

Case Study: The AI-Powered System that Assisted Authorities in Handling Millions at the Maha Kumbh Mela

Vehant Technologies deployed OKEAN® DeepVue™ an advanced computer vision-based AI-Powered system, for real time crowd monitoring at the world’s largest religious gathering.

Introduction

The Maha Kumbh Mela 2025 was the world’s largest religious gathering, with an estimated 660 million devotees visiting the northern Indian city of Prayagraj over a period of 45 days. The Kumbh Mela is celebrated four times over a 12-year cycle, but this year’s festival coincided with an auspicious celestial alignment, elevating it to a once in a lifetime event.

Pilgrims from all over the world made the journey to take a dip at the confluence of three rivers - the Ganga, the Yamuna and the mythical Saraswati.

The Problem Statement

The Maha Kumbh Mela 2025, the world’s largest religious gathering, attracted millions of devotees to Prayagraj. Anticipating the challenges of ensuring safety and security amid such an massive crowd, particularly during peak bathing days, authorities identified potential risks including overcrowding, congestion, barricade jumping, vehicle management and several others.

These challenges posed serious risks, potentially leading to chaos and compromising pilgrim safety. To address this, authorities recognized the need for an advanced AI-driven solution to strengthen surveillance, enhance situational awareness, and ensure smooth management of crowd, traffic and overall event operations for the festival’s success.

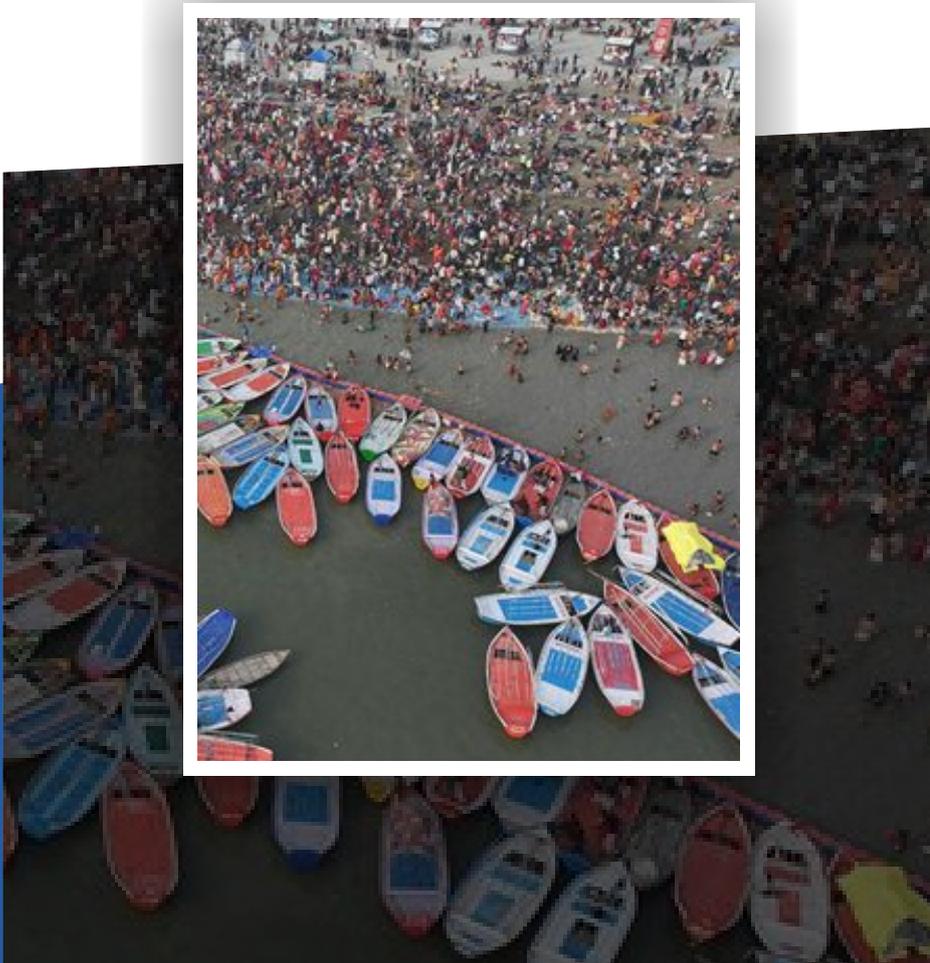


Fig.1 Maha Kumbh, Prayagraj

Use Cases In Action



Crowd Detection & Estimation



Object Count & Classification



People Count



Automatic Number Plate Recognition



Fire & Smoke Detection



Barricade Jumping



Attribute-based video search (Video Summarization)



Parking Management using Vehicle count



The Maha Kumbh 2025 project marks a significant step forward in leveraging advanced technology to drive real-world impact. Through our OKEAN® platform, we're enhancing security, efficiency, and crowd management—creating a safer and more connected experience for millions of pilgrims.

