Disney2Go
Solution to Overcrowded Theme Parks: Tech Based Crowd Mitigation Tool for Disney

🐦 @meaghanmtaylor
✉ meaghanmtaylor@gmail.com
in /meaghantaylor

MEAGHAN TAYLOR

The purpose of this project is to investigate the effectiveness of how a mobile app integrating augmented reality and GPS technology can influence crowd behaviour in the themed entertainment industry. In partnership with Dr. Ali Asgary, Associate Professor, ADERSIM, at York University, the study was conducted on the AnyLogic Simulation system to measure how Disney characters can act as a crowd mitigation tool to influence crowd movements throughout the Magic Kingdom. Using data to represent park entrance rates, attraction duration, and wait times, the study was able to capture the level of influence Disney characters had on park guest's movements throughout their visit. This simulation reveals that Disney characters have the ability to influence crowd behaviour with a probability rate of 30%. This data supports the view that the proposed mobile app will act as an effective crowd mitigation tool and can strategically influence crowd migration throughout the Magic Kingdom.

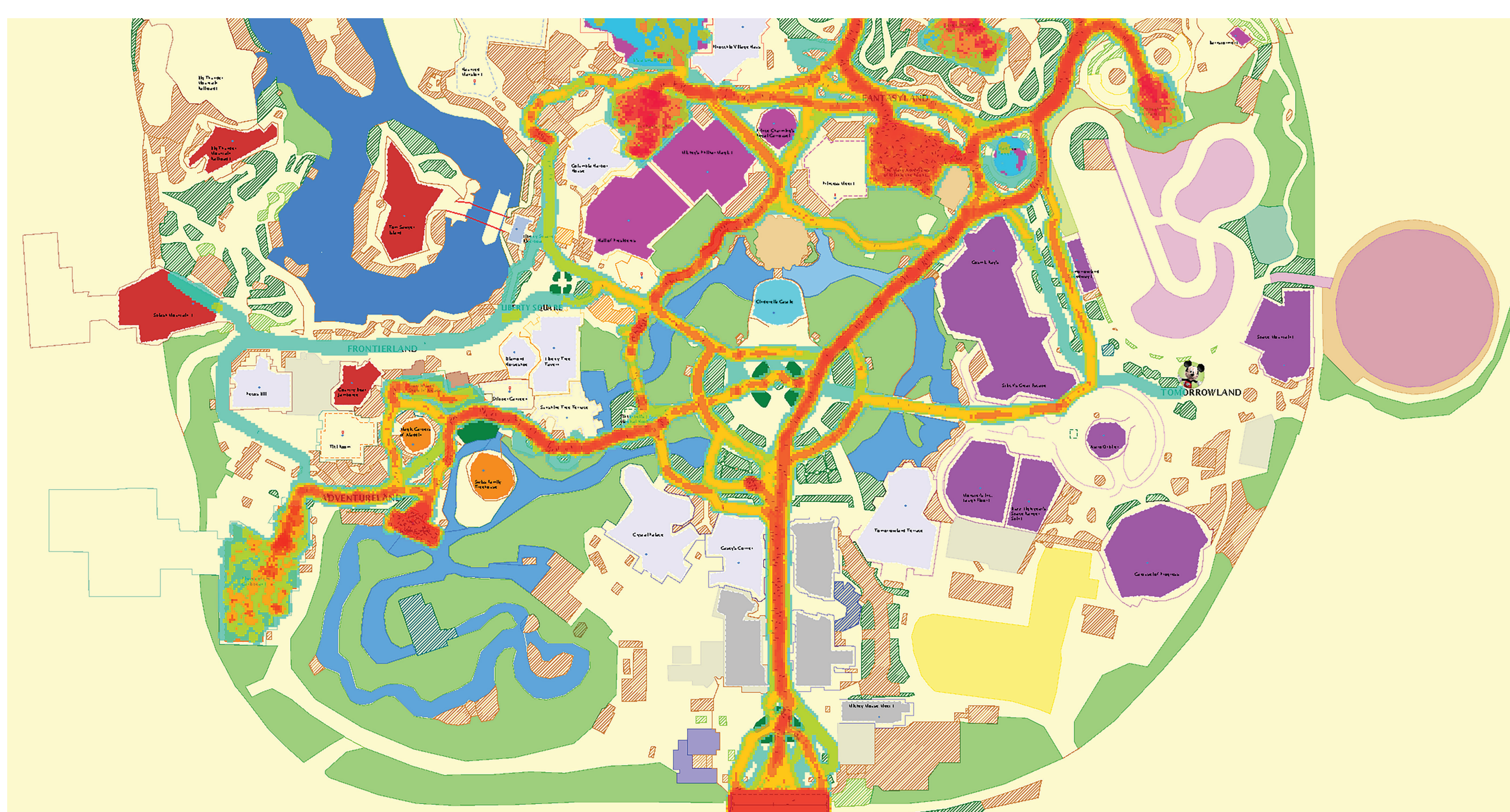## CROWDING AND CROWD MITIGATION

In an industry where safety and positive overall experience are the primary goals for Disney's visitors, developing effective crowd mitigation techniques are vital. One primary focus for parks and businesses within the themed entertainment industry is crowd mitigation and maintaining crowds at a safe and effective level. Crowding is a significant problem among theme and amusement park guests. Walt Disney attractions worldwide attract nearly 138,000,000 guests per year at their parks (TEA, 2015, 9). More specifically, the Magic Kingdom in Disney World attracted approximately 20,492,000 guests in 2015 (TEA, 2015, 12). As theme parks, particularly Disney World attractions, attract millions of people each year, understanding how crowds operate and behave is significant to developing effective crowd mitigation techniques.

