

COVID-19: MACHINE LEARNING ANALYSIS

“How Air Traffic Affected the Spread of Covid-19”

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Motivation

The Belief

“Covid-19 wouldn’t have become a pandemic if not for air travel.”

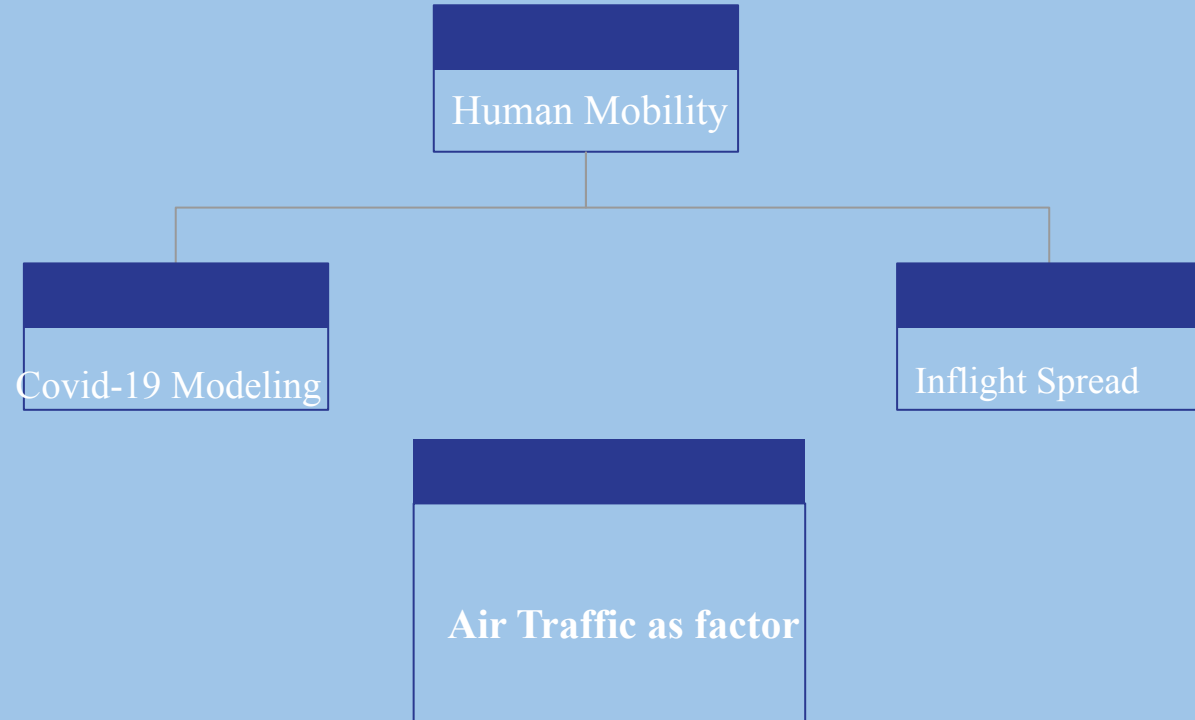
The Context

“How Covid affected the Air Traffic”

The Problem

Relevant Papers focused on Statistical Analysis

Literature



Methodology

Approach 1

Comparison

Examining countries with more arriving international travellers VS with less

Approach 2

Phases and Variants

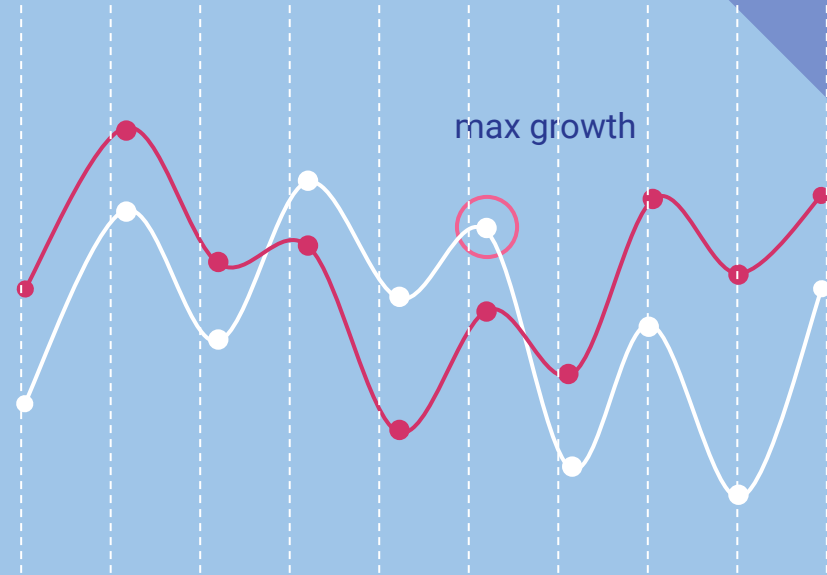
- Analysis of all the 3 Phases
- Investigate Alpha & Delta Variants spread

