

GRAIC '22

A competition for intelligent racing

Contacts

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- Fill this form for updates: <https://forms.gle/cqjBEyZKu7nSh6Ws9>
- Submission: TBA

Timeline

- **January 26:** Single agent platform beta released
- **February 21:** Multi-agent platform beta released
- **January - early March:** Feedback and platform updates
- **March 31:** Final platform release
- **April 8-9:** [Engineering Open House Presentation](#)
- **April 18:** Submissions open
- **May 1:** Submissions close, final races held
- **May 3-6:** [CPS-IOT Week 2022](#), final results announced

Organizers

- Sayan Mitra
- Necmiye Ozay

GRAIC Core team

- Dawei Sun (Co-lead)
- Kristina Miller (Co-Lead)
- Yan Miao (Co-Lead)
- Yixuan Jia (Race development)
- Raj Joshi (Testing Pipeline)
- Junyan Li (Map creation)

[Generalized RAcing Intelligence Competition \(GRAIC\)](#) is a simulated vehicle race affiliated with [CPS-IOT Week 2022](#). GRAIC aims to bring together researchers in AI, planning, synthesis, and control to create a platform for comparing different algorithms for controlling vehicles in dynamic and uncertain environments. We hope that it will also be fun.

TL;dr We are providing a simulation environment, test vehicles, tracks, scoring function, and documentation. As a competitor, you will use the given API and develop your racing controller. In early May, you will submit your racing controller code. The competition tracks will be different from the testing tracks. Multiple vehicles will be involved. We will run the races with your controllers and provide results, data, video feedback, and announce winners during CPSWeek. There will be different race categories and prizes.

New in GRAIC '22

- We lower hardware requirements for entry: You will have an AWS image to run simulations; no need for expensive hardware. Instructions are on the [installation page](#).
- More excitement: Multi-agent racing, new vehicles, and tracks.

Race Details At runtime, the input to the controller will come from a *perception oracle* that will provide as input a local view of obstacles, lanes, and gates on the track near the vehicle. All of these will be published in ROS topics. The tracks will have unknown static and moving obstacles. The outputs from the controller (brake, throttle, and steering) will drive the vehicle through ROS interfaces. For some vehicles will have a dynamic model for others you black-box vehicle simulator. The perception and control interfaces will not change. See more documentation at [GRAIC webpage](#); code available from this [GRAIC github repo](#).

Installation This year we have two options for installation: you can run GRAIC '22 on Amazon Web Services (AWS) or install our docker image locally. Instructions can be found on our [installation page](#).