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

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Cruise Industry Research

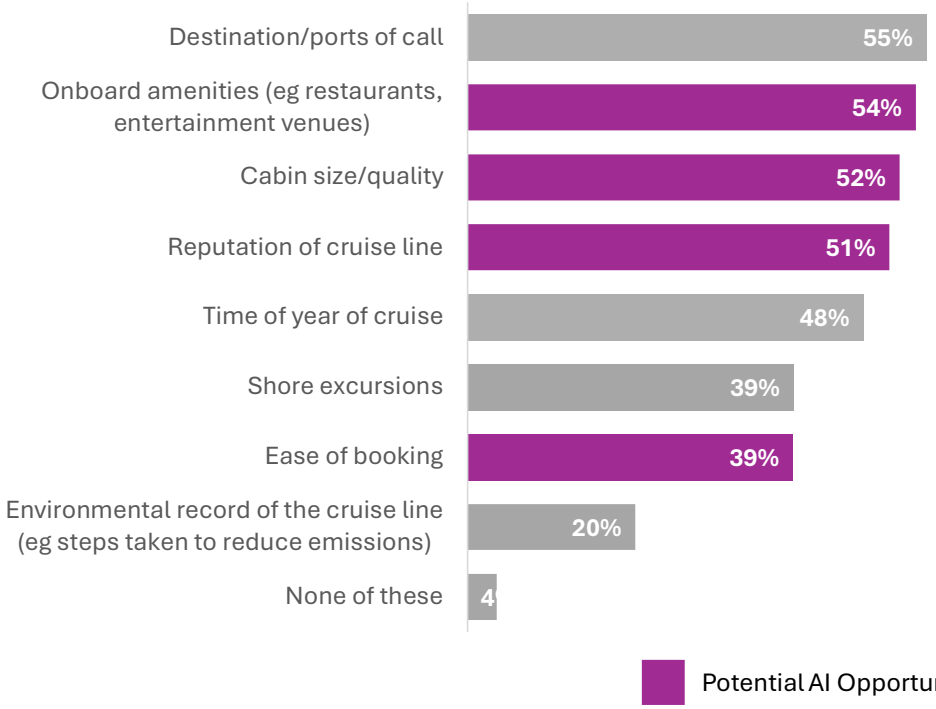
Source: CLIA Passenger Data, 2019 - 2021 and CLIA Cruise Forecast/Tourism Economics (December 2022)

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)

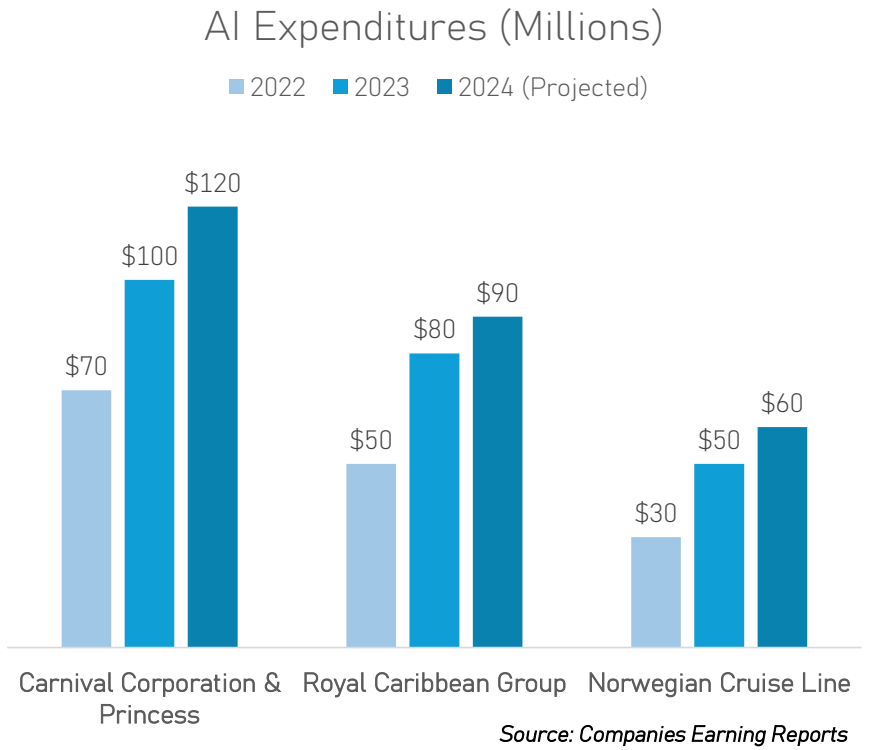


Source: Mintel - Cruises US 2023 Cruises Report

AI Investments

Carnival Corporation & Princess Cruise Line	· AI improved internet connectivity · Food Waste Management
Royal Caribbean Group	· Smart Staterooms (Automation, HVAC) · AI Chatbot on Board · Food Supply Management
Norwegian Cruise Line	· AI Recommendations: Amenities and services · Predictive Maintenance · Streamlined Booking Process

Source: Companies Earning Reports



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)

Source: Mintel - Cruises US 2023 Cruises Report

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

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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

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Implementing AI in Workflows

	Booking	Embarkation	AI Workflow
Guest	↓ Enters Personal Info ↓ Purchase Cruise =**Booking Info**	↓ Checks In ↓ Confirms Identity ↓ Provided ID Card ↓ Photo Taken	Visits Restaurant **'Trattoria Intelligenza Artificiale'**
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***

100 Feet*

◊ ***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?

