



AlphaPilot Innovation Challenge

Information Guide For The
Artificial Intelligence Drone Racing Competition

November 2018



What is AlphaPilot?

The Overview

- AlphaPilot is a Lockheed Martin open-innovation challenge
- It is focused on artificial intelligence (AI) and autonomy
- The format is drone racing

The Details

- Teams will design AI to pilot drones through professional drone racing courses
- AlphaPilot will provide specially-designed drones containing the latest GPU devices
- No offloading of data is permitted – teams must perform 100% edge computation

What Makes AlphaPilot Unique?

Exciting Sport

- Drone racing is the world's fastest growing sport, with over 60 million viewers
- It's a big draw for Millennials, K-12 students, and their families

Incredible Partners

- Drone Racing League is launching the AI Robotic Racing league (AIRR) as part of AlphaPilot
- NVIDIA is providing the latest in GPU technology

Original Content

- AlphaPilot will be featured in Drone Racing League content for broadcast television
- An AlphaPilot documentary will be distributed via media on demand

How to Get Involved

Compete as a Team

- Teams of 1-10 permitted
- Teams can be independent or affiliated with a legal entity
- Register via the AlphaPilot website (starting November)

Sponsor a Team

- Legal entities may choose to sponsor one or more teams competing in AlphaPilot
- Sponsorship can be in-kind, monetary (labor and travel), or both

Sponsor AlphaPilot

- The AlphaPilot team has reserved slots for tier-two sponsors
- Includes branding and signage, activations, event tickets, VIP activities

Host an AlphaPilot Race

- If you have a unique venue with over 80,000ft² and are interested in hosting an AlphaPilot race, please contact the AlphaPilot team or the Drone Racing League

How it Works

Open Registration (November 2018 – February 2019)

- Register online, build your teams and connect with sponsors
- Receive updates on AlphaPilot challenges, rules, timelines, technology, and more

Virtual Qualifying Round (March 2019)

- Watch an informational webinar on the AlphaPilot qualification challenge
- Develop code for the qualifier and submit it to a specified location on or before the given deadline
- The qualification challenge will close and AlphaPilot will announce the top scoring teams

Workshop (June 2019 – July 2019)

- The top teams will be issued a simulation kit to develop and train their code for AIRR racing
- The top teams will be paired with a Lockheed Martin mentor to assist in their code development
- A workshop will be held to introduce teams to AIRR and engage with leading AI experts

Race in the 2019 AIRR Season (August 2019 – December 2019)

- The top teams will participate in a series of DRL AIRR race events
- A grand prize will be awarded to the team with the best cumulative score (DRL scoring system)
- An additional \$250,000 prize will be awarded to the winner if they can outfly a professional DRL pilot

AlphaPilot FAQs (1 of 2)

What Are the Rules for Intellectual Property?

- Teams will retain ownership and control of their intellectual property
- Teams must document the use of any third-party intellectual property
- Lockheed Martin will have the right of first refusal to negotiate a license

What is the Difference Between AlphaPilot and AIRR?

- AlphaPilot is Lockheed Martin's innovation challenge from 2018 - 2020
- AIRR is the Drone Racing League's new autonomous racing class
- The first two seasons of AIRR are dedicated to AlphaPilot with Lockheed Martin as the title sponsor

How Many Races and Where Will They Be Located?

- AlphaPilot will run 2 seasons – 2019 and 2020
- 4 races in 2019 (3 domestic and 1 international) and between 1-4 races in 2020 (pending 2019 outcome)

Can You Confirm Any Technical Details?

- The challenge will require 100% edge computing – no offboarding of data
- Contestants cannot modify any of drone hardware or payloads
- Preparation for races (finalists only) will be done via a high-fidelity AI/ML simulator and development kit
- The 2019 drone will utilize the NVIDIA Jetson TX2 – possibly upgrading to the Jetson Xavier in 2020
- Course design will incorporate a visual fiducial guidance system

AlphaPilot FAQs (2 of 2)

What if We Need to Modify Our Team Members?

- Teams may add, remove, or substitute official team members so long as the change is reported (via the team's AlphaPilot profile or through direct communication with AlphaPilot administrators if in the finalist phase) and in compliance with AlphaPilot's terms and conditions for participation.

Will Other Aerospace Companies Be Able to Compete?

- Yes. All companies are welcome to compete
- AlphaPilot is about advancing the state of autonomous technology and is being done in the spirit of communal progress

How will Awards be Divided Amongst Team Members?

- Each team will have a designated Team Captain. The Captain will be the sole recipient of award money
- Lockheed Martin is not responsible for distribution of award money amongst the team
- All teams are encouraged to develop their own legal arrangements in advance of the competition

Do All Teams and Team Members Have to Attend Each Race?

- Teams may have between 1-10 members, but only a subset will be permitted to attend each race (based on venue capacities)
- Teams are encouraged to have enough members such that at least 1 person can attend each event
- Teams that cannot attend an event may choose to assign an AlphaPilot administrator to perform their race-day setup

How Will Teams Find Sponsors?

- Teams that represent a legal entity or university may pursue a direct sponsorship from those organizations
- Organizations interested in sponsoring a team can register via the AlphaPilot website and promote their availability
- Teams are encouraged to promote their activity online and may crowdsource a sponsorship within user communities

More information:

lockheedmartin.com/alphapilot

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