AltoPonix

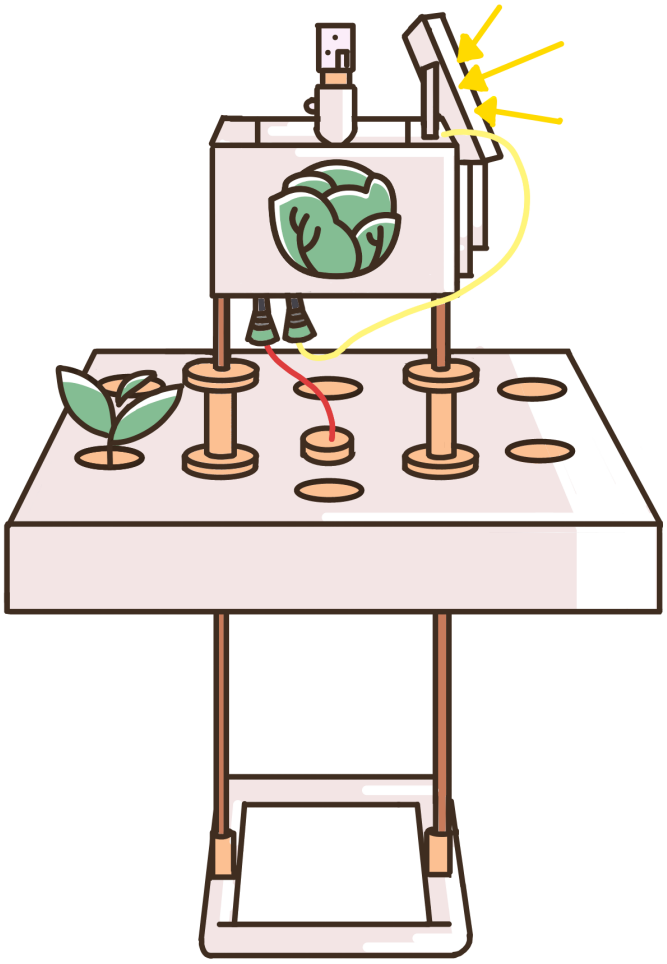
Student-Led Nonprofit

Sponsorship Packet

About AltoPonix

AltoPonix is a student-run nonprofit tech research organization. Our novel design is patent-pending, award-winning, and unequivocally unique. With over 15 members, we fulfill our dual mission of spreading STEM to the next generation and creating a difference in the hydroponics industry. The hands-on experience our members receive enhances both their STEM knowledge and essential life skills such as leadership, confidence, and work ethic. As a registered 501(c)(3) nonprofit, we rely on sponsorships and donations to continue our vital progress.

About STEM



STEM(Science, Technology, Engineering, and Math) is synonymous with achievement and accomplishment in the 21st century. Technology ranked as the fastest-growing industry for the past several years, even more so with the digital age expedited by COVID-19. Early exposure is essential, and AltoPonix provides. Students in AltoPonix gain experience in whichever field of STEM they pursue, whether it is machinery, electronics, software, or computer-aided design.

Room For Improvement

Hydroponics utilizes only water to grow rows of plants stacked upon each other. Fertile land is not required, and plants can be grown in any weather condition. The downside is that most systems are electricity-intensive, costly, and not viable. Our first design, named S1 or Series 1, was optimized for price at only 20 dollars to construct. Utilizing solar power made our device self-sufficient, and a revelation in design made our system superior in all statistics to industrial designs. Our initial prototype model used 0.15% of the electricity typically required while growing plants 30% faster than competing designs. No other design boasts these percentages, but there is still room for improvement. Rest assured, we will fill that room soon.

Our Future

Currently, we are working on S2 or Series 2. While our S1 model succeeded in growing plants with efficiency and quality, it failed in quantity. The design of S1 had a limited production volume, so bulk cultivation was not possible. S2 will be a 300 pound, fully automated, 6-foot tall hydroponics system. By stacking levels vertically, S2 will have the capacity to grow 36 plants at a time. Onboard microcontrollers will ensure seamless automated operation and maintain optimal growth conditions for the plant. Assembled with primarily aluminum, S2 will also be cheap to construct while retaining function and structure.

Our Production

S2 will have two levels, one a stationary vat filled with our nutrient solution, and the other a platform elevator holding the plants. The elevator periodically lowers the plant roots into the solution and then removes them, allowing for efficient nutrient uptake while disallowing oversaturation. There will be several mechanisms that monitor the state of the plants. Firstly, data sensors in the nutrient solution will record solution pH, solution conductivity, and solution nutrient levels. Secondly, temperature and humidity detectors observe ambient state. Finally, there will be a stereo vision camera that continually records images of the plant. The nutrient solution composition is then adjusted up or down according to the data.

Our Software

A plethora of software is required to effectuate S2. Several machine-learning algorithms parse the data from the data sensors, using growth and disease segmentation to evaluate the status of the plant. Then, onboard microcontrollers adjust the parameters up or down accordingly. However, decay in the plant can still occur. For that reason, a machine learning algorithm is constantly evaluating the stereo vision camera feed. If any visual hazard is detected, the same method of adjusting system variables fixes the problem. There is also software for the automation of S2, including raising the platform elevator, dispensing nutrients into the solution, and maintaining temperature and humidity levels.

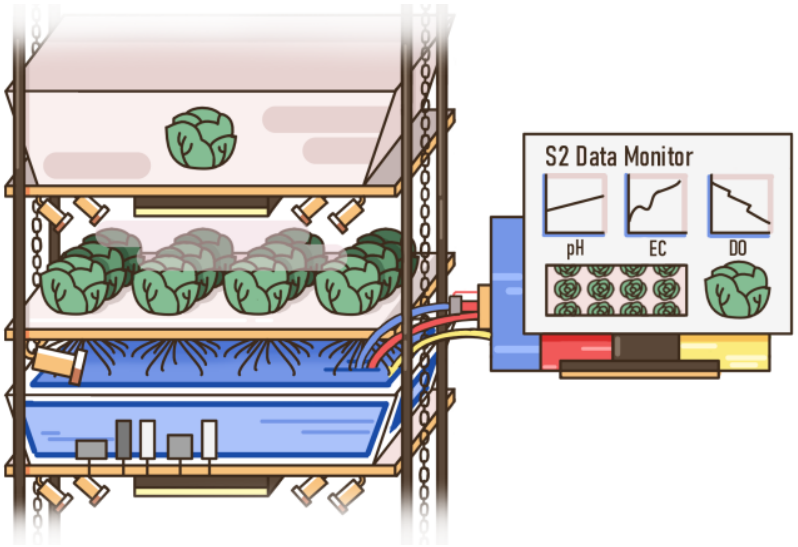
Sponsorship

What better way to help the future than by shaping the minds that will lead it? Not only does a sponsorship help promote your company, but it also leaves a lasting impression on possible future employees. Also, AltoPonix offers a slew of benefits to sponsors, ranging from your logo on promotional materials to your logo on our design. Finally, do not forget AltoPonix has already made significant advancements to current hydroponics systems. Our rate of improvement will only increase with funding, so why not help us?

Tier One

$2500+ worth

- Logo placed most prominently on a plaque on our system
- Logo placed most prominently on website sponsor list
- All lower benefits



Tier Two

$1500+ worth

- Logo placed on a plaque on our system
- Logo placed on all promotional materials
- All lower benefits

Tier Three

$750+ worth

- Logo placed on website sponsor list