Amazon Web Services DeepRacer Event Challenges Competencies

Presented at IMEX – iaee America Faculty Engagement Program

Mandalay Bay, Las Vegas, Nevada

Ann D. Summerall-Jabro,PhD (jabro@rmu.edu)

Robert Morris University

October 10, 2024

Reflection

"As I reflect on the past 15 weeks of our event planning course, I am astounded by the amount of knowledge and practical skills I have gained . . . it has been a journey of learning, challenges, and personal development. I am grateful for the experiences shared with my teammates and I look forward to applying these insights to real-world events if needed."

- Kennedi Randolph, Infinite Impressions Research Director
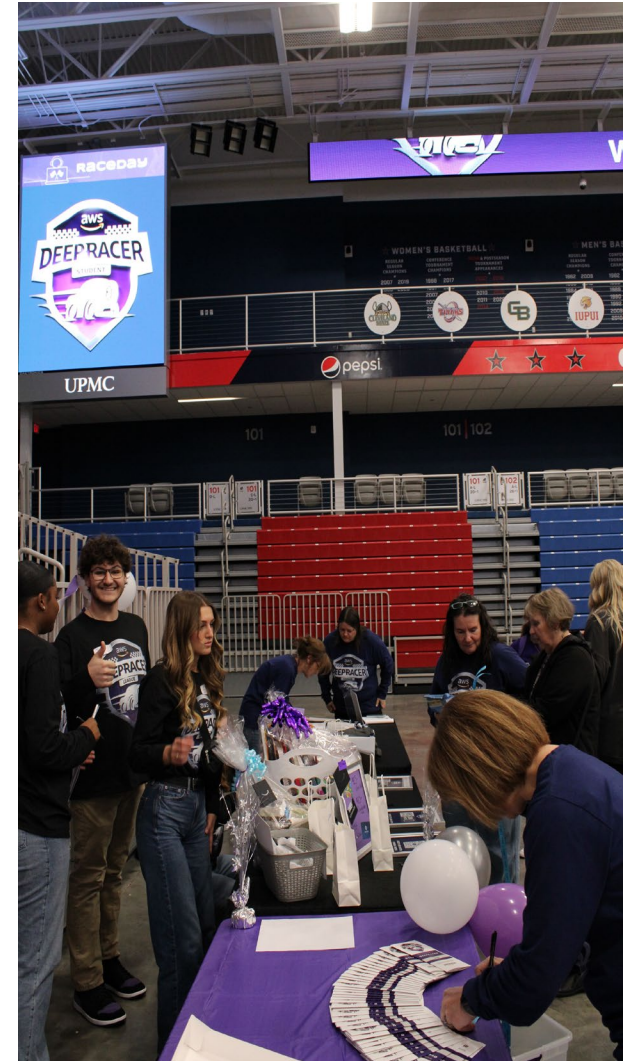
Amazon DeepRacer powered by AWS

Amazon Web Services DeepRacer

- Fully autonomous 1/18th scale race car driven

by reinforcement learning (RL) from a model programmed

in its console.

- Components of AWS DeepRacer console: An AWS Machine

Learning service for training and evaluating reinforcement

learning models in a three-dimensional simulated autonomous-driving environment.

- The AWS DeepRacer League helps individuals learn about reinforcement learning using a racing simulator to train, evaluate, and tune Reinforcement Learning (RL) models, then send them out on the track for a real-world autonomous race. The DeepRacer completing multiple laps around the track in the shortest time wins the competition.

