Use-cases in AI

CURRENT INNOTOMY RESEARCH AREAS

1. Deep learning framework for nucleus detection in divergent medical images of cytoplasm and segmentation of those nuclei
2. Deep learning architecture for handling cardiovascular data for
   a. Classification of ventricular and fibrilation (VT/VF) arrythmias
   b. Myocardial infarction classification
3. Deep X-ray – A deep learning platform for handling X-rays
   a. Bone age estimation from hand X-rays when the chronological age is either not verifiable or disputed
   b. Detection of clinically important conditions in chest X-rays (e.g. common thorax diseases such as Edema, Hernia, Fibrilation, Nodule, Pneumonia and their localization)
4. Type 2 Diabetes genomics – finding deep learning based personalized genome based drug discovery
5. Deep Cancer – A deep learning framework for
   a. Analysis of ECG data for heart rate variability
   b. Comparison of genomic information from tumours and normal cells of same patient
   c. Identification of Molecular basis of clinical phenotypes
   d. Consolidation of past EHS data for prediction of next visit based on medication and patient response

MACHINE LEARNING / DEEP LEARNING USE-CASES

Listed below are some of the projects on which some work has been carried out at Innotomy. The typical work flow involves EDA, data cleaning, choosing alternative deep learning models and compare their performance.

HELLO-WORLD
1. Titanic – Machine learning from disaster
2. Dogs vs. cats
3. Digit recognizer
4. Rossmann store sales
5. Movie review sentiment analysis
6. Integer sequence learning
7. Traffic sign recognition
8. Dog breed classification

FINTECH
9. Home credit default risk
10. Credit card fraud detection
11. BNP Paribas cardif claim management
12. Prudential life insurance assessment
13. Mercari price suggestion challenge
14. New York city taxi fare prediction
15. Two Sigma: Use news analytics to predict stock price performance
16. House prices: Advanced regression techniques

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MACHINE LEARNING / DEEP LEARNING USE-CASES

REMOTE SENSING
17. DSTL satellite imagery feature detection
18. Planet: Understanding the Amazon from space
19. Statoil Iceberg classifier challenge
20. Airbus ship detection challenge
21. TGS salt identification
22. Forest cover type prediction
23. How much did it rain
24. Plant seedlings classification
25. LANL earthquake prediction
26. NOAA fishseries Steller sea lion population count

HEALTHCARE
27. West Nile virus detection
28. 2016 Data Science Bowl – Transforming how we diagnose heart diseases
29. 2017 Data Science Bowl – Lung cancer detection
30. 2018 Data Science Bowl – Nuclei detection in divergent cell images
31. RSNA Pneumonia detection challenge
32. Bone age estimation
33. Human protein atlas image classification
34. Diabetic retinopathy detection
35. Malaria detection
36. Genomic visualization
37. Skin lesion analyzer
38. Cervical cancer screening
39. Ultrasound nerve segmentation

PHYSICS
40. TrackML particle tracking challenge
41. Higgs Boson machine learning challenge

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