

## Improving Sales Forecasting Using Real-time Monitoring of Out-of-Stock Events through deep learning based Object detection technique for Ice cream brands

Rohit Agarwal<sup>1</sup>, Gaurav Pawar<sup>2</sup>

<sup>1</sup>Mobisy Technologies Pvt Ltd, India

<sup>2</sup>Mobisy Technologies Pvt Ltd, India



### Abstract

Out-of-stock situations (OOS) are undesirable for brands especially in the ice cream business. Traditional prediction (forecasting) models which depend largely on historical sales data tend to fail while predicting optimal quantity of ice cream stock for various retailers. This is evident as the OOS situation is quite common especially in the summers. One of the reasons is that the models generally don't use past OOS events to correct themselves. This is simply because gathering OOS data automatically is a challenge. Brands are dependent on the retailers to report the events as they occur who may forget to do so. Ice-cream cabinets are mostly placed horizontally with a number of baskets containing various flavors (SKUs). The key to identify OOS in ice cream cabinet is to determine the depth up to which an ice cream basket is filled with the SKU. We have devised an automated way to determine the OOS by leveraging our state-of-art deep learning based image recognition technology. 80% of OOS events avoided due to better stock predictions SKU Detection Accuracy: 95% Depth Detection Accuracy: 90% This approach is generic and can be extended to dairy, frozen foods which are kept in horizontal refrigerators (cabinets). In this presentation we intend to share our work and results with respect to the Indian market.

As a hobby project he launched a website <http://bmtcroutes.in> which aims at finding bus routes in Bangalore and is currently in top google search results. He has Masters in IT from IIIT, Bangalore, India and Bachelors in Computer Science from IET, Lucknow, India.

### Speaker Publications:

1. "An Intelligent Diagnosis System for Prediction of Heart Disease Risk based on Feature Selection and Ensemble Classification Techniques"
2. "Channel Enhanced Deep Convolution Neural Network based Cancer Classification"
3. "Fuzzy based Optimization Framework for Content based Medical Image Retrieval (CBMIR)"
4. "Recognition of Facial Emotion Using Swarm Optimization and Component Analysis"

[8th Global Summit on Artificial Intelligence and Neural Networks](#); Webinar – June 18-19, 2020.

### Abstract Citation:

Rohit Agarwal, Improving Sales Forecasting Using Real-time Monitoring of Out-of-Stock Events through deep learning based Object detection technique for Ice cream brands, Neural Networks 2020, 8th Global Summit on Artificial Intelligence and Neural Networks; Webinar – June 18-19, 2020 (<https://neuralnetworks.conferenceseries.com/2020>)



### Biography:

Rohit Agarwal works as Senior Data Scientist in Mobisy Technologies, Bangalore where he leads a team of Data Scientists & Software Engineers, focusing on salesforce automation by applying state of the art ML & Deep Learning techniques. He has 13 years of industry experience with 11 years in GE where he worked on conceptualizing, designing, prototyping a number of software & data solutions using cutting edge technologies for solving large