SIMULATION
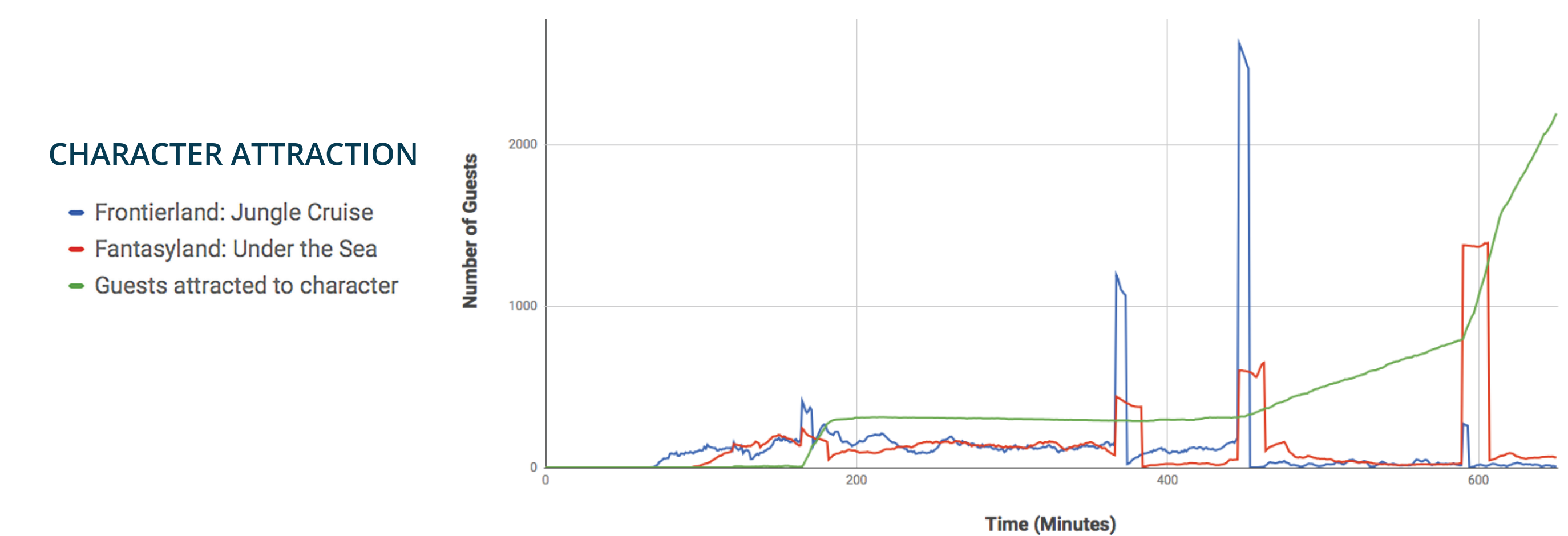
INTRODUCTION AND OVERVIEW

This project aims at investigating effective crowd mitigation techniques using a mobile application to influence crowd behaviour. In order to test the effectiveness of this theory, a simulation using the AnyLogic Simulation program was necessary to analyze the level of influence objects and features would have on a guest's overall pedestrian behaviour during their visit to Disney World's Magic Kingdom. Satellite imagery of the park captured pedestrian pathways and attractions. Ride duration and wait times were also programmed to simulate an average day in the Magic Kingdom.

Throughout the simulation, guest behaviour was constantly influenced by character attractor placement on the simulation map. The simulation uses a heat map to represent the concentrated areas of people in the park. This is significant as it helps illustrate which areas of the park are overcrowded and which areas could help ease crowding issues by influencing pedestrian movement to less crowded areas of the park. Using the heat map, the character attractor was placed outside busy areas of the park to encourage movement towards less crowded areas.

RESULTS AND FINDINGS

The results of the simulation confirm that the character attractors influenced 30% of crowd behaviour and successfully acted as a crowd mitigation tool. As seen in the graph below, crowd behaviour is directly correlated with character movement. Disney can utilize these findings to proactively move guests throughout the Magic Kingdom.

CHARACTER ATTRACTION
- Frontierland: Jungle Cruise
- Fantasyland: Under the Sea
- Guests attracted to character

PROPOSED MOBILE APP: DISNEY2GO

Using augmented reality and GPS technology, Disney2Go will allow guests to find and keep track of their favourite Disney characters. This will eliminate any user frustrations in tracking down characters throughout the park. Guests of all ages and demographics will use the app to search for Disney characters in proximity to their location, in real time.

Image background source: My Disney Experience App (Disney, 2017)

AUGMENTED REALITY

