BGR ENTERTAINMENT CHALLENGE: Go Grow Glow

Can you imagine what it would look like if our campus were filled with visually fantastic mushrooms? This could become a reality. Mushrooms are considered one of the most sustainable species from a human perspective in the world. [1] Throughout the whole process from growing to harvesting, mushrooms require considerably less amount of growing materials, water, and energy compared to other species of crops. Mushroom cultivation also emits significantly less carbon dioxide than other agricultural practices. [2] Mushrooms impact human life positively. Beyond their use as nutritional food, they can also be found as ingredients in building materials, packaging, textiles, medicine, and for a number of other purposes. [3] However, the number of mushroom species is declining. And we do not put efforts into conserving mushrooms due to a lack of awareness, while we are comparatively enthusiastic to protect well-known endangered animals and plants from extinction. [4] It is time for us to shed light on the value and status quo of mushrooms and help them grow. The mushroom has strong vitality, just like us–boilermakers. The project, therefore, aims to raise awareness of the sustainability of mushrooms by letting people participate in the interactive installation. At the same time, we try to engage the public by bringing them into

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[1] "Mushrooms Are Considered to Be the Most Sustainable Vegetable - Here's Why." American Mushroom Institute - Mushrooms Are Considered to Be the Most Sustainable Vegetable - Here's Why. Accessed November 28, 2022. https://www.americanmushroom.org/news/2021/01/01/ami/mushrooms-are-considered-to-be-the-most-sustainable-vegetable-here-s-why/.

[2] "The Mushroom Sustainability Story: Mushroom Sustainability." Mushroom Council, July 27, 2022. https://www.mushroomcouncil.com/sustainability/story/.

[3] Hugo, Kristin. "Surprising New Uses for Mushrooms, from Houses to Packaging." Science. National Geographic, May 4, 2021. https://www.nationalgeographic.com/science/article/mushroom-surprising-uses-building-material-medicines-fungi.

[4] "Are Fungi Species Going Extinct?" Fantastic Fungi, September 14, 2022. https://fantasticfungi.com/are-fungi-species-going-extinct/.

the public space. When participating in the project, students will get opportunities to explore and become familiar with the campus.

"Go, Grow, Glow" is a light-based public installation that uses mushroom growth animation videos using Arduino and Processing. It imitates the process of mushroom propagation and creates an immersive space for students to participate in mushroom reproduction. We bring mushrooms from nature to campus and create an experience that is engaging, both visually and intellectually. The system of this project functions like a game. Typically, the mushrooms disperse spores by the wind or insects. In this project, the students will play the role of "insects," and the campus can be a big playground. The mission of students is to across the campus to help mushrooms to reproduce. We try to use this creative way to activate our public spaces and create fun, uplifting experiences for people on campus.

This installation will be placed in three prominent locations on campus, from the north area to the south, based on the location of Purdue's Campus Tree Trails tour. At each destination, students will encounter a tree that needs to be helped spread "spores." When students get close to the target tree, the mushrooms will grow one by one. The closer the students get to the tree, the more mushrooms will show up on it. It means the mushroom senses the proximity of carriers and is well-prepared to release spores. It will leave hints for the following location after growth is complete. When the students go away, the mushrooms will disappear. The challenge for students is to find the exact target tree. It would be an adventure for students, too.

Since this installation mainly uses light that has less impact during the day, we will install physical artifacts of mushrooms using sustainable materials to draw students' attention to the project. During the night, the target tree will show the twinkle light to attract students to participate in the project.

For the mechanism, each tree will be equipped with an infrared sensor. And the mini-projector will be hidden around the tree. So when students get close to the tree, the infrared sensor will be triggered and send signals to the Arduino. The Arduino then transmits the signal to Processing, and projectors project the motion graphics onto the tree.

Budget

Category	Cost
3 computers	$1200
3 projectors	$450
3 Arduino boards	$75
3 Ultrasonic distance sensors	$75
3d mushroom objects (paper clay)	$180
Portable power stations	$450
Misc. (wires, power supplies, etc.)	$70
Total	$2,500

We hope that our proposal would meet a positive response. Thank you for your consideration.

Sketch
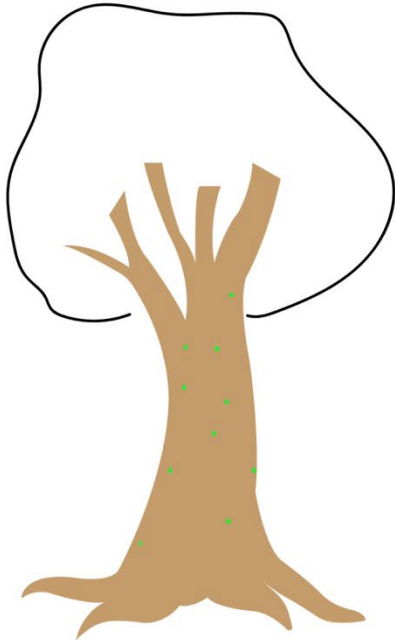
When nobody appears in front of the tree,
dot-shaped lights twinkle to attract people.
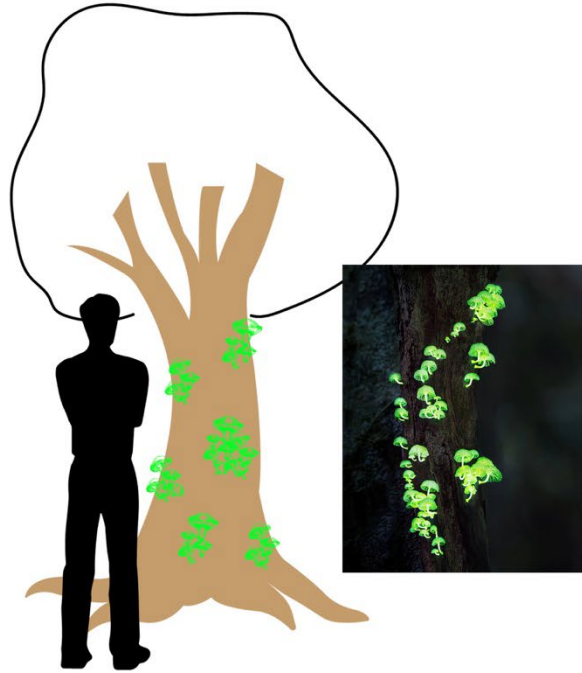
When people get closer to the tree,
the animated motion graphics of growing mushrooms appear
on the surface of the tree.

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