View results

Respondent

27 Aaditya Voruganti

37:03
Time to complete

Instructions:

Please adhere to the session word counts. Project leads must attend one SSC working group meeting post step 1 application submission. If you have any questions about the application process, please contact the SSC at Sustainability-Committee@illinois.edu.

1. Have you attended an SSC working group meeting? If not, please attend an SSC Working Group and present your project. Once working group attendance is complete, please return to complete your application.

   https://studentengagement.illinois.edu/student-sustainability/ssc/calendar/
   *

   - (●) Yes
   - ( ) No

2. Please enter the date of the working group meeting you attended. As a reminder, the working group meetings are structured as follows

   - Energy + Transportation and Infrastructure working group.
   - Food & Waste + Land, Air, and Water working group.
   - Education and Justice working group.

   *

   Food & Waste + Land, Air, and Water working group

3. Date of Application *

   02/09/2024

4. Project Name: *

   SegBin by TerraVortex

5. Total Funding Requested From the SSC. *

   3186.14

   Please enter a number less than or equal to 10000

6. Project Lead Full Name: *

   Aaditya Voruganti

7. Project Lead University Email Address *

   av34@illinois.edu

8. Project Abstract: (In less than 100 words, briefly describe the project.) *

Improper waste segregation poses significant environmental and financial challenges. In colleges, even students often neglect to separate waste correctly, leading to damaged recyclables, increased landfill waste, and the labor-intensive task of sorting improperly discarded waste. This issue extends beyond universities, indicating a larger problem with waste management globally. The current approach of replacing traditional single-bin systems with costly three-bin recycling bins has improved diversion rates but falls short of expectations. Financial burdens arise from the need to hire workers for manual waste sorting. To address this problem, we developed a cost-effective solution that ensures minimal damage to recyclables by sorting waste at the point of disposal.

9. Project Category *

- ○ Education & Justice
- ○ Energy
- ◉ Food & Waste
- ○ Land, Air & Water
- ○ Transportation & Infrastructure

All rolling application require a faculty/staff advisor.

Faculty and Staff Advisor

10. Full Name: *

Daphne Hulse

11. RSO/Department *

Facilities and Services

12. University Email Address: *

dlhulse2@illinois.edu

13. Do you have additional members? *

- ◉ Yes
- ○ No

Project Team Member

Additional Member

14. Full Name: *

Pranav Penmatcha

15. RSO/Department *

TerraVortex

16. University Email Address: *

pcp3@illinois.edu

17. Do you have additional members? *

- ( ) Yes
- (•) No

UIUC Financial Contact

Financial Contact (Must be full-time UIUC employee)

18. Full Name: *

Mike Alsip

19. RSO/Department *

Facilities and Services

20. University Email Address: *

alsip@illinois.edu

Project Questionnaire:

21. Is this project student led? *

- (•) Yes
- ( ) No

22. If applicable, have you received approval from Facilities & Services and/or site manager? *

- (•) Yes
- ( ) No
- ( ) N/A

23. If additional funding is required, do you have a plan for ongoing funding beyond SSC? (SSC cannot guarantee ongoing financial support) *

- (•) Yes
- ( ) No

24. Beyond SSC, do you have sources contributing funding or support (ex. staff time, external grants, etc.) to this project? *

- ( ) Yes
- (•) No

25. Have you applied for SSC funding previously? *

- (•) Yes
- ( ) No

26. Project Timeline:
(SSC funding agreements remain active for two years. List your project's timeline and major milestones.) *

In February 2024, we'll commence with CAD designs for the SegBin lite device, focusing on the form factor and hardware components. By the end of February, we aim to finalize the design and initiate the sourcing of necessary components. March 2024 will see the initial in-lab testing and fine-tuning of our device. March 2024 will also involve optimization and adjustments based on feedback from the field tests conducted on the bins. In April 2024, we'll monitor the system's performance during an initial deployment phase, preparing a comprehensive project report alongside. By May 2024, we anticipate wrapping up, and providing a thorough handover to the University, inclusive of all necessary documentation and user guidelines. In the fall, we will focus on building our newer model SegBin X and start deploying that across campus to further enhance waste management. This will be a significant upgrade but requires a lot of background information we will gain from SegBin lite.

27. Project Description:
(In 250 words or less, describe your project. What does your project hope to accomplish? What are your project's deliverables?) *

SegBin lite is a sleek, efficient dustbin built to offer automated waste sorting. It is equipped with four adjustable openings, each corresponding to a customizable waste category (plastic products, food waste, metals, office products, biodegradable, etc), SegBin lite utilizes a wide array of Full HD camera modules and infrared sensors. Users simply hold the trash above the camera for 2-3 seconds, allowing our advanced algorithm to analyze the photo and open the appropriate hole for disposal.
Segbin X, which is part of phase 2 will also involve an automatic sorting system where a user throws waste into one hole and the sorting is handled automatically by the dustbin itself. By revolutionizing the waste management process through automated waste sorting at the point of disposal, our innovative dustbin offers a streamlined solution that not only optimizes operational efficiency but also drives substantial cost savings. The labor-intensive task of manual waste sorting is significantly reduced, enabling UIUC to reallocate its valuable resources to more critical endeavors, thereby enhancing overall productivity.
For this SSC application, we intend to build 2 SegBin Lites to check their viability and feasibility on campus. We intend to collect data on performance and feedback to see how the bins perform in real-life field conditions. This will be helpful for us to develop a proposal for more deployments in the future and it will also help improve our devices.

28. Environmental Impact:
(In 200 words or less, how does your project increase environmental stewardship at UIUC? If applicable, what is the carbon, water, waste, and/or energy savings?) *

The project's use of AI and revenue optimization contributes to more efficient waste management practices. This not only minimizes contamination and reduces landfill waste but also optimizes the recovery of recyclable materials. The data analysis dashboard provides users with valuable insights into disposal trends and waste composition. This empowers users to make informed decisions about waste management, promoting responsible practices. Additionally, the lower cost of switching to SegBin.Ai than conventional 3-bin dustbins by over 50% significantly reduces spending on waste management infrastructure and it also has a major boost in waste diversion rates.

29. iCAP Objective Correspondence:
(In 200 words or less, does your project aim to advance one or more of the Illinois Climate Action Plan's (iCAP) objectives? If so, how?)

A full list can be found here: https://icap.sustainability.illinois.edu/objectives

The ICAP goal of 5.2 Reduce Landfilled Waste, specifically 5.2.1 which deals with adding new bins to buildings is an objective we will directly be addressing with our solution. The main goal of this project is to gain more uncontaminated recyclables and send them to processing plants rather than the waste ending up in landfills. It will do that in 3 ways, increase diversion rates by effective sorting, reduce contaminations by preventing spills and lastly reduce the cost to sort refuse at the waste transfer station.

30. Student Impact:
(In 200 words or less, how will this project benefit students? How will students be involved with this project? What educational components are in your project?) *

The project is completely Student developed and researched. It is focused on using resources available to students on campus to develop sustainable technology that directly impacts the local community. We currently are a small student team, actively hiring more like minded peers like us to help achieve the goals of SegBin.Ai initiative on campus. The students will be involved in every step from design, manufacturing, software, hardware and marketing. We employ a large variety of skills from different schools in illinois like engineering, business and pure sciences to develop our ideas and products.

31. Please see attached file, please be very descriptive and fill out the budget and timeline Excel sheet, and submit it below.

https://studentengagement.illinois.edu/student-sustainability/ssc/docs/SSC-Supplemental-Budget-Timeline.xlsx

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SSC Spring 2024 Aaditya Voruganti.xlsx