

Enhancing Cruise Satisfaction & Guest Experiences with 'Memorable Moments' AI

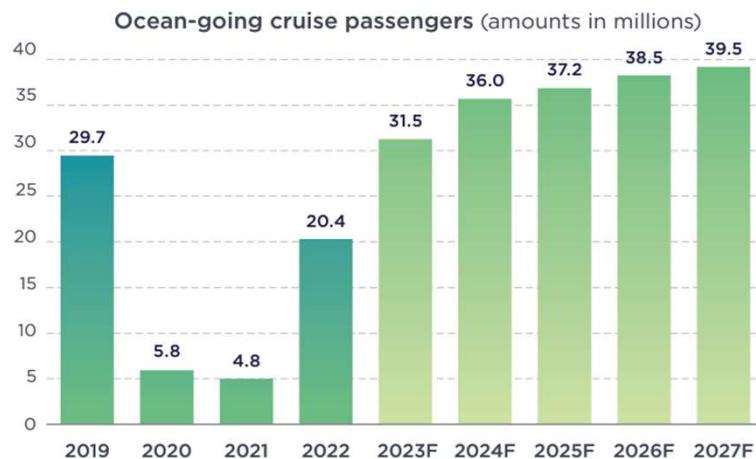
Document Type: Proposal

Date: May 2024

Core Competencies Demonstrated:

- Market Research Synthesis: Synthesized third-party research (Mintel, 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

