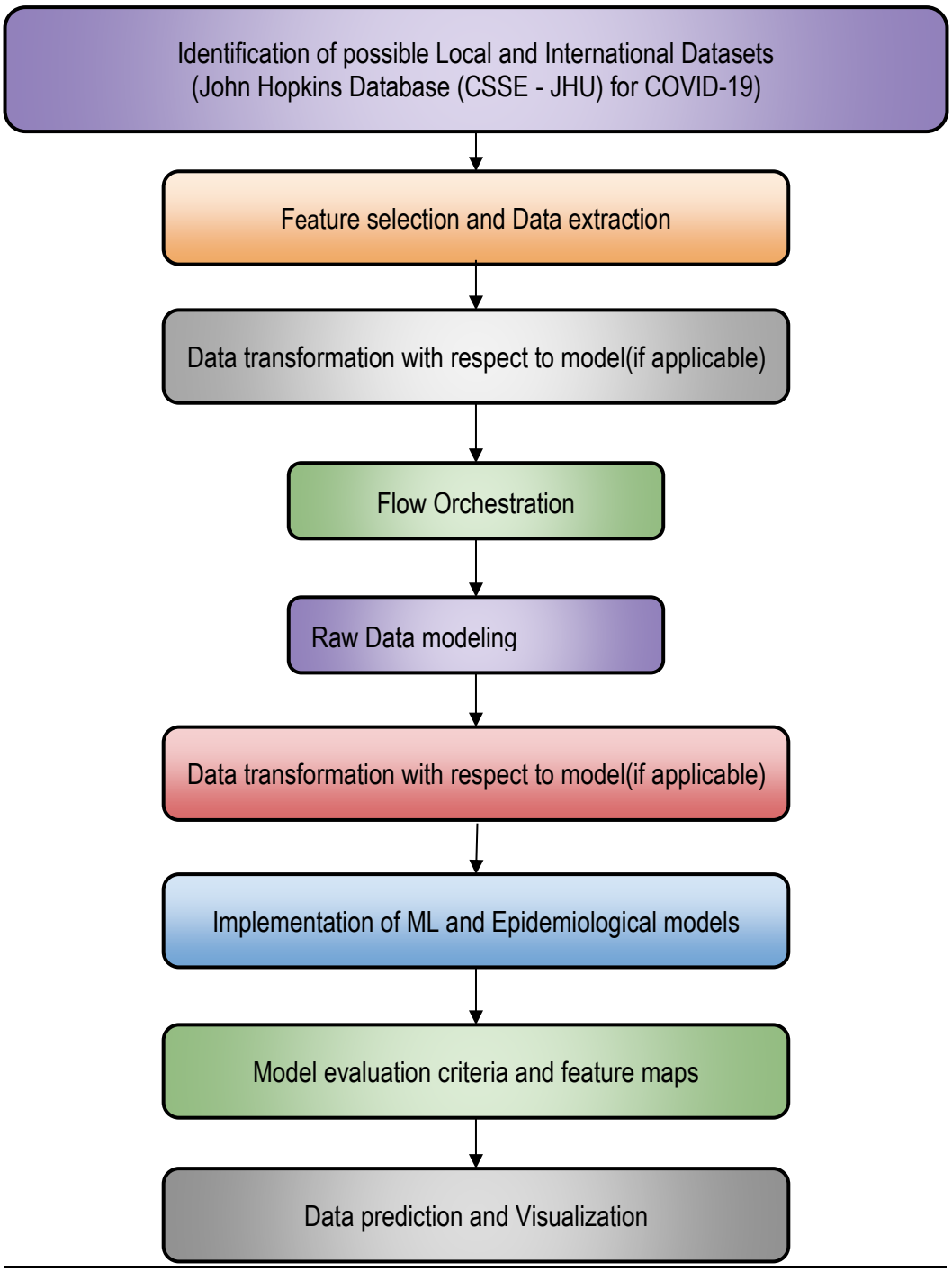
Datathon 2020
Team 4X - Submission for Initial Round (DA2023)

High Level Design of the System



Model Evaluation

Model	Discussion
Cumulative Average	Statistically calculates R(t) for a defined time period and then assumes for being constant at that period. Used for basic statistical prediction and modelling
Prophet	Used as a statistical prediction approach. Worked considerately with rapid peaks of data
ARIMA	Used as a statistical prediction approach. The response for peaks are over-responsive
SEIR with extended parameters	Epidemiological ML model with extended features for mild, critical and fatal conditions. The response for epidemiological flattening was better, but did not considerably response for rapid peaks
Neural Network	It seems of a overfitting
LGBM Regression	A regression approach, the prediction output parameters were well but the insufficient input parameters must have to be considered
XGB Regression	A regression approach, the prediction output parameters were well, lining with the divisional approach

Links for the Google Colaboratory notebooks (which are with code bases and visualizations)

- Prediction with SEIR (Extended Parameters) For Sri Lanka - https://colab.research.google.com/drive/16ln_ngfMV3R_8RPT1r4aMKldeGYvgIwp?usp=sharing#scrollTo=Bwm1HIvy0SRh
- Prediction with SEIR (Extended Parameters) For Sri Lanka - https://colab.research.google.com/drive/1gK5ULJqjnmdx5-hiMH3oalxTcLaXbM9v?usp=sharing
- Statistical Models, LGBM and XGB - https://colab.research.google.com/drive/1hBkOGAqu8oAgULh5j_CpW6kpywX_kZ86?usp=sharing
- EDA Data Transformation & Forcasting Using Prophet - https://colab.research.google.com/drive/1miKsP5RBFCzidYrSxw-RXpjKPFPWV8sP?usp=sharing
- SIR for R0 calculation - https://colab.research.google.com/drive/1JxO_6EfdCmMmcLolNsYA3Hl3Xr4B6jll?usp=sharing
- Prediction Using a Neural Network - https://colab.research.google.com/drive/1eI4TaywIb0nFKQ1jG9W8lrGao4MwTkXQ?usp=sharing
- Interfaces For Visualizations - https://colab.research.google.com/drive/1N5GPwx5pEkRqcgWikOPDZThEvypmFsFq?usp=sharing