

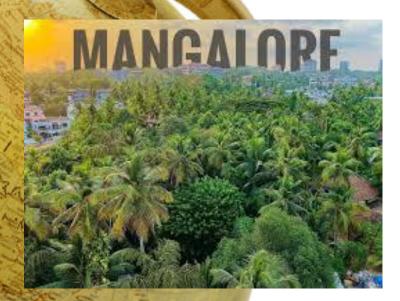
Dr. Machine Learning







Towards Mangalore...









St Aloysius Deemed to be University



St Aloysius College, Chapel



High School Block



St Aloysius Deemed to be University









Clinical Machine Learning

Dr. S Ruban

Associate Professor & HOD St Aloysius Deemed to be University







Public/Private Hospitals / Labs

Insurance companies

Pharma Companies

Technology providers

Healthcare Ecosystem

Patients

e-Health / Telemedicine / m-Health

Government / regulators / policy makers

Investors / Charities / Universities

Is it different?.....

- ✓ Life or death decisions
- ✓ Need robust algorithms
- ✓ Heterogeneity of data
- ✓ Lack of qualified resources
- ✓ Transparency and Accountability

For Reading: https://www.nature.com/articles/s41591-021-01614-0

Machine Learning in Medicine



VARIOUS TYPES OF HEALTHCARE DATA

S. No	Types of Data	Healthcare Data	Pre processing Steps to use Deep Learning	DL based Healthcare Applications					
1	Numerical	Blood reports	Normalization of the data	Classification of normal/abnormal					
2	Categorical	Medical test results	Encoding	Classification of normal/abnormal					
3	Text	Medical reports	Word2Vec, TF/IDF, ELMO kind of word embeddings	Automatic Report generation, Summarizing medical report					
4	Image	X-ray	Image Normalization,	Classification, Segmentation					
5	Video	CT, MRI, Ultrasound output	Slices/frames, image level preprocessing	Classification, Segmentation and object detection					
6	Speech	Doctors and technicians discussions and instructions	Speech to text conversion	Capturing speech and generate report					
7	Signals	ECG, EMG signals	Signals to vectors conversion	Classification of normal/abnormal					







Moving Ahead

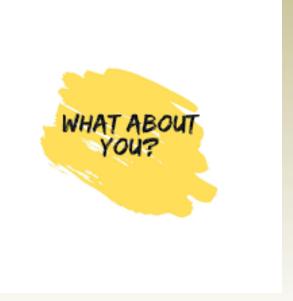






Case Study 1: Immunization Tracker (1/2)





Identifying children who will default from vaccine

Vaccine Recommendation in Japan

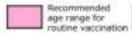
WHO recommendation for delayed vaccine

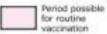
Case Study 1: Immunization Tracker (2/2)

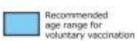
Vaccination Schedule Recommended by the Japan Pediatric Society October 1, 2020 Japan Pediatric Society

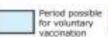


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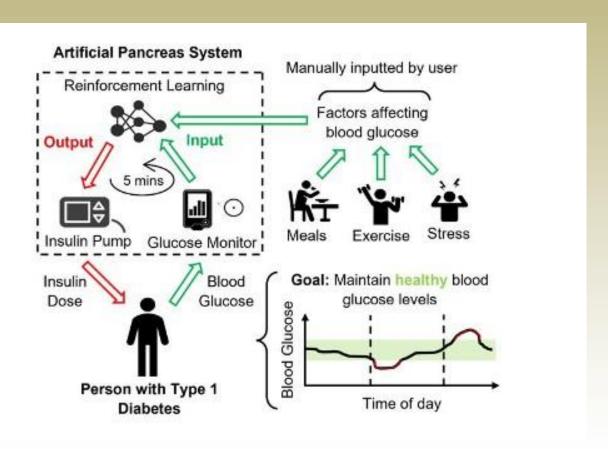








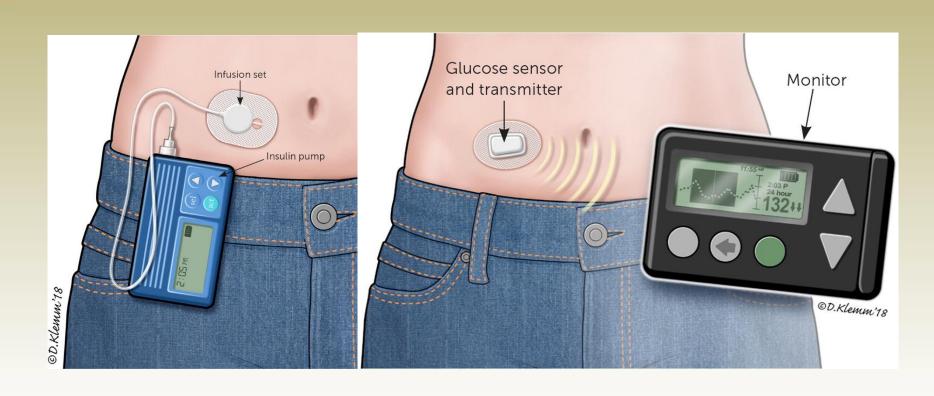
Case Study 2: Type 1 Diabetics Management (1/4)



Machine Learning in Diabetes Care

Prediction for those having Type 1 Diabetes

Case Study 2: Type 1 Diabetics Management (2/4)



