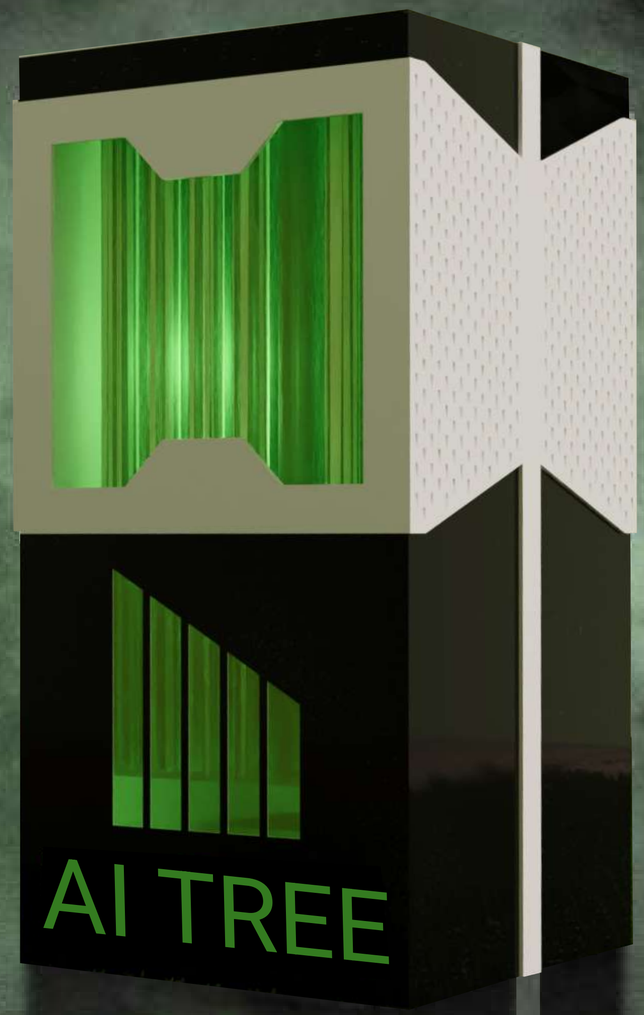
Oxygen | Food | Fuel

AI TREE Wants To Make A Better World.

An approach towards A sustainable built environment



PROBLEM STATEMENT

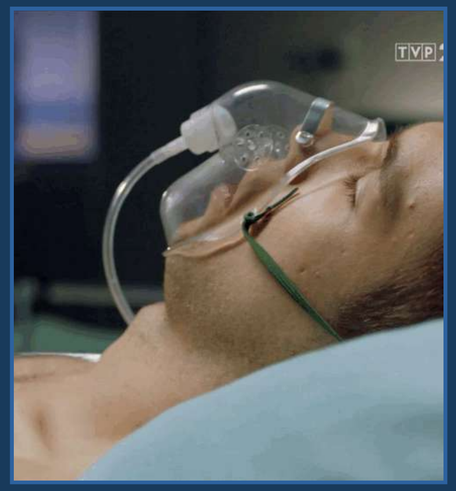
RISING CARBON DIOXIDE LEVELS AND GLOBAL WARMING.

CLIMATE CHANGE/GLOBAL WARMING

It is clear that the world is in a need of large-scale action to be taken against pollution being generated on a daily basis and changing climate because of it leading to global warming,melting of glaciers and what not! :(

OXYGEN SHORTAGE IN PANDEMIC

Many people with COVID-19 have low levels of oxygen in their blood, even when they feel well. Low oxygen levels can be an early warning sign that medical care is needed.



FARMERS LOW REVENUE

Despite the potential for productivity in the agricultural sector, low productivity in agriculture contributes to the difficulty and poverty among farmers in India.

INDUSTRIAL POLLUTION-CARBON RELEASE

A lot pollutants- like Particulate matter (PM10 and PM2.5) ,CO , CO2 , SO2 being released into the air from the industries without being filtered.