Feedback Loop

False Positives

Crew App

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

Yes ☑

No ☒

Emerging: Vision Transformers (ViTs)

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

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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!

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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

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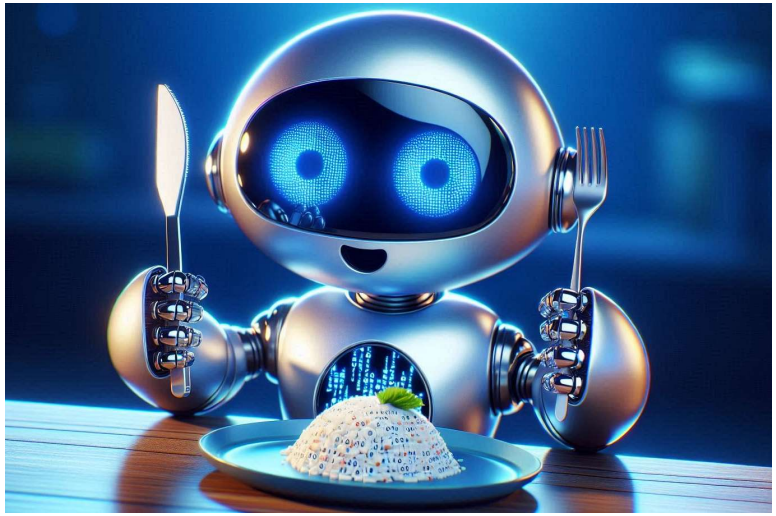
Data Collection and Preparation

→ 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

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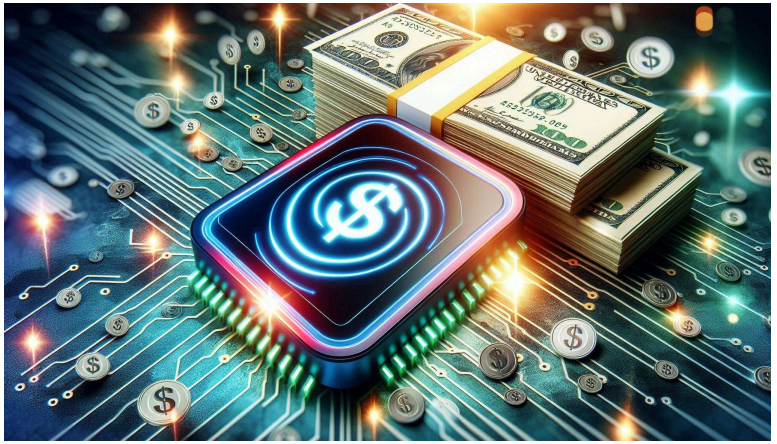
Addressing Challenges & Considerations

- 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**



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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

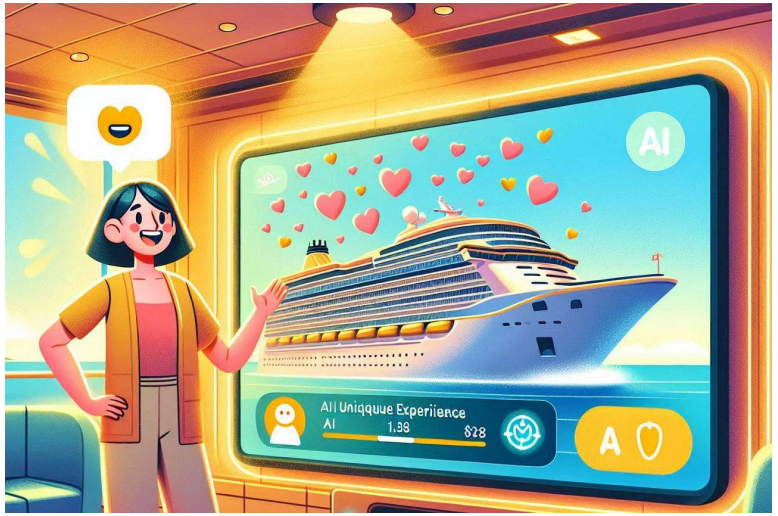
- Prepare report after Analysis
- Include findings from Descriptive, Qualitative, and Predictive Analysis
- Communicate Pilot results to stake holders

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.



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

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Thank You!