



AWS DeepRacer 2021 Championships Official Rules

Over 50,000 aspiring developers from across the globe have participated in AWS DeepRacer throughout 2021, vying for a chance to compete in the 2021 finals online, and take home the coveted AWS DeepRacer Championship Cup. Championship finalists will be notified of these rules prior to the commencement of racing on Nov. 1, 2021 via the email associated with the AWS DeepRacer account. These rules will also be published and available on awsdeepracerleague.com prior to Nov. 1, 2021.

How the top 40 Championship finalists are determined

(1x) 2020 League Champion The 2021 AWS DeepRacer League Champion will return to defend their title.

(24x) Virtual Circuit Pro Division Winners The top three winners of the eight AWS DeepRacer League Virtual Circuit monthly Pro Division Finale races in 2021.

(5x) re:Invent Wildcard Race Winners The 5 top finishers winners of the re:Invent Wildcard race taking place from Nov. 1 – 14, 2021.

(10x) Community Wildcard Race Winners Ten lucky entrants selected from various AWS DeepRacer community races throughout 2021 will receive invites to compete in the Championship Knockouts.

Championship Racing

The AWS DeepRacer re:Invent Championship Cup will consist of a wildcard race, and three (3) rounds of racing. The races will take place on a single track which will be announced and available for training in the DeepRacer console starting on Nov. 1, 2021.

Wildcard Race | Time Trial | Nov. 1 – 14, 2021

Round 1: Group Knockout Round | LIVE Object Avoidance | Nov 17, 2021

Round 2: Bracket of 16 | LIVE Head-to-Head | Nov. 22, 2021

Round 3: Grand Prix Final | LIVE Head-to-Head | Dec. 1, 2021

The re:Invent Wildcard Race

Location: [AWS DeepRacer Console](#)

Race Schedule: 12:01am Nov. 1, 2021 – 11:59pm Nov. 14, 2021 (UTC)

Track: Vivalas Speedway - Length: 73.785m (195') Width: 131 cm (51.58")

Format: Time Trial Leaderboard

Ranking method: Total time

Race style: Continuous Laps

Number of laps: 3

Resets allowed: Unlimited

Reset penalty: 3 seconds

During the re:Invent Wildcard Race, anyone eligible to compete in the AWS DeepRacer League (except for the 21 previously qualified AWS DeepRacer Championship finalists from the 7 completed Pro Division Finale races as of 11/1/2021) may compete directly in the AWS DeepRacer Console. Throughout the race period, competitors may submit unlimited evaluation attempts to achieve the fastest possible time on the leaderboard. Each evaluation consists of 3 continuous laps, with unlimited resets (3 second penalty per reset). At the end of the racing period, the 5 competitors with the fastest



leaderboard times will advance to compete in the round 1: group knockout races. Wildcard finishers will race first in their respective knockout round groups. In the event that more than one wildcard racer is in the same group, the slower finisher from the wildcard race will go first. In the event a tiebreaker is necessary to determine which competitor will move on to the next round, a coin toss, performed by AWS, will determine which competitor will move on.

Round 1: Group Knockout Races

Location: [AWS DeepRacer Console](#)

Broadcast Location: www.twitch.tv/aws

Race Schedule: Nov 17th, 2021

Track: Vivalas Speedway - Length: 73.785m (195') Width: 131 cm (51.58")