← Back Next →

THE SOLUTION

- Our Team Created the **AI TREE** , a green energy solution that captures and sequesters carbon from the atmosphere using algae. This device uses AI to optimize algae growth, carbon capture and algae output ,releases oxygen and super food, produces biofuel, creating a product that is sustainable and efficient.

- **How are WE solving the problem ?**

- **Business model**: Our initiative of this product is very **sustainable** as it would help every sections of the society,from our farmers who would grow algae doubling their profit with respect to any crop they grow, then we will be using that algae in our product AI TREE and then supply this product to the urban areas like IT sectors, offices, hospitals etc where the trees couldn't be planted or to the **red category** industries(having Pollution Index score of 60 and above),where we need carbon filtration due to pollutants directly beiung released and carbon tax which is been levied by the government recently.

- **NOT REPLACING TREES**"-The idea of the AI Tree Is not to Replace real trees , but complement them in area where Planting a forest would not be viable.

- **Frameworks/Tools/Technologies** – AI (Artificial Intelligence)

- **Extent of Scalability/Usability-1 AI TREE = 400 REAL TREES** ("AI TREE" is capable of producing oxygen via algae ,which is equivalent to 400 real trees)

Why is it a right Solution?

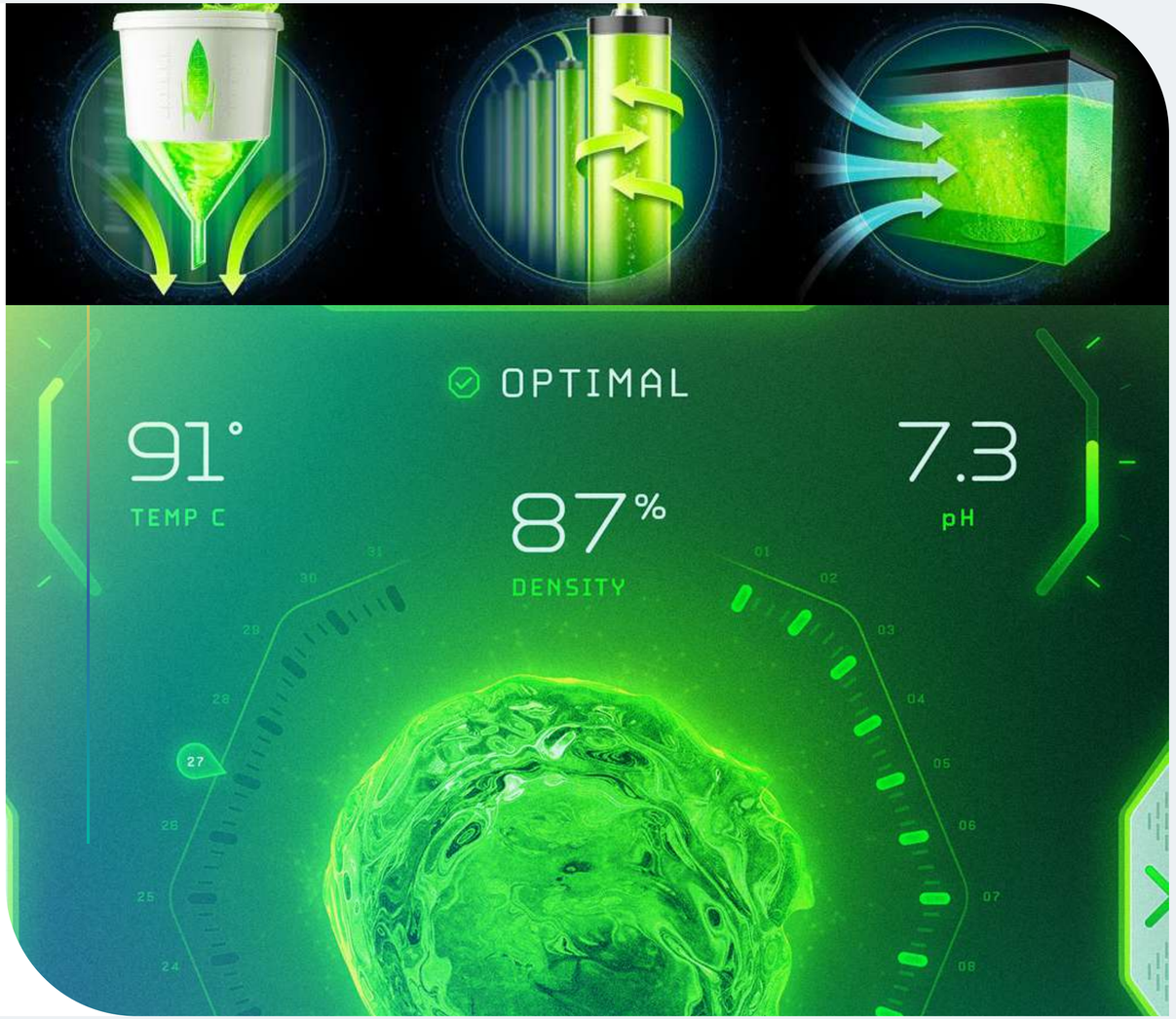
- Super-boosted algae is 400 times more effective at capturing carbon than trees in the same unit area.
- Algae-based biomaterials have the potential to bring about a seismic shift in the way we think about our supply chains. As algae grows, it absorbs CO2 and light and creates biomass. This versatile material can have many uses, including carbon negative or neutral foods, fuels, fertilizers, pharmaceuticals, textiles, as well many more uses we have yet to discover.
- By using machine intelligence to constantly monitor and manage air flow, amount and type of light, available CO2, temperature, pH, biodensity, and harvest cycles, we maintain perfect conditions for maximum carbon sequestration
- The AI TREE (Bioreactor) measures -1-Meter-by-1-Meter-by-2-Meter and is designed to fit in industrial areas, including offices and homes.
- Thankfully, Spirulina is great for the keto diet because it is an all-natural, plant-based way to get essential nutrients that can often be forgotten. In just 1 tsp, Californian Spirulina can provide: magnesium, calcium, vitamin A (Beta-carotene), manganese, gamma linolenic acid, chlorophyll, and more.