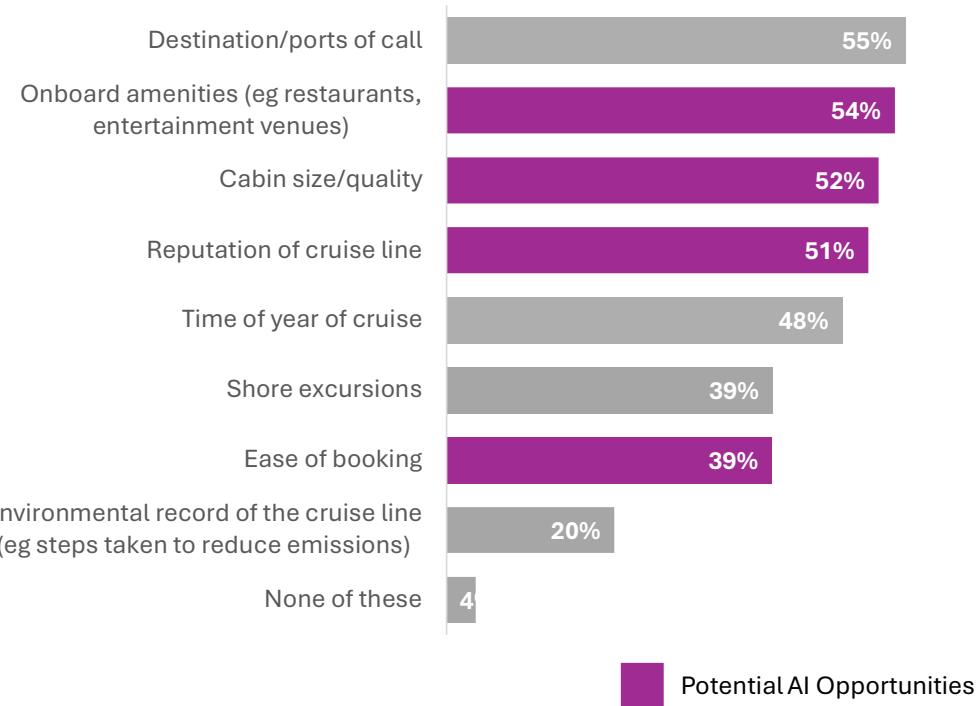
% of Consumers, 2023

- 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

Portfolio: petetrujillo.com | LinkedIn: /in/petetru | Email: pete.tru@gmail.com

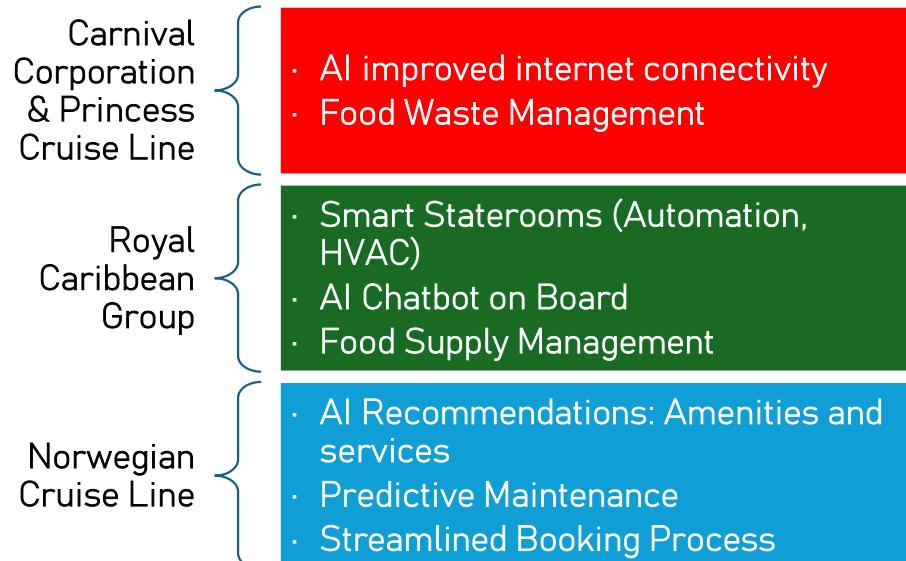
"Aside from price, which of the following factors would be most important to you when choosing a cruise vacation? (% Mention)



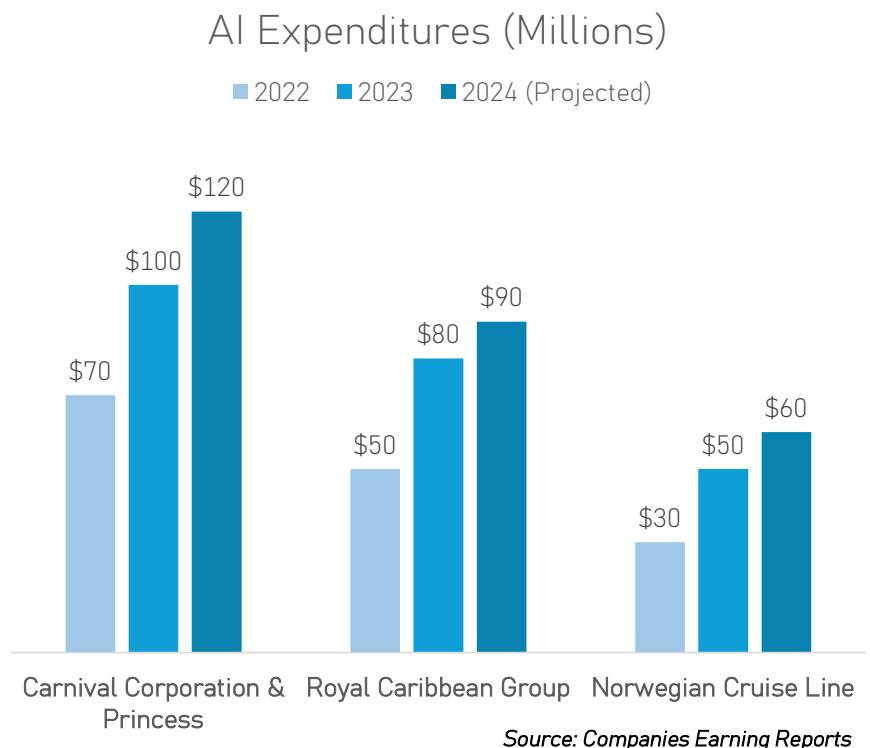
Potential AI Opportunities

Source: Mintel - Cruises US 2023 Cruises Report

AI Investments



Source: Companies Earning Reports



Satisfaction & Loyalty

Quality and Satisfaction Drive Loyalty

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

Amenities and Esthetics Importance

- **Onboard Amenities** are a top factor in choosing a cruise vacation (Mintel, 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

- 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

AI Workflow to Identify Guest



Uses Videos Data



ID's Guest using Machine Vision



Send Guest Info to Staff via Crew App

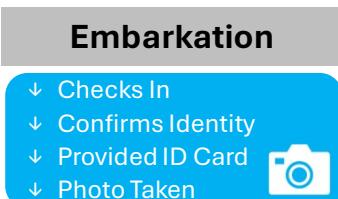


Improved Service



Implementing AI in Workflows

Guest



AI Workflow



Crew App

- Sends Info to Crew App
- Staff Review's info in Smart Device



Yes

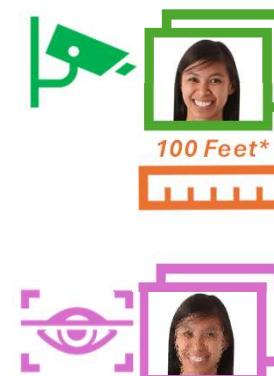
AI

Saves **Booking Info** In Customer/ Booking Database

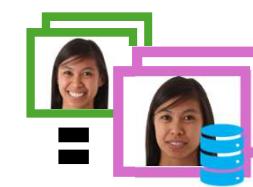
- ↓ Saves **Embarkation** Photo in Database
- ↓ Assigns **Embarkation** Photo to Profile