"Drivers" racing a DeepRacer
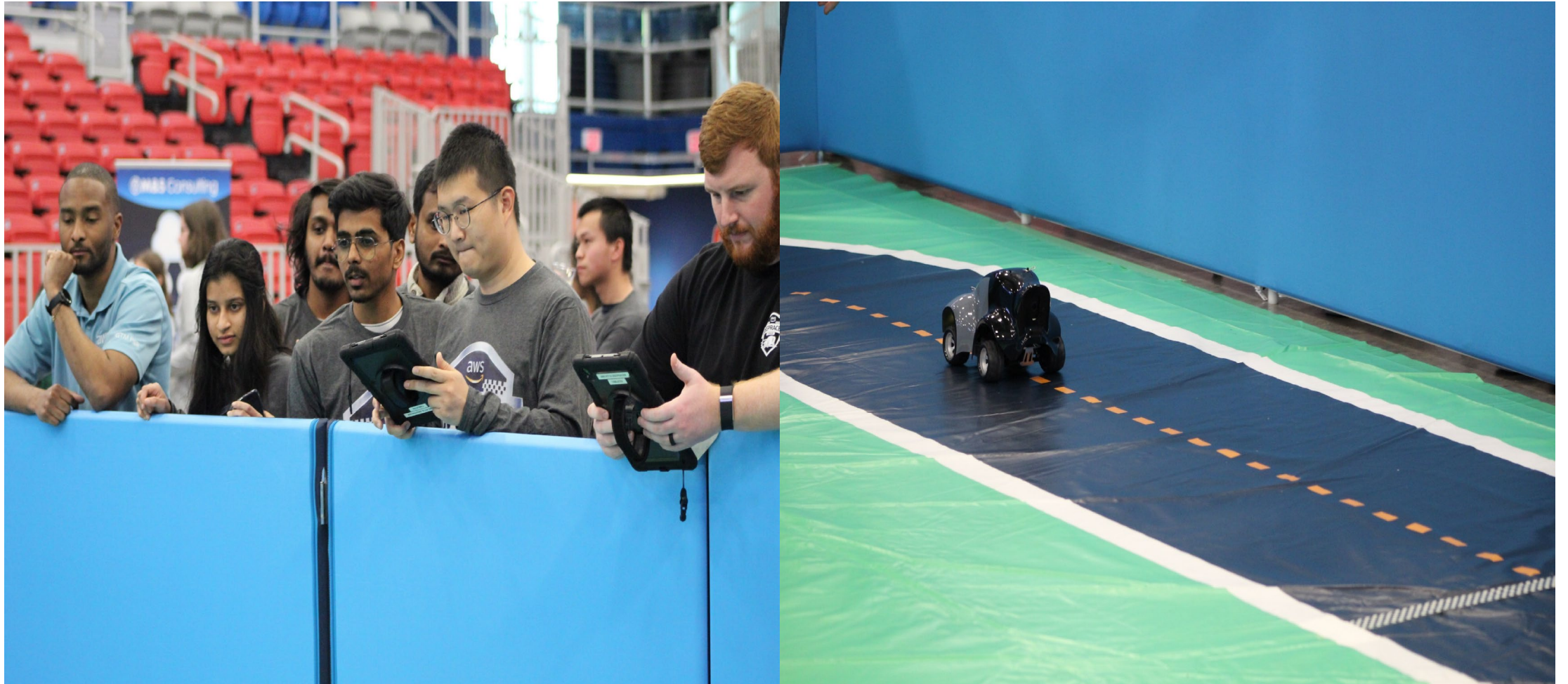
DeepRacer Event

10 CIS student teams spent more than a month learning how to code algorithms in Python to drive AWS DeepRacers using machine learning. The race was the actual training of their models and testing them out on the AWS racetrack.

Amazon DeepRacer powered by AWS

- Each race was recorded and projected for fans and supporters to watch. Live streaming was considered but not utilized.

- Amazon technical support arrived the day of the race to coordinate with the "drivers" the uploading of their models on AWS (Amazon Web Services) and use their iPads to control the DeepRacer.

- The DeepRacer experience relies on Amazon Web Services (AWS) for computing power and S3 storage. The multiple iterations of driving the race track creates data that ultimately results in the generation of AI models.

Developing, Coordinating & Executing Events Course Components

- Service - RMU students graduate with a Student Engagement Transcript that identifies 7 areas of engagement. This event counted as service and professional development.