METHODOLOGY- How It Works !

- Algae need three key elements to grow: carbon dioxide, light and water.
- Algae have the best efficiency and capture capacity when receiving a steady stream of CO2, particularly via industrial heating, ventilation, and air conditioning etc.
- As algae consume CO2, they produce biomass. This biomass can then be harvested and processed to create fuel, oils, nutrient-rich high-protein food sources, fertilizers, plastics, cosmetics, and more.
- The device is based on a closed-system model, with every part of the growth process being tightly controlled and optimised with machine intelligence to maximise the CO2 consumption.

- **Few notable PRODUCT FEATURES:**

- Custom CV enabled automated microscope to measure cell health
- Larger tube diameter for more efficient algae growth
- Solar power
- Conveyor pump system eases strain on algae Full growth and maintenance web dashboard interface
- Data API for centralized retrieval of AI TREE data



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APP - UI ATTACHMENTS AND SENSORS USED

Arduino

Raspberry Pi 4 Model B

NODEMCU - ESP8266

Water Temperature sensor : DS18B20

Humidity sensor : DHT11

Water Level Sensor

Lighting sensor

CO2 sensor

Repository link - https://github.com/1701aman/AI-Tree

OUR WORKING PROTOTYPE

CONCLUSION

- There are some facts to prove why only algae AND AI TREE and WHATS THE DIFFERENCE BETWEEN AI TREE AND REAL TREES?
- About 28% of the oxygen is generated by the trees in the rainforest while 70% is produced by the Marine plants.
- Tree of 50 cm diameter and approximate height of 30-40 metres, produces roughly 123 grams or 92 litres of pure oxygen a day, providing the average human with 14% of his or her daily requirement.
- So in the near future we would have an extreme oxygen shortage and in order to cater daily oxygen requirement by humans the it would be very necessary as AI TREE is equivalent to 400 real trees.

