

## Case Study

# Using machine learning to classify passengers into regions

Laying the foundations for region-based targeting in airports

- Avtar Singh



## Introduction

Enterprises across industries are going digital. In essence, digital is the ability of a company to adopt new computing and data technologies to improve its operational efficiency and delight its customers. The winds of change for going digital are blowing in the aviation industry too. Governments, Airport Operators, Airlines, Security Agencies and Technology Providers across the world are imagining new ways powered by technology to improve customer experience and efficiency.

Today, every organisation desires to leverage its data and transform it into something that is useful both operationally and commercially. Airport Operators- organisations who run the Airports- wish to do the same. However, these Airport Operators do not own or have access to data in many instances. This is especially true about the data related to passengers travelling through an airport. Typically the passenger data is owned by Airlines under strict regulatory laws even though Airports are an important enabler in the entire passenger journey.



## The Challenge of Region-based Targeting

Commercial Airport operators with huge retail areas love to target passengers individually. This data is however not available easily. In fact, in most regulatory environments, Airports are prohibited to store individual passenger information or target them individually for marketing purposes. Even when the data is available, unlike normal retail, it does not always serve Airport interests to acquire, store and retain every individual passenger's detail because only a fraction of the daily travellers are frequent flyers or repeat customers for the airport.

In a diverse country like India, this challenge becomes multi-fold. India has more than 30 regions where people speak different languages and follow different culture. Indian retail is a complex market with several local region-centric brands. Air travel in India is growing at a phenomenal rate since the turn of the century, with one-time, small-town travellers forming an ever increasing mix of daily travel load.



## Solving for Region-based Targeting

WAISL is delighted to announce a new offering for Airports- the ability to classify passengers into regions!

WAISL has leveraged state-of-the-art machine learning techniques to create useful models that classify travellers into regions with minimal amount of data points needed from the Airport Operator. This ability to activate the models with minimum data points greatly removes the obstacles to adoption for Airports while at the same time ensuring compliance to all Government and security regulations.

Going a step further, WAISL has packaged the offering as an easy-to-consume cloud-hosted API that provides straight-forward onboarding and a simple to understand pay-as-you-use commercial model.



## Benefits of Region-based Targeting

In practical terms, WAISL's offering enables Airports to see future load by regions and adjust their operations accordingly. Specifically, with this capability, Airports can—

- Enable dynamic advertising – programmatic advertising that changes based on expected region and gender profile. This makes advertising more relevant and useful, thereby increasing advertising revenue.
- Enable dynamic signage – Signage that changes based on region profile
- Smart resource allocation – Plan optimal allocation of resources like Washrooms, Wheelchairs, Gender-specific SHA gates and more.

## Part of D2A – A Suite of New Age Services Delivered in a SaaS model

This offering is available to Airports as a part of D2A- WAISL's Digital Airport-In-A-Box. D2A is a suite of offerings that enable next generation Airports to transform their data into value added services. D2A is a SaaS native platform with the following industry-first features—

- Multi-tenant, with each Airport's data encrypted at rest and in motion
- Easy onboarding and role based access control
- RESTful endpoints to key services enable easier integration into on-premise applications
- Pay-as-you-use model enables transparent procurement and billing



## How It Works

This offering is part of D2A's Analytics Suite- a set of offerings that leverage AI/ML to make data useful. Specifically, this offering leverages multiple proprietary machine learning models created on general travellers data. We use non-identifying information in model preparation to ensure compliance with regulatory environment and also to ensure that minimal data points are needed to activate the model downstream. For classifying into regions, we only need passenger's Given and Surnames while activating the models. We prepare and use multiple models and return classification response based on highest scoring model. We use both classical machine learning and deep learning approaches in the underlying models. Specifically, we use Random Forest, Gradient Descent, LSTM and Ensemble modeling approaches in our model generation.

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## About the Author



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Avtar is Head- Innovation and Platform Engineering at WAISL. He has 25 years of experience in architecture, design and development of data heavy enterprise software. He has a B.Tech. in Computer Science & Engineering from GITAM, Andhra University, and Post-graduate certificates in Data, Economics, Development Policy (MITx) and Management of Technology Ventures.