Approach 3

Algorithms and Techniques

Statistical techniques VS Machine Learning (Facebook's Prophet Algorithm and Neural Network)

Implementation



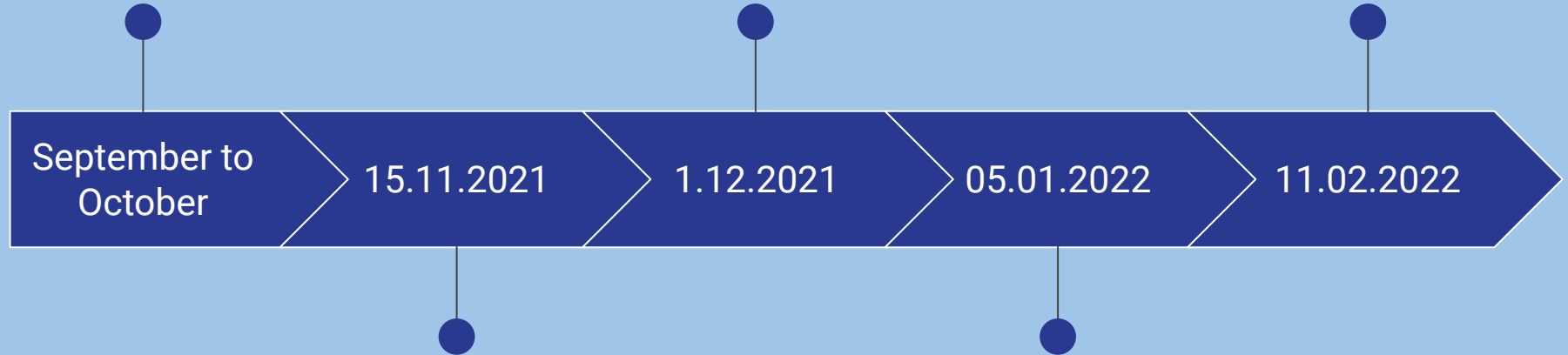
Prophet Algorithm

- Prophet time series = Trend + Seasonality + Holiday + error
- Advantages: Accommodates seasonality with multiple periods. Prophet is resilient to missing values. Fitting of the model is fast. Intuitive hyper parameters which are easy to —tune

Reading papers &
Sense Making

Initial work on Neural
Network

Final Presentation



Prophet Algorithm
completion

Second Run on Neural
Network: Featuring
Engg and Tuning

References

Human Mobility Papers:

https://www.researchgate.net/publication/333136406_Urban_Human_Mobility_Data-Driven_Modeling_and_Prediction

https://www.researchgate.net/figure/An-overview-of-data-driven-modeling-and-prediction-for-human-mobility_fig1_333136406

<https://ieeexplore.ieee.org/document/709453>

COvid measure dataset:

<https://www.kaggle.com/paultimothymooney/covid19-containment-and-mitigation-measures>

Air traffic dataset:

<https://zenodo.org/record/4670228#.YVQQ7UZBz0q>

Covid-19 dataset:

<https://raw.githubusercontent.com/datasets/covid-19/master/data/time-series-19-covid-combined.csv>

https://facebook.github.io/prophet/docs/quick_start.html

<https://europepmc.org/article/pmc/pmc7833922> **“The influence of passenger air traffic on the spread of COVID-19 in the world.”**

www.teenvogue.com

https://www.123rf.com/photo_38313435_picture-of-world-map-with-flying-planes-on-it.html



THANKS !

Questions?