Format: AWS DeepRacer Virtual Live Racing: Object Avoidance

Ranking method: Fastest single lap

Race style: 2 attempts, 3 minutes continuous each

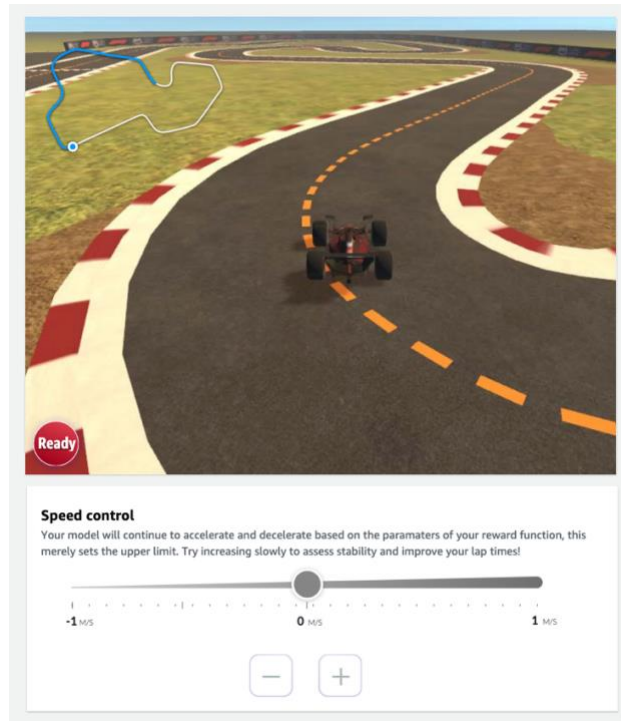
Resets allowed: Unlimited

Reset penalty: 3 seconds

Collision penalty: 3 seconds

Round 1: Group Knockout Races will take place on Nov 17, 2021 inside the AWS DeepRacer console and LIVE on AWS Twitch. Participants will be separated into 4 groups. AWS will use best efforts to align racers to similar time zones, with races scheduled for each group during regular re:Invent hours for all of the participants, based on the respective geographic region. The scheduled race time for the 4 group races will be published on www.awsdeepracerleague.com by Nov. 15, 2021 as well as emailed directly to championship finalists pending the release of the results of the Virtual Circuit Pro Division Finale October race results, which will conclude on Nov. 11, 2021.

The group knockout races will be conducted in a virtual live racing experience within the AWS DeepRacer console. Each group will receive access to their race within the console environment, and shall have the ability to submit the model of their choosing for evaluation in the console prior to the start of their group knockout race. Racers will be placed into a queue based on their 2021 Virtual Circuit Qualifying Race results, with top pro Finale leaderboard finishers racing last in their group, and wildcard racers going first. When each racer reaches the front of the queue, they will be given 3 minutes uninterrupted on the virtual track while their model is evaluated live in real time to achieve their single fastest lap time. Each racer will be given 2 attempts on the track. The model will operate autonomously to maneuver through the object avoidance track; however, the racer will have ability to manually set the maximum speed using the speed control tool (pictured below). Once all racers in the group have completed their attempt, second attempts will take place, with the start order determined by the reverse of the first attempt leaderboard rankings, meaning the slowest finisher in attempt 1 will race first in attempt 2, while the fastest in round 1 will race last. At the end of the 2 attempts, the 4 fastest racers as determined by their best single lap posted on their group's leaderboard will advance to the round 2: Bracket of 16. In the event a tiebreaker is needed to determine which competitor moves on to round 2, the racer with the fewest resets during their qualifying run for round 1 will be determined as the winner. Racers may submit a different model during each racing attempt at their discretion, however no change of model may be made within an attempt. If a racer for any reason fails to participate in their race run, they will forfeit their turn. No reruns, makeups, or alternate run times will be offered for a racer that is not present during their race turn. During live knockout races, anyone will be able to watch the races live on the official AWS Twitch channel <https://www.twitch.tv/aws>. As of July 8th, 2021 LIVE racing was made generally available in the AWS console. With the launch of this feature, any user is able to create their own LIVE race to submit models to any currently released AWS DeepRacer track. In consideration of this, no practice session shall be organized by AWS however participants are encouraged to make use of this feature to practice ahead of their race. Detailed instructions and best practice for participating in a LIVE race will be made available in writing to each competitor in their official invitation to their group knockout race.



Round 2: Bracket of 16

Submission Location: [AWS DeepRacer Console](#)

Broadcast Location: www.twitch.tv/aws

Race Schedule: Nov. 22, 2021 5:30pm (PST)

Track: Vivalas Speedway - Length: 73.785m (195') Width: 131 cm (51.58")

Format: LIVE Head-to-Head double elimination bracket tournament

Ranking method: Total time

Race style: Continuous Laps

Number of laps: 3

Resets allowed: Unlimited

Reset penalty: 2 seconds

Collision penalty: 2 seconds

Following the conclusion of the round 1: group knockouts, the top 4 finishers in each of the 4 groups will be placed into the round 2: Bracket of 16 LIVE Head-to-Head race. This new racing format will combine Head-to-Head racing between competitors with the LIVE racing experience as described in round 1 group knockouts. In Round 2, competitors will be matched up based on their finish result during round 1. Matchups for round 2 will be determined as outlined in the below diagram. In Head-to-Head racing, two competitors will simultaneously deploy models in the LIVE racing environment, that are able to detect and interact with one another on the track. As in all live racing, the model will make racing decisions autonomously, while the competitors will have the ability to manually adjust the maximum speed reward using the speed control tool. In each race, competitors will have a single attempt to complete 3 continuous laps. The first competitor to successfully complete 3 laps is the winner of the race, and advance on to face the next winning competitor within their



bracket. Racers may submit a different model during each racing attempt at their discretion, however no change of model may be made within an attempt. In the double elimination format, the second-place finisher in a race will move to the “last chance bracket” where they will have one more attempt to race against other competitor that has had one unsuccessful race. The Round 2 bracket of 16 will progress until 3 competitors remain: 1 undefeated racer, and 2 racers with 1 unsuccessful race each. These 3 competitors will advance to the Championship Finale race.

