

## Enhancing Cruise Satisfaction & Guest Experiences with ‘Memorable Moments’ AI

**Document Type:** Proposal

**Date:** May 2024

### **Core Competencies Demonstrated:**

- **Market Research Synthesis:** Synthesized third-party research (Intel, CLIA) to identify key consumer drivers for cruise selection: "Destination" and "Onboard amenities"
- **AI Product Strategy:** Identified a novel opportunity to use AI (computer vision) to create hyper-personalized "Memorable Moments" , directly linking the tech to improving "Satisfaction & Loyalty" drivers
- **Conceptual System Design:** Designed a high-level "AI Workflow" showing how data (booking info, embarkation photos) is processed by a CNN and sent to a "Crew App" to enable personalized service
- **Pilot Program Design:** Defined a specific 45-day, two-ship pilot program with clear inputs/outputs , success metrics (Satisfaction, Likelihood to Recommend), and a formal analysis plan

# Cruise Industry Research



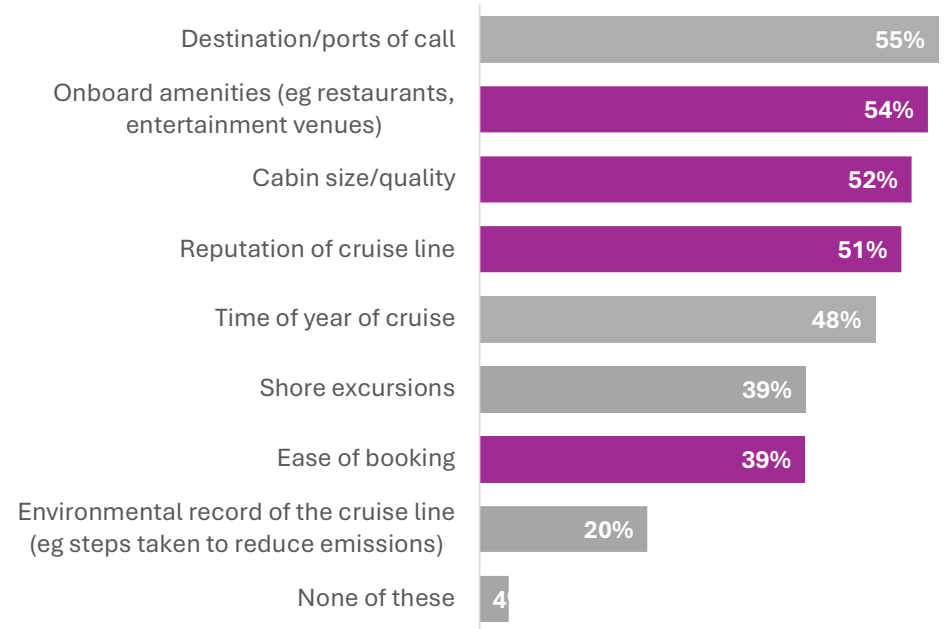
Source: CLIA Passenger Data, 2019 – 2021 and CLIA Cruise Forecast/Tourism Economics (December 2022)

## US: Cruise interest and Intent % of Consumers, 2023

- 56% Have been on an ocean cruise
- 29% Have taken an ocean cruise in the past three years
- 34% Are interested in taking an ocean cruise in the next 12 months

Source: Mintel - Cruises US 2023 Cruises Report

## "Aside from price, which of the following factors would be most important to you when choosing a cruise vacation? (% Mention)"