- ◊ **Convolutional Neural Networks (CNN)**
- ↓ Takes video with camera
- ↓ Face is Encoded

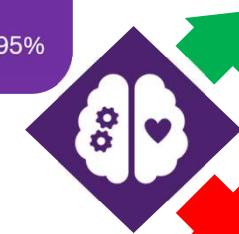
- **Demographics**
- **Preferences**
- **Allergies**
- **Room Information**
- **Booked Activities**
- **Celebrations**



- ◊ **Convolutional Neural Networks (CNN)**
- ◊ **Goal Based Model (95% Confidence)**
- ↓ Compares Photo vs. Embarkation Photos
- ↓ **CNN Scores**
- Confidence of Match
- ↓ Until Achieves Goal of 95%



AI Meets Goal Thresholds?



No

Images Generated with DALL E 3

Sources:

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

AI Workflow Benefits

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

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



Project Definition & Goals

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

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

-
- + 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

→ Inputs

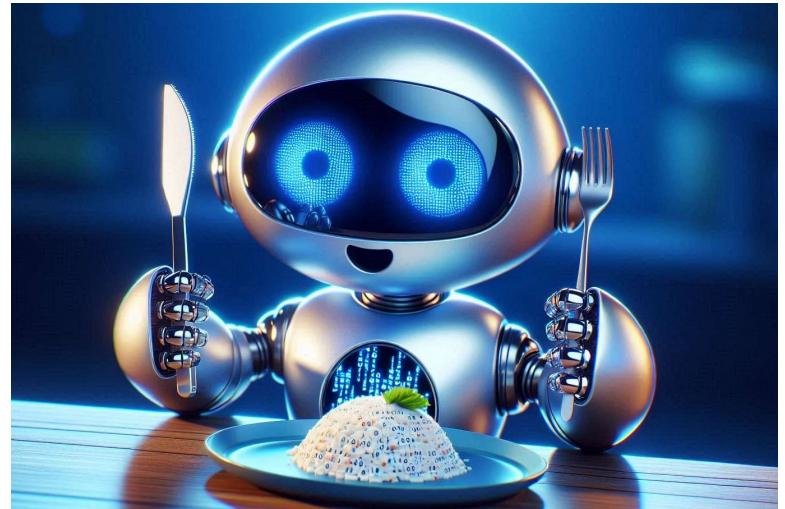
- Cameras In/Near Restaurants
 - Staff App Feedback Loop: Accurate Yes/No
 - Customer Database: Embarkation Photos
 - Confidence Threshold
-

Outputs →

- Number of Attempted Matches
 - Success Match Counts
 - Accuracy of Matches from Staff App
 - Times Attempted to Send to App (Un)Success
-

+ Additional Datapoints (Later Analysis)

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



Addressing Challenges & Considerations

- Privacy Concerns
 - Ethical/Bias Considerations
 - Security Risks
 - Transparency / Legal / Contract Agreements
-
- 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

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 stakeholders

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

- 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

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

Mintel. (2024, September 12). *US cruises market report 2023*. <https://store.mintel.com/report/us-cruises-market-report>

Park, S., & Santos, C. A. (2017). Exploring the Tourist Experience: A Sequential Approach. *Journal of Travel Research*, 56(1), 16-27.

Hosany, S., & Witham, M. (2010). Dimensions of cruisers' experiences, satisfaction, and intention to recommend. *Journal of Travel Research*, 49(3), 351-364. <https://doi.org/10.1177/0047287509346859>

Hao, Y., Pei, H., Lyu, Y., Yuan, Z., Rizzo, J.-R., Wang, Y., & Fang, Y. (2022). Understanding the impact of image quality and distance of objects to object detection performance. arXiv. <https://arxiv.org/abs/2209.08237>

MSC Cruises Enhances Passenger Experience with New Facial Verification Technology. (2024, May 16). AirGuide Business, NA.