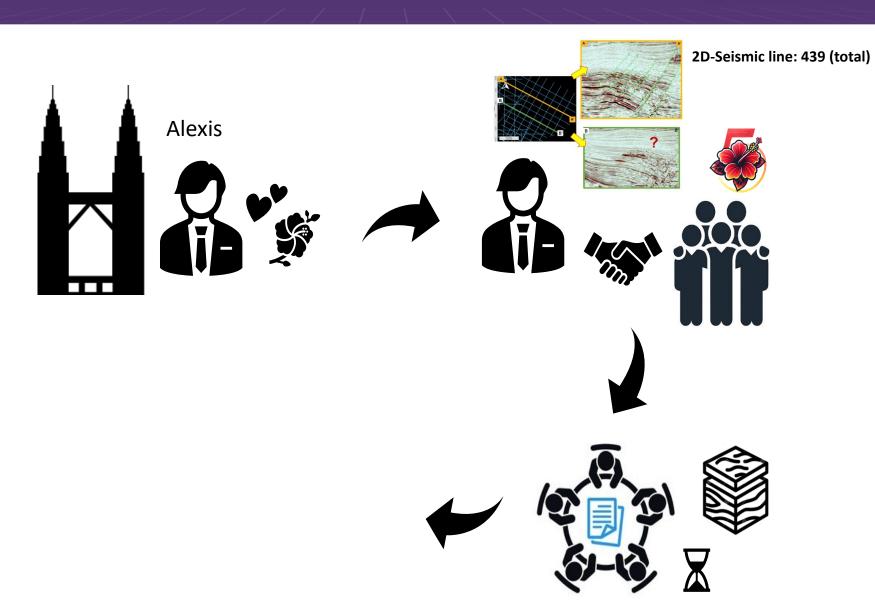






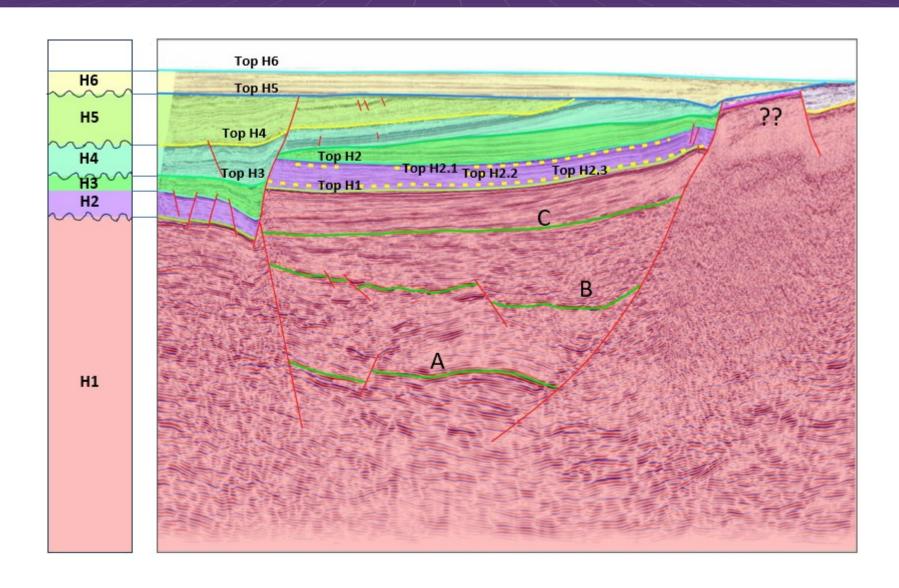
### The Story of....





### **Geology Overview**







Methodology **Annotating** Data pre-processing data Load and pre-Data is labelled process the for machine seismic PNG learning images

Data augmentation

Model selection, loss function & metrics

**Model training** 

Model

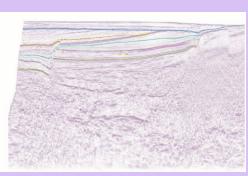
Enhance the training dataset to improve model generalization

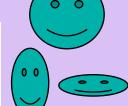
Model choice made based on...

Split 60:30:10

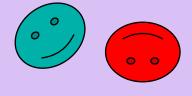
Evaluate the model's performance on a test set

Convert the trained model for deployment





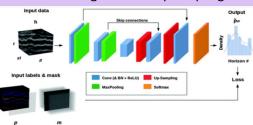






19 total layers:

9 convergence vs 9 upsampling



Main reference: Extracting horizon surfaces from 3D seismic data using deep learning | **GEOPHYSICS** 



Expertise evaluation



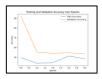
Publish trained model for deployment in other seismic inlines/crosslines

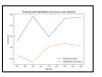
- **SimpleCNN**
- DeepUNetCustom
- o Adam
- SGD
- Manual gridsearch
- Accuracy suffers, huge penalty on false positive