 Potential AI Opportunities

Source: Mintel - Cruises US 2023 Cruises Report

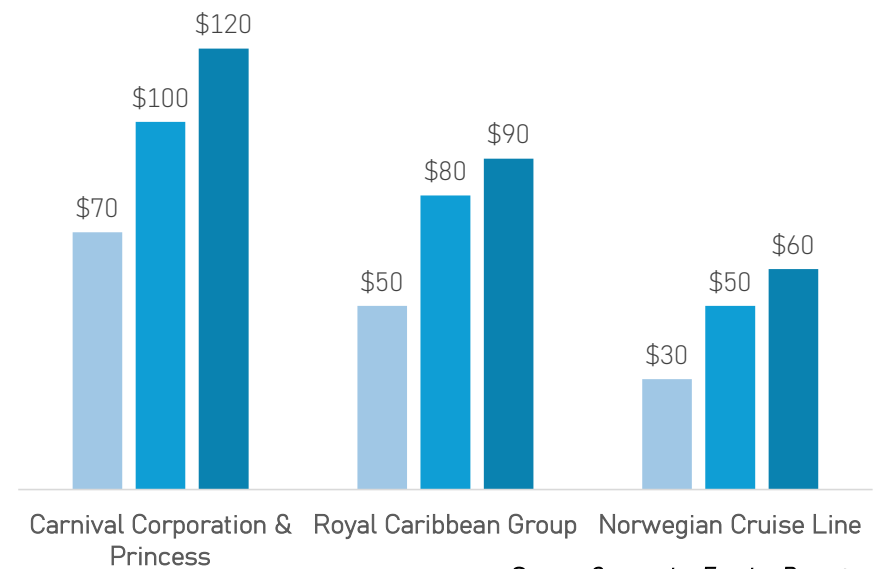
# AI Investments

Carnival Corporation & Princess Cruise Line	<ul style="list-style-type: none"><li>· AI improved internet connectivity</li><li>· Food Waste Management</li></ul>
Royal Caribbean Group	<ul style="list-style-type: none"><li>· Smart Staterooms (Automation, HVAC)</li><li>· AI Chatbot on Board</li><li>· Food Supply Management</li></ul>
Norwegian Cruise Line	<ul style="list-style-type: none"><li>· AI Recommendations: Amenities and services</li><li>· Predictive Maintenance</li><li>· Streamlined Booking Process</li></ul>

Source: Companies Earning Reports

AI Expenditures (Millions)

■ 2022 ■ 2023 ■ 2024 (Projected)



Source: Companies Earning Reports

# Satisfaction & Loyalty

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## Quality and Satisfaction Drive Loyalty

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- **Quality of the Cruise** is the Biggest Predictor of **Repurchase**  
(Petrack, 2004)
- **Satisfaction Drives Intention to Recommend**  
(Hosany & Witham, 2010)

## Amenities and Esthetics Importance

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- **Onboard Amenities** are a top factor in choosing a cruise vacation (Intel, 2024)
- **Ship 'Esthetics'** was the most important Factor in predicting **Satisfaction** and **Intention to Recommend**  
(Hosany & Witham, 2010)

**Memorable Tourism Experiences** often involve unexpected, fortuitous, and adverse events  
(Park & Santos, 2017)

# AI Opportunity

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- AI could be used to further enhance the board experience for guests.
- Data would be collected about the guests when they are on board via RFID Sensors & Cameras
- AI could identify and track customers onboard
- AI could leverage the customers information to provide enhanced services



# Memorable Moments AI

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## AI Workflow to Identify Guest



