

Game Design Challenge Finalist Team 2706

Team Name: Merge Robotics

Location: Kanata, Ontario Canada

Game Name: Save Our Species

Game Overview:

You have been sent to an eggstreme conservation mission on the planet Mergius. The planet is in a state of impending ecological disaster. Unable to save Mergius, your job is to help gather the EGGS of an endangered species, only found on this planet, and deliver them safely to a more stable ecosystem on a nearby planet. Mergius is riddled with multiple unpredictable habitats. Your Alliance must navigate through caves, mountains, volcanic terrain, and ruined forests to rescue as many EGGS as possible before nightfall. When nightfall arrives, the temperature drops, reducing EGG survival rates.

The species has three distinct egg colour variations - pink, orange and green. Your task is to gather these EGGS and place them into the BASKETS, found in HATCHERIES which you brought down to the planet's surface, so that they can later be hoisted into your spaceship. Each EGG placed into a BASKET gives the Alliance a point value. Survival rate increases when similar coloured EGGS are placed together in their corresponding BASKET. EGGS placed into BASKETS of their corresponding colour increases the amount of points they are worth.

As you are collecting EGGS, your ship's sensors show that a volcanic eruption will occur. This will reveal more EGGS for retrieval, but also signals the imminent collapse of the planet.

To increase a specific BASKET'S survival, a GOLDEN EGG can be added to the awaiting NEST in your spaceship. An INCUBATOR is available on Mergius' surface to develop any EGG into a GOLDEN EGG. Robots must place an EGG into the INCUBATOR, turn it on, and wait until the GOLDEN EGG is ready. They then must take the new GOLDEN EGG out of the INCUBATOR and deliver it to a crewmate. Before coming aboard the spaceship, the GOLDEN EGG must pass through the DECONTAMINATION PORTAL, and one of your crewmates will carefully place it in one of the three coloured NESTS. Golden EGGS warm the NEST, providing a greater chance of survival. Placing a GOLDEN EGG into a nest doubles the point value of all EGGS in the corresponding coloured BASKET on the surface. GOLDEN EGGS can also be placed directly into the BASKETS on Mergius' surface for a large point value.

As dusk approaches and the temperature begins to drop, the BASKETS need to be lifted off the surface of the planet, to the warmth and safety of the spaceship. Alliance members must work together to ensure that as many BASKETS as possible are hoisted up to the spaceship so that all EGGS can be quickly brought onto the spaceship. Each BASKET hoisted up to the ship means additional points for the Alliance. If all BASKETS are brought onto the spaceship before nightfall, Alliances will receive a ranking point. Night signals the end of the conservation mission, and although both Alliances have fought to ensure the species survival, only one can be declared the winner.

Describe Notable Field Elements:

1. EGG as game piece - 3 different colours (Green, Pink, Orange)

2. SPECIES' HABITAT

- Each habitat has wedge shaped zones representing an area on the planet with associated challenges where EGGS are available to collect

- Each habitat has a volcano located in its centre



- Volcano erupts 60 sec into teleop, adding EGGS to the habitats (pop-o-matic mechanism to propel EGGS into the SPECIES' HABITATS)

- SPECIES' HABITAT is a Protected Zone

SPECIES' HABITAT comprises of the planet's four terrain types:

- a. Cave - Low bar 24 inches high

- b. Mountainous Terrain - Ramp

- c. Volcanic Terrain - Rough potholed surface with a lava stream (slippery)

- d. Fallen Forest - ice covered logs litter the ground - (rollers)

3. HATCHERY- contains the BASKETS for scoring

- 3 different coloured BASKETS that match the EGGS (Green Pink Orange)

- Each is attached to a pulley by THE ELEMENT (a chain)

- BASKET lights up when GOLDEN EGG is placed in the associated coloured NEST

- HATCHERY is a Protected zone

4. INCUBATOR

- Specially lit box into which robots can insert an EGG

- One INCUBATOR per alliance with

- One HUMAN PLAYER per INCUBATOR

- There is a lever that turns on the INCUBATOR at >24 inches high

- There is access from outside the field for HUMAN PLAYER to swap EGGS

- There are lights to indicate incubation progress and completion (Alliance Colour)

- INCUBATOR is a Protected Zone

5. DECONTAMINATION PORTAL

- Slot to remove GOLDEN EGG from field for HUMAN PLAYER to put into NEST;

- DECONTAMINATION PORTAL is a Protected Zone

6. NEST

- Consists of 3 slots (corresponding to the coloured BASKETS)

- Only 1 GOLDEN EGG per slot which indicates that corresponding BASKET will receive the point multiplier.

7. HUMAN PLAYERS:

- 2 human players per alliance (stationed at DECONTAMINATION PORTAL and at INCUBATOR)

What are robots expected to do?

There are two Alliances of 3 robots each. Expected robot actions will differ during the three main phases of the game and according to a team or an Alliances' gameplay strategy.



The game begins with a 15 second Autonomous Period. Robots cannot be preloaded with EGGS. All Alliance robots start within the safe zone of their Alliance's HATCHERY. During the Autonomous Period robots are expected to:

- Exit the HATCHERY (points)
- Collect EGGS from the SPECIES' HABITAT
- Deliver collected EGGS to BASKETS in the HATCHERY (double points during Autonomous) or to the INCUBATOR
- Activate INCUBATOR (via lever)

At the end of Autonomous Period, Human drivers/operators will move forward and take control for the 90 second Teleoperated (Teleop) Period. During Teleop robots may individually or by working together:

- Collect EGGS by navigating varied terrain in SPECIES' HABITAT
- Deliver EGGS to BASKETS or to the INCUBATOR
- Activate INCUBATOR (via the lever)
- After INCUBATOR lights up with Alliance colour, take GOLDEN EGG from INCUBATOR to Decontamination Portal
- After INCUBATOR lights up with Alliance colour, take GOLDEN EGG from INCUBATOR to a BASKET
- Defence

A field sound will indicate the last 30 seconds of the match and the start of the Endgame Period. During this time robots may:

- Continue Teleop actions
- Go to HATCHERY and park
- Go to HATCHERY and hoist BASKET to spaceship for evacuation (Each robot may hoist one or two BASKETS maximum)
- A ranking point is awarded if robots work together to raise all 3 BASKETS

Did you use the Game Design Challenge Element in your concept?

Yes

If yes, how?

THE ELEMENT (chain) is key to saving the species from extinction on the planet Mergius. To "Save Our Species", EGGS must be hoisted to the spaceship for evacuation via THE ELEMENT. In this game:

- A truss structure in the HATCHERY above the BASKETS houses three pulley systems - one per BASKET.
- The corners of each basket are attached to a length of THE ELEMENT.
- The corner lengths are then joined to a single chain that runs up to the HATCHERY's truss structure where it passes over the pulleys, and hangs down for a waiting robot.
- The robot end of THE ELEMENT is suspended 4 ft above the floor and is available to be pulled by robots during endgame

- The robot end has a T handle to assist robots in grabbing on
- Robots will grab the handle and raise the BASKET
- Lights indicate to the audience when the BASKET is raised to safety (trips a sensor), indicating successful EGG evacuation from the doomed planet Mergius