Disney2Go will use the latest technological advancements in the AR and GPS fields. The AR aspect of the app would be utilized to project the desired Disney character onto the guest's screen. In an attempt to move crowds throughout the park as a result of overcrowding in particular areas, guests would search for their favourite Disney characters and look for their location. The character would appear on the guest's screen in an AR type format and the character would direct the guest to their location in the park, using GPS technology. This form of directional signals, using the AR technology, will be a unique way of implementing crowd mitigation techniques throughout the Disney theme park.

GPS TECHNOLOGY

As there is two-way GPS technology between the guest and the character, Disney is able to monitor the phone traffic and GPS pings in particular areas of the park to measure and identify which areas of the park are crowded. As a result of this information, Disney would be able to place characters in other less crowded areas of the park to encourage people to move to those given areas, thus reducing the burden on particular areas of the park.

GROWTH AND IMAGINATION

Disney is continuously looking at ways to engage their guests and improve their overall experience. While Disney2Go can act as Disney's primary crowd mitigation tool, engaging guests and improving their overall experience is Disney's primary objective. As Walt Disney said, "Disney will never be completed. It will continue to grow as long as there is imagination left in the world." The magic and fantasy elements of Disney will continuously evolve as technology advances and imaginations soar. This app upholds and respects Disney's main objectives and keys through its innovation, attention to detail, and focus on Disney's park efficiency and overall guest experience.

REFERENCES

Disney. (2017). Magic at Your Fingertips. Disney. Retrieved from https://disneyworld.disney.go.com/plan/my-disney-experience/mobile-apps/.

Themed Entertainment Association. (2015). TEA/AECOM 2015 Theme Index and Museum Index: The Global Attractions Attendance Report.

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FUTURE APPLICATION OF THIS CROWD MITIGATION TOOL

International theme and amusement parks
Emergency and crisis management
Major sporting events
Music festivals and local fairs
Retail store promotions and specials

ACKNOWLEDGEMENTS

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MDM — MASTER OF DIGITAL MEDIA