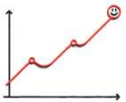
Uses Videos Data



ID's Guest using Machine Vision



Send Guest Info to Staff via Crew App

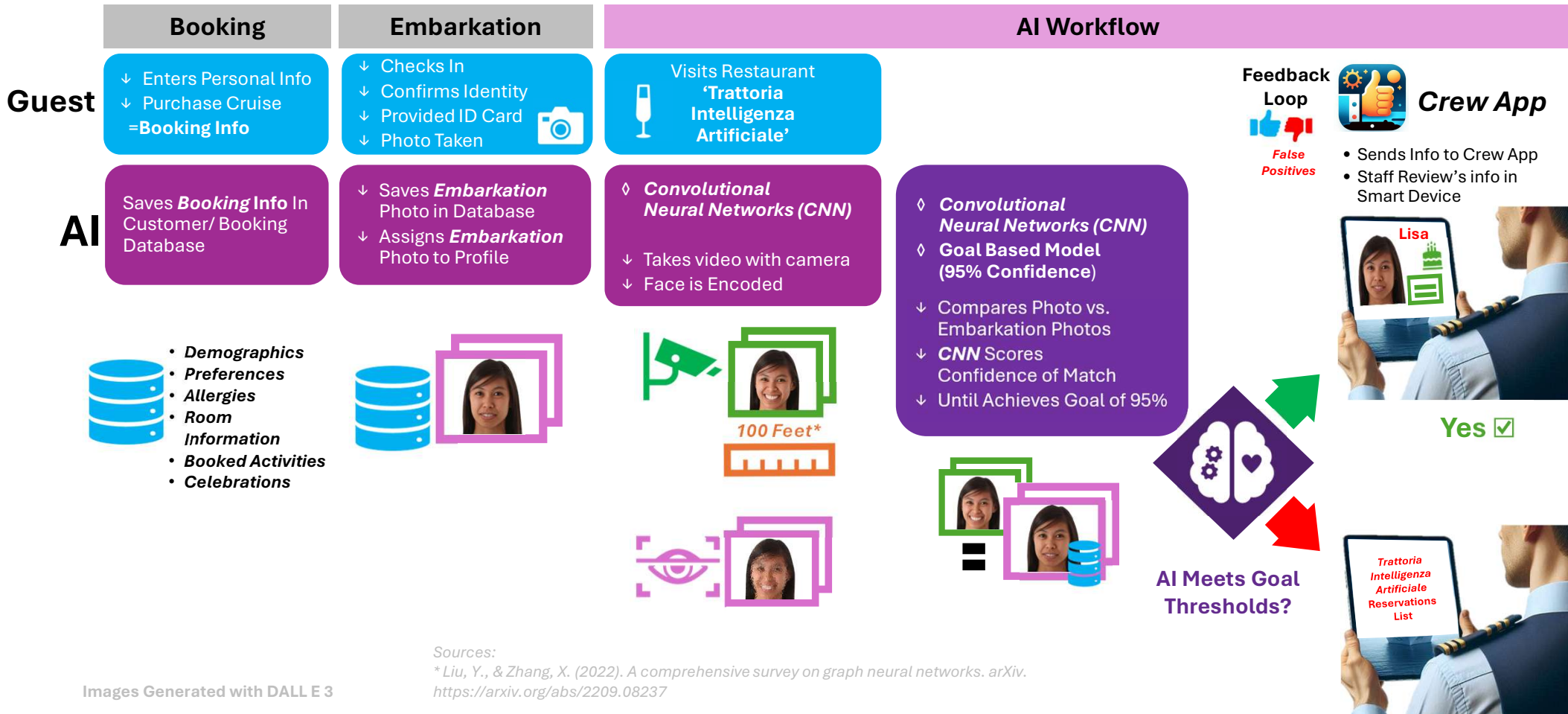


Improved Service



Images Generated with DALL E 3

# Implementing AI in Workflows



Sources:

\* Liu, Y., & Zhang, X. (2022). A comprehensive survey on graph neural networks. arXiv. <https://arxiv.org/abs/2209.08237>

Images Generated with DALL E 3

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# AI Workflow Benefits

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## Memorable Moments AI workflow has Potential to:

- + Enhance Customer Service Experience
- + Enhance 'Esthetics' on the ship
- + Improve Impression of Quality
- + Improve Amenities
- + Create Memorable Moments

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= **Increased Customer Satisfaction!**  
**Increased Likelihood to Rebook!**  
**Increased Likelihood to Recommend!**





# Project Definition & Goals

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## 45 Day Pilot (Two Ships)

- Similar Amenities
- Same Number of Voyages
- 2 Restaurants of the Same Genre
- Random Sampling: 20% of Guests
- Gather Feedback from Staff

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- ✓ Existing Equipment (Cameras)
  - ✓ Existing Customer Surveys Processes

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- + Development of AI Algorithm
  - + Updates to Existing Onboard App
  - + Process Updates + Staff Training



### Expected Outcome:

**Increased in Satisfaction & Loyalty**  
from Guests that  
**Experienced the AI Workflow**

# Data Collection and Preparation

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## → Inputs

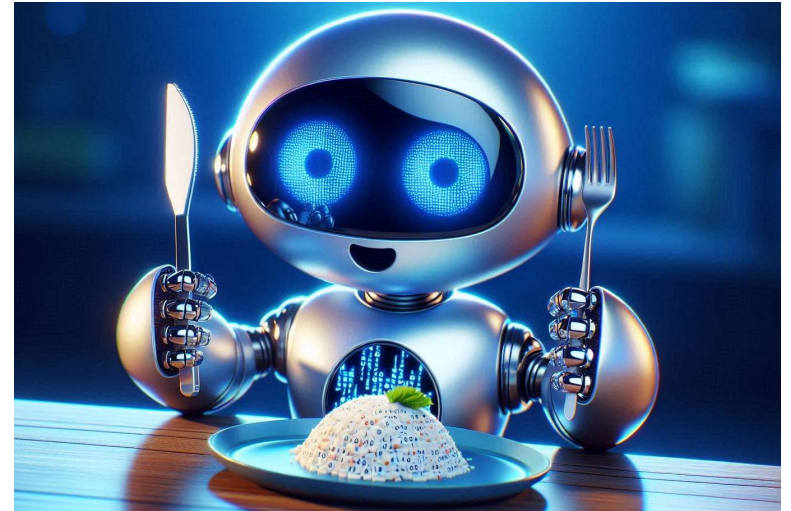
- Cameras In/Near Restaurants
  - Staff App Feedback Loop: Accurate Yes/No
  - Customer Database: Embarkation Photos
  - Confidence Threshold
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## Outputs →