At the same time, we're setting a new benchmark for managing large-scale events and public safety," says Anoop G Prabhu, CTO & Co-Founder, Vehant Technologies.

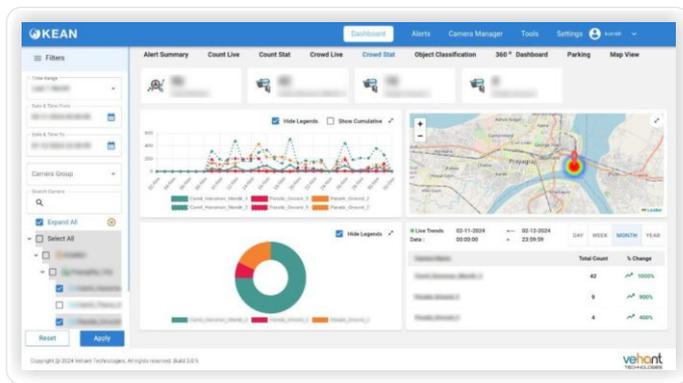


Fig.1 OKEAN® DeepVue™ Web Interface

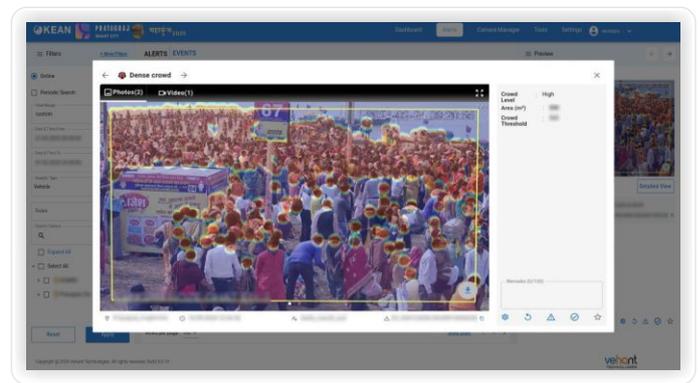


Fig.2 OKEAN® DeepVue™ Crowd Density Estimation

The Solution: Tradition meets technology at Maha Kumbh

The OKEAN® DeepVue™ platform deployed advanced solutions at the Maha Kumbh, assisting a dedicated police force in their job of ensuring the safety of the millions who attended the event. The platform's count statistics dashboard provided detailed analysis for estimating crowd density, person count (entry & exit), person and vehicle attribute detecting fire and smoke, managing parking with the help of automated number plate recognition, etc. Key outcomes delivered were:

- **Proactive safety measures:** Business Intelligence dashboard facilitated preemptive crowd redirection. Authorities received real-time, data-driven insights on crowd density estimation. Historical and real-time analysis helped predict congestion trends.
- **Faster emergency response:** An intuitive and user friendly interface improved the usability and response times to alerts.
- **Smarter traffic and parking management:** Map-based monitoring helped authorities prioritize congested areas and dynamic parking allocation enabled optimal space utilization.

Before deploying OKEAN® DeepVue™ at Maha Kumbh Mela 2025, the product and engineering teams carried out extensive pre-work to ensure accurate crowd intelligence. The AI models were trained on video footage from Magh Mela 2024 and other large-crowd datasets, then refined with tailored business logic based on inputs from Mela authorities. This enabled the system to deliver real-time insights on the ground, ensuring smoother operations and contributing to the event's overall success.

YouTube - <https://youtu.be/eStiXXbn4wY?si=6UXSxakgg2E17xWN&t=276>

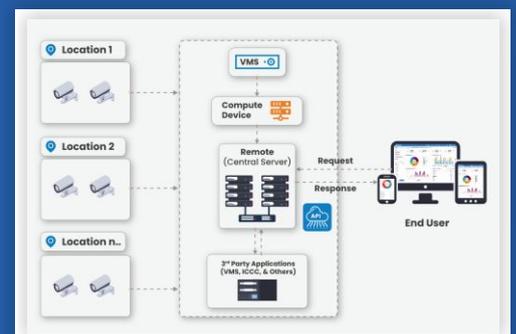


Fig.3 OKEAN® Architecture Diagram