- Development of PR firm and materials: head shots, company name, motto and description of services provided by each member, team operating agreement, conflict styles and conflict resolution plan, leadership rotation, cost-benefit analysis of skills of each member, roles descriptions and performance appraisal instruments.

- Conduct research for clients (DeepRacer/CIS and RMU Colonial Food Pantry)

- Create media plans and artifacts

- Build GANNT charts, budgets

- Seek sponsors and raffle items for the event's execution (generate foot traffic for DeepRacer and meet Food Pantry event goal of 100 items and $100.00)

- The team translates course content to the event specifics and provides a 25 minute debrief of the experience to the client and class, complete with photos and evaluation data from the attendees. An event book is compiled for future reference.

Technology to Engage DeepRacer Participants

Technology made this race visually engaging with the jumbotron screens projecting the races in real time.

Another LED screen displayed the ranks of the contestants and finish time.

The fascia wrap scrolled the arena with raffle ticket sponsors, competition teams/faculty mentors and Infinite Impressions members' names.

Research Study Components

Case Study Methodology

- Experiential and problem-based learning.

- Developing, Coordinating and Executing Events team co-coordinated the event for course credit and graduate and undergraduate majors in the Computer Information Systems (CIS) Department worked with a faculty mentor to train their DeepRacer vehicle. First-, Second-, and third place winners earned cash prizes that were taken from the budget.

- Competition sponsored by Amazon with a $10,000.00 budget. Ten week preparation window during spring 2024 semester. First time special event for the University with Amazon. Co-event coordinators were chair of the CIS Department who articulated Amazon's strict expectations/requirements.

- Event Planning 5-person student group, Infinite Impressions, co-produced the event and during the event solo-produced an awareness event for the Colonial Cupboard, an organization dedicated to serving students encountering food scarcity.

Research Study Components

Data:

1. 70-minute semi-structured depth interviews. Protocol developed from the MBECS and conducted with:

   - 3 administrators associated with event (co-producer, VP of Information Technologies and AWS certified faculty member who coordinated team mentors)
   - 2 IT Conference Center employees (Director and Assistant Director)
   - 3 student team members of "Infinite Impressions"

2. Student reflection journals (all 5 team members)

3. Personal Observation as I taught the course

Research Questions

RQ1: At what level of knowledge and ability was each event co-coordinator involved in the event execution?

RQ2: What do co-event planners identify as necessary to understand to better execute this event?

University President Michelle Patrick, Provost Joseph Zimmer, Members of the Amazon Web Services Team and the Amazon Race Coordinator gather for a shot.

Meeting Planning International's MBECS Competencies (KSAS)

Meeting and Business Event Competency Standards (MBEC), which are global, industry-endorsed descriptions of the knowledge and abilities that experienced meeting professionals need in order to be successful.

Knowledge and abilities are correlated with levels of achievement and are classified as:

(1) Coordinate (person assists a meeting manager),

(2) Manage (person can plan and manage to achieve strategic goals),

(3) Direct (connect event strategies to organizational strategies and plans).

MPECs Ranking based on Data Analysis

RQ1: At what level of knowledge and ability was each event co-coordinator involved in the event execution?

	Co-Event Producers	
MBEC content areas	**Infinite Impressions**	**CIS**
Strategic planning	Manage	Manage
Project management	Manage	Manage
Risk management	Direct	Direct
Financial management	Coordinate	Coordinate
Administration	Manage	Manage
Human resources	Direct	Direct
Stakeholder management	Manage	Manage
Meeting/event design	Coordinate	Coordinate
Site management	Direct	Direct
Marketing	Coordinate	Coordinate
Professionalism	Direct	Direct
*Communication	**Coordinate/Manage**	**Coordinate/Manage**

*Key shortcoming was communication within teams and across teams.

technological familiarity with graphics, visuals, etc. Otherwise, both areas did relatively well.