- Number of Attempted Matches
  - Success Match Counts
  - Accuracy of Matches from Staff App
  - Times Attempted to Send to App (Un)Success
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## + Additional Datapoints (Later Analysis)

- Staff Feedback/Interviews
- Survey Surveys
  - Satisfaction
  - Likelihood to Recommend
  - Likelihood to Rebook



Images Generated with DALL E 3

# Addressing Challenges & Considerations

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- Privacy Concerns
  - Ethical/Bias Considerations
  - Security Risks
  - Transparency / Legal / Contract Agreements
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- Training for Staff
  - Integration Into Existing Systems
    - App
    - Onboard Networks
    - Reliable intranet
  - Accuracy
- 
- **Address Customer Concerns**
  - **Address Staff Recommendations**
  - **Retrain the AI as needed using Data from Feedback Loop**



# Analysis and Results

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## Analysis

### Descriptive Analysis

- Test Group vs. Others
  - Overall Satisfaction
  - Likelihood to Recommend
  - Likelihood to Rebook
- **False Positives** from App
- **Match Rates** from Convolutional Neural Networks

### Qualitative Analysis

- Employee Feedback
- Customer Verbatims

### Predictive Analysis

- **Data mining, Monte-Carlo, Forecasting**
- AI will increase?
  - Overall Satisfaction
  - Likelihood to Recommend
  - Likelihood to Rebook
- AI Impact Factors: amenities, ambiance, etc.

## Communication Results

- Prepare report after Analysis
  - Include findings from Descriptive, Qualitative, and Predictive Analysis
  - Communicate Pilot results to stake holders
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## Evaluate Next Steps

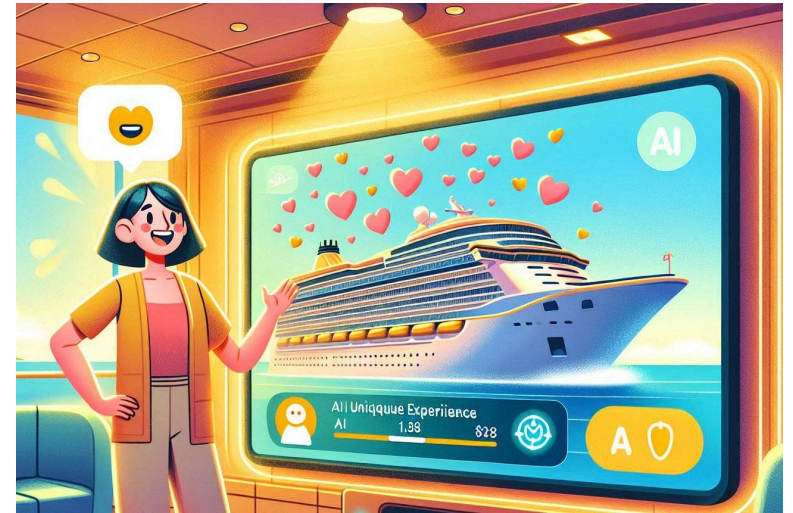
- Determine if the AI program is valuable
- What is the financial investment of expansion?
  - Add to additional ships
  - Improve the AI
  - Update/change any processes
- Is there a **Net Benefit** in expanding?
- What are **Other Risks or Issues** that were discovered during the analysis



# Conclusion

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- Integration of AI workflow into the cruise industry offers numerous opportunities.
  - Enhances on-board experiences and streamlines operations.
  - Improves customer satisfaction and increase loyalty.
  - MSC Cruises is using facial verification technology to enhance security and streamline the boarding process (AirGuide Business, 2024).
- Essential to address challenges such as privacy, ethical, and technical.



# Sources

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Petrack, J. F. (2004). The Roles of Quality, Value, and Satisfaction in Predicting Cruise Passengers' Behavioral Intentions. *Journal of Travel Research*, 42(4), 397–407.

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