# SIMULATION FOR DISNEY PARKS AND EXPERIENCES

Brian Walters[1], Amy Sardeshmukh[1], and Frederick Zahrn[2]

[1]Disney Experiences, Lake Buena Vista, Florida, USA
[2]The Walt Disney Company, Lake Buena Vista, Florida, USA

## ABSTRACT

At Disney, simulation is used to analyze a variety of stages and aspects of the guest's vacation experience. Before the first guest rides a new theme park attraction, Disney works behind the scenes to build detailed simulation models that inform design decisions. In this presentation, we will discuss analytics utilized by Disney in the design, development, and maintenance of attractions and transportation systems — including component-level and system-level simulations of the dynamics of ride vehicles and animatronics. In a broader commercial context, we will also discuss the role of simulation in analytics applications supporting business decision making for Disney Experiences.

## SPEAKER BIOGRAPHIES

**BRIAN WALTERS**, PE, is Senior Manager of Modeling, Simulation, and Training Tools within the Global Engineering and Technology team at Disney Experiences. A veteran of the U.S. Navy, he got his start at Disney on the Instrumentation Support team, providing attraction testing and data acquisition services. He spent ten years as a Sustaining Controls Engineer, improving attraction reliability for all rides at the Magic Kingdom and leading the adoption of new data acquisition and analytics technologies. As part of Modeling, Simulation, and Training Tools, he has spent the last ten years leading a team that develops simulation, training, data acquisition, and analytics tools for Disney parks worldwide. One of his focus areas is collaborating on the organization's Scientific Data Analytics initiative involving digital twins and attractions predictive maintenance. Some of Brian's past projects include developing digital recorders for elephant vocalization research at Animal Kingdom and building an instrumentation pack for measuring g-forces on attractions. He was part of the opening team for Mission: SPACE at EPCOT and Star Wars: Rise of the Resistance at Disney's Hollywood Studios. Brian graduated from the University of Central Florida with a Bachelor of Science in Electrical Engineering and a Master of Science in Engineering Management.

**AMY SARDESHMUKH** is Director of Yield Optimization within the Walt Disney World Commercial Strategy team at Disney Experiences. Prior to starting her current position in 2024, Amy worked for sixteen years in roles of increasing responsibility on the Industrial Engineering team at Walt Disney World, ultimately leading teams of internal consultants who translate data into key insights for business leaders to drive continuous improvement and operations strategy. She has supported operations serving Guests of Walt Disney World at every stage of their visit, including attractions, transportation, food and beverage, merchandise, resorts, pre-arrival, and back of house. She also contributed to several theme park land designs including Star Wars: Galaxy's Edge, Toy Story Land, and Fantasyland. Prior to starting as an Associate Industrial Engineer in 2008, Amy completed her Bachelor of Science in Industrial Engineering from Purdue University, while also completing five semesters of internships in Industrial Engineering at Disney. She also holds a Master of Science in Industrial Engineering from the University of Central Florida.

**FREDERICK ZAHRN** is a Director of Decision Science Transformation within Disney Decision Science & Integration (DDSI). DDSI is a centralized team that maximizes the business performance of The Walt Disney Company by advancing a culture of applied decision science. Fred leads a team working to identify the best methodologies for business analytics and to promote their use in support of business decisions across the Company. His team produces prototypes and pilots in technical domains including optimization, causal inference, simulation, machine learning, statistics, and decision analysis. His project experience includes support for a variety of lines of business including theme parks, resort hotels, vacation ownership, cruise line, musical theatre, consumer products, and media networks. He has supported business functions including revenue management, marketing, sales, finance, supply chain, real estate, and public affairs. Prior to starting his Disney career in 2010 as an Operations Research Analyst, Fred completed his Master of Science in Operations Research and Ph.D. in Industrial Engineering from Georgia Tech.