What do co-event planners identify as necessary to understand to better execute this event? **Emergent themes from interviews**

- First time – new experience for everyone. Did what we could with information available. Need to trust students' abilities. Amazing experience.

- Novel experience- so much to learn in so little time. Average hours worked on project by each individual was over 40! Not everyone involved in conversations pertaining to event specifics which may have created additional work for co-event coordinators.

- Time – 10 weeks to execute a complex event and generate a mechanism to attract non-CIS types – Food pantry support for student population was a good appeal.

- Change – event location moved to Event Center late in preparations. Graphics, visuals and other content needed different formatting conventions. "Let's use the Ferrari if we've got one."

- Adaptability- concerns about how much PR, at what time, and what media should promote to conform to Amazon's requirements, CIS department concerns and students' availability.

Emergent themes from interviews

Media Presence – CIS students not trained to give interviews and message. Difficult to create 30 second promos for the team when they aren't familiar with promotion.

Social Media Dominance – traditional media still matters.

Community integration - High school students invited to event but due to short notice, transportation not provided. Live streaming was considered but not pursued due to time constraints.

Reflections

1. Teams Meeting: Infinite Impressions choose to have a client liaison interface with CIS co-event planner. Communication was slow and sometimes not interpreted appropriately. Not everyone was invited to the meetings.
2. Realistic Goals: Ambitious effort in 10 week time frame. Need more focus and lead time to execute the many moving parts. Needed to initiate promotion immediately. Waited until too close to the event and relied predominately on social media.
3. Budgeting: Budget shifted as event planning progressed creating need for more sponsorships/donations.
4. Conflict Resolution – Students had a plan but seldom used it because they were a group of friends who enjoyed social and educational experiences together. Teacher intervened and held a session on problem-solving.
5. Success – Food Pantry goals were exceeded with donations and funds from raffles. CIS wasn't focused on attendees. They were focused on the competitors and competition. Need shared definition. Almost 100 attendees for 3-hour event.

Media Planning

Successes	*Challenges*
Strong social media presence	Needed earlier and more access to competitors to generate stories about DeepRacer
Learned about formats for Jumbotron, etc.	Event location change created new opportunities – little time.
Media planning complexities realized.	Traditional media still attracts diverse demographic

"I am very proud of myself and my group for all of the hard work we put into this event and class. While it was stressful, I found that I learned a lot, and solidified information that I did not know as well as I needed to. I learned how to work in a group that consisted of mainly my friends, and how to go about conflict resolution in that setting. My biggest takeaway though, is creating a media plan and attaching it to a detailed audience. I thought I understood what went into creating a plan like this, but I was wrong. There are so many pieces to the puzzle, and this class showed me each piece," - Ella Donovan.

Metrics on Event Success – Needed Improvement

- Event size – attendees were counted every 15 minutes.

- Feedback Audience – raffle ticket buyers and attendees were asked about the experience. Needed formal survey!

- Financial Management – Line item budget item amounts shifted as scholarship funds became a component of the budget.

- Revenue Generation strategies – raffles were the primary revenue generation strategy. Proceeds went to Colonial Cupboard.

Final Thoughts

April 5, 2024. Ten teams assembled and raced their DeepRacer cars autonomously while Amazon support personnel assisted the faculty and students during the racing event.

- Infinite Impressions greeted guests, sold raffle tickets for the Colonial Cupboard, explained how the cars moved around the track and interviewed participants, collected digital images and boxed food items for the food pantry.

- All interviewees agreed the event was a profound success and provided a lot of opportunities for ways to improve the next one!

- Amazon's DeepRacer League Pit Crew Leader, **Nicole Murray complimented Infinite Impressions for their creativity and service twist to the race**.

First Place Team with Acting Dean Hartle and Nicole Murray, DeepRacer League Pit Crew Leader

"The Amazon AWS event went really well. Overall, it had a great vibe and a seamless flow that resulted in a commendable $220.00 and more than 240 food items donated to the Colonial Cupboard."
- Elise Spath, Infinite Impressions Client Liaison