### Results



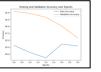
### **115 Different Models**



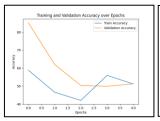


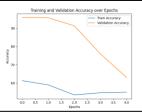


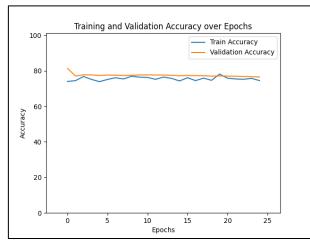




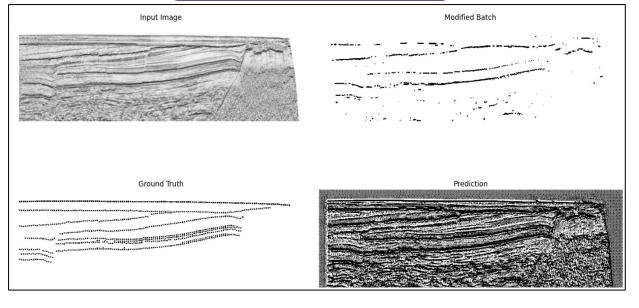






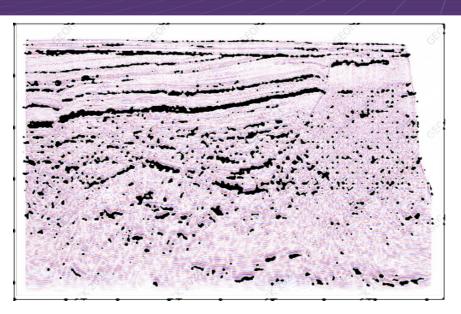


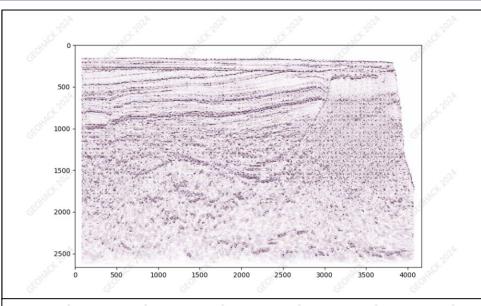
## Sample Results (from one of our models)

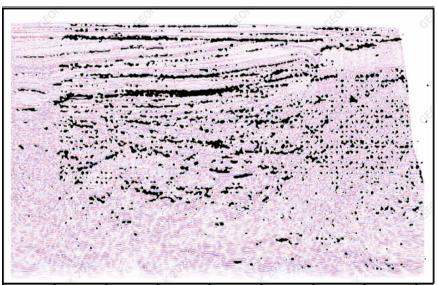


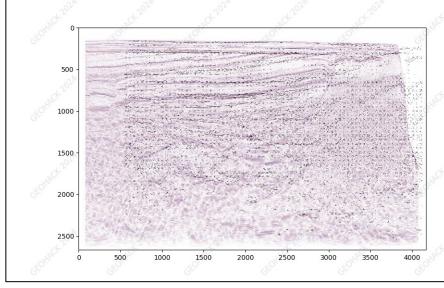
### **Surprise! Additional data?! (Holdout)**





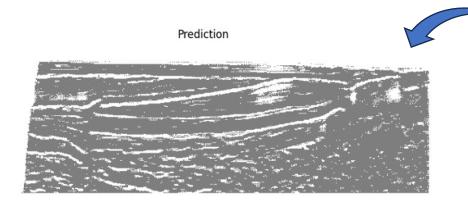




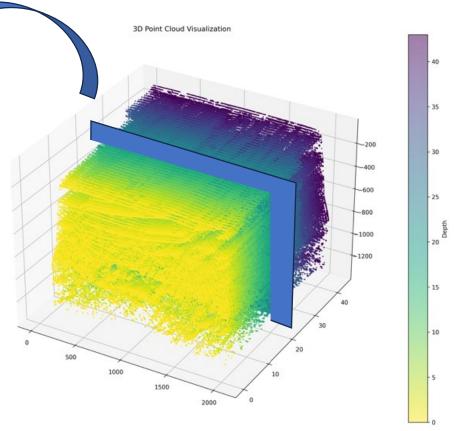


# Value Driven Integration of Technology & Domain



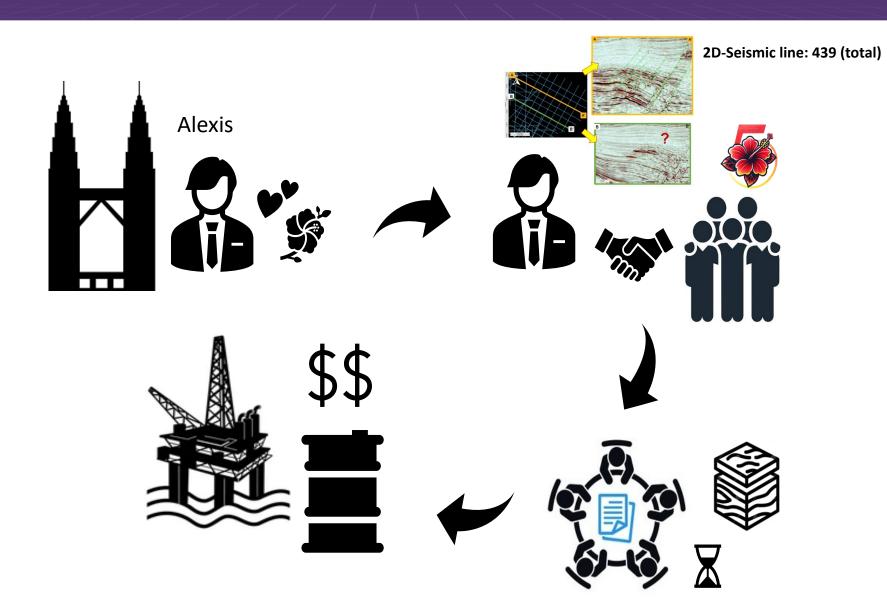


- Full culmination of our relentless pursuit into a valuable 3D model:
  - Structure
  - Seal
  - Trap
  - Gross Volumetrics
  - STOIIP
  - Economics



### The Story of....







# Thank you!