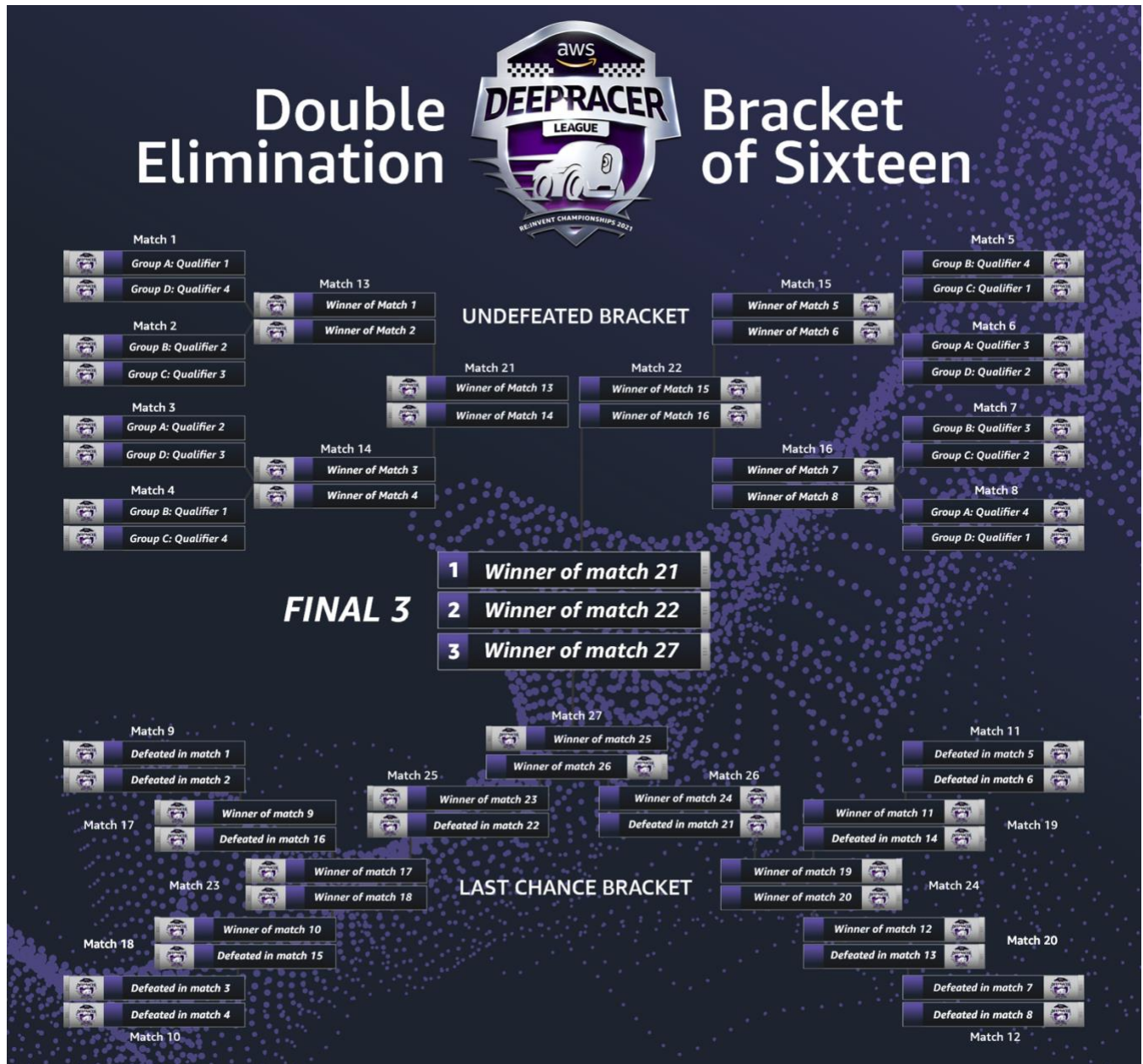


Figure a. Bracket of 16



Round 3: AWS DeepRacer Championship Finale

Submission Location: [AWS DeepRacer Console](#)

Broadcast Location: AWS re:Invent Live AIML and Data Analytics Keynote

Race Schedule: Dec. 1, 2021

Track: Vivalas Speedway - Length: 73.785m (195') Width: 131 cm (51.58")