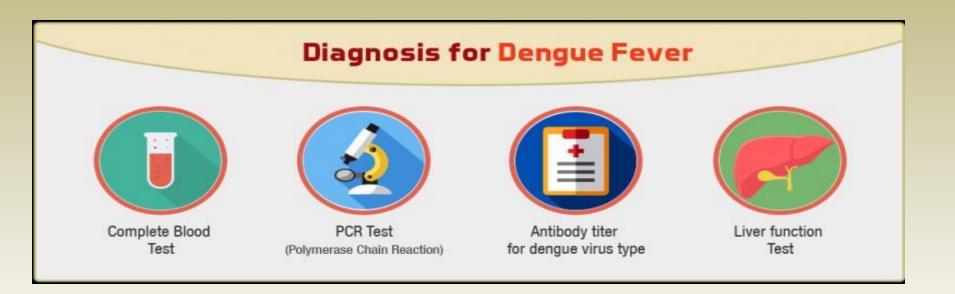
Case Study 2: Type 1 Diabetics Management (3/4)



Case Study 2: Type 1 Diabetics Management (4/4)



Case Study 3: Noninvasive Dengue Fever detection (1/3)



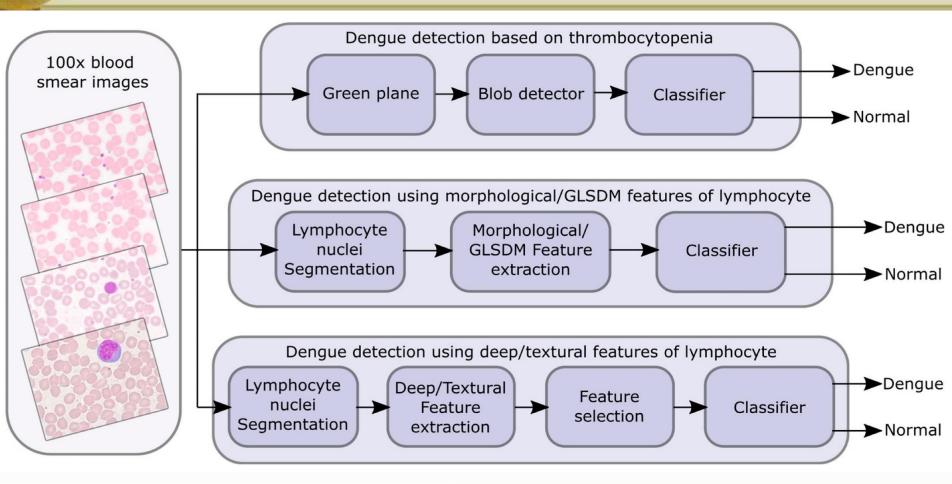
Platelet prediction in Dengue patients

Dengue Detection using Ensemble algorithms





Impact of Technology (2/3)





Impact of Technology (3/3)

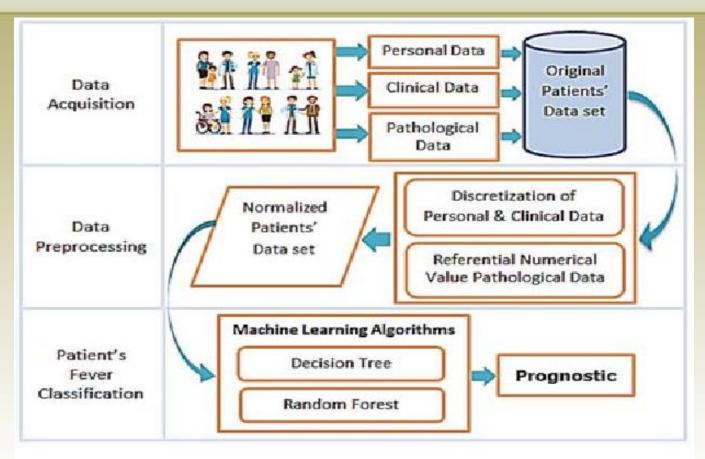


Fig. 1. Flow chart of dengue prediction Model





Case Study 4: Poly Pharmacy (1/3)



Exploring Polypharmacy
poly pharmacy in saudi Arabia





Case Study 4: Poly Pharmacy (2/3)

Challenges of precision medicine in polypharmacy

Ageing



Interactions



Limited evidence



Current approach to precision medicine in polypharmacy

Decision support tools



Prediction of drug interactions



Novel approach to precision medicine in polypharmacy

- 1. Screening
- testing
- 2. Pharmacogenomic 3. Review & Recommendation
- 4. Implement
- 5. Quality evaluation



















Case Study 4: Poly Pharmacy (3/3)

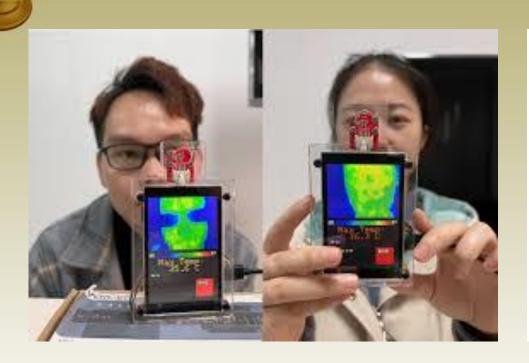
7 STEPS TO APPROPRIATE POLYPHARMACY



Case Study 5: Thermal Imaging to identify Snakebite (1/2)



Case Study 5: Thermal Imaging to identify Snakebite (2/2)





Snake bite
Venomous Animal Bites





Let's Discuss.....







What Next

School of Information Science & Technology

ORGANIZES



International Conference on Intelligent Systems for Healthcare and Agriculture (ISHA-2024)

In Association with



Conference Date: 20-03-2025 & 21-03-2025





For more information: Dr. S.Ruban