Format: LIVE Head-to-Head double elimination bracket tournament

Ranking method: Total time

Race style: Continuous Laps

Number of laps: 3

Resets allowed: Unlimited

Reset penalty: 2 seconds

Collision penalty: 2 seconds

The remaining 3 racers will face off LIVE Head-to-Head in a conclusion of the bracket of 16 double elimination tournament. The Finale round will consist of 2 races; the first race will take place between the two competitors that each have had one unsuccessful race, to determine our third place finisher. The final race will take place between the winner of the first, and the undefeated racer from the bracket of 16. The rules and format of round 3 will be the same as that of round 2, with a single attempt, best of 3 lap format determining the winner of each race. As in the previous round, two competitors will simultaneously deploy models in the LIVE racing environment, that are able to detect and interact with one another on the track. The model will make racing decisions autonomously, while the competitors will have the ability to manually adjust the maximum speed reward using the speed control tool.

At the conclusion of the round 2: bracket of 16, the 3 advancing racers will be provided with an invitation to a private race where they will compete LIVE to determine the winner. The exact date and time will be communicated at the close of the round 2 bracket of 16, to take place between Nov. 23 and Nov. 30, 2021. The LIVE race will be recorded by our professional production team, with audio visual equipment shipped to each participant prior to the race start. A broadcast of the LIVE championship race will be screened during Swami's AIML and Data Analytics keynote on Dec. 1, 2021 during re:Invent 2021. The keynote will serve as the world premiere of the Finale and official announcement of the 2021 AWS DeepRacer League Champion.

AWS DeepRacer Championship Cup Race Rules

- a. Inside the AWS DeepRacer Console, there may be announcements indicating whether any of the rules were adjusted for a particular race and if so, they will supersede these Terms and Conditions. We reserve the right to update and change these terms and conditions.
- b. You may only race with your own Reinforcement Learning model or a stock AWS DeepRacer Reinforcement Learning model provided by AWS in the AWS DeepRacer console.
- c. All timings shall be as determined by the AWS DeepRacer console to the thousandth of a second.
- d. During the round 1: group knockouts, if the maximum time on track has elapsed and no valid lap has been completed, you will not have a valid lap time to submit and marked as DNF.
- e. During the round 1: group knockouts, once the first lap of an attempt has been initiated, the countdown clock will not be paused or restarted due to any reason.



- f. During all LIVE racing, no special consideration will be given for global latency and response times of the speed control device. The speed control is not a throttle, and only defines the maximum allowable speed of your model, while your model continues to operate autonomously within this parameter.
- g. AWS reserves the right to restrict or otherwise remove you from participation in the Championship Cup due to disruptive behavior or misconduct of any kind, including but not limited to, use of aliases or other racing materials that are inappropriate, profane, defamatory, infringing, or unlawful.
- h. Except where these DeepRacer Championship rules expressly differ, the AWS DeepRacer 2021 League Virtual Circuit rules found here ([2021 AWS DeepRacer League Terms and Conditions](#)) will govern. For avoidance of doubt, to the extent these DeepRacer Championship rules expressly differ from the 2021 AWS DeepRacer League Terms and Conditions, these Championship rules govern.

The Prizes

One (1) Grand Prize: The 2021 AWS DeepRacer Championship Cup Champion shall receive

- a. Bragging rights to the AWS DeepRacer League 2021 Championship Cup and a track and other significant elements named after the winner during AWS DeepRacer League 2022.
- b. The Champion will also receive \$10,000 USD. For participants of the U.S., payment will be made via Chase Quick Pay. For international participants payment will be made via PayPal

One (1) Second Prize: The 2021 AWS DeepRacer Championship Cup second place finisher will receive \$5,000 USD. For participants of the U.S., payment will be made via Chase Quick Pay. For international participants payment will be made via PayPal

One (1) Third Prize: The 2021 AWS DeepRacer Championship Cup third place finisher will receive \$2,000 USD. For participants of the U.S., payment will be made via Chase Quick Pay. For international participants payment will be made via PayPal

Three (3) Fourth Prizes: The 2021 AWS DeepRacer Championship Cup 4-6 place finishers will receive \$1,000 USD each. 4-6th place will be determined as the unsuccessful competitors from matches 21, 22, and 27 as shown in figure a. bracket of 16. For participants of the U.S., payment will be made via Chase Quick Pay. For international participants payment will be made via PayPal

If a potential winner is from Italy, Hong Kong, or otherwise ineligible to receive a cash prize due to local laws or restrictions, AWS, at its sole discretion, reserves the right to provide an alternative prize of equal or greater value.