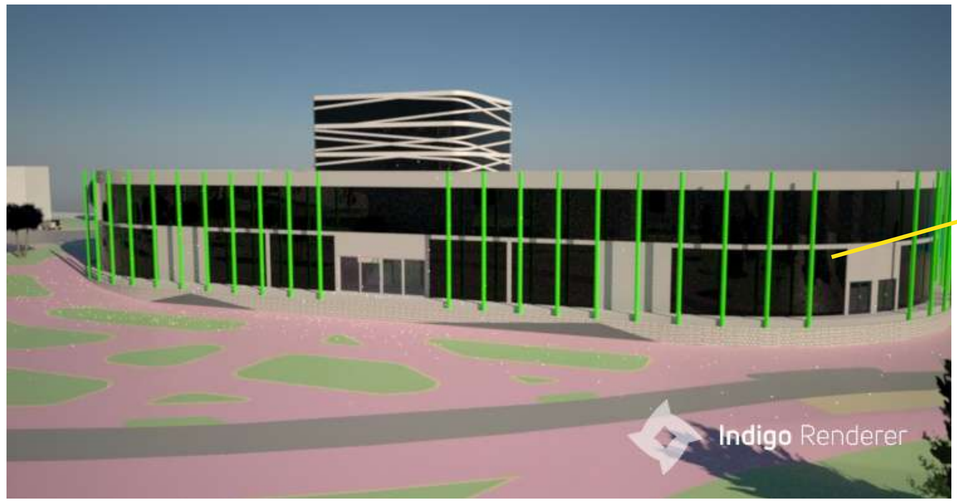
VIDEO LINK

SOCIETAL IMPACT / NOVELTY

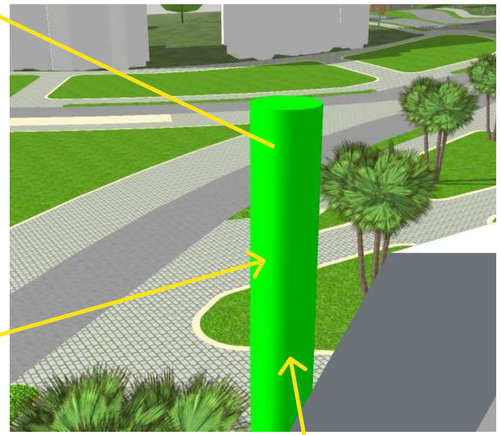
- Our product is sustainable at every stage - from growing algae- engaging 50+ farmers and increasing their profit,since algae(chlorella vulgaris) is a Marine plant contributing to about 70% of the oxygen on earth , to developing ai tree - meeting with 28% of the oxygen(which was earlier from trees), removing pollutants from the atmosphere by providing the industrial unit to industries and then developing smart homes in which all the electricity supply comes from biofuel , our by product - spirulina.

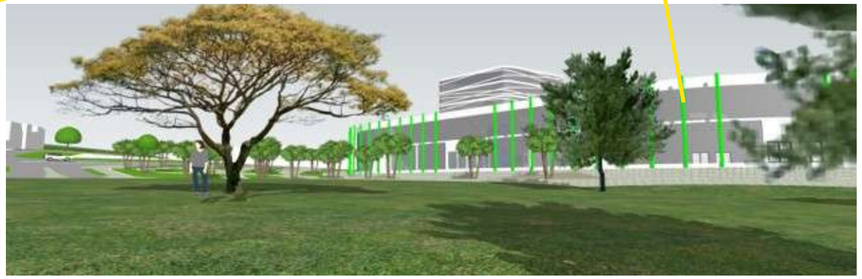
FUTURE PROSPECTS- APPLICATION OF AI TREE IN MAKING SUSTAINABLE BUILDINGS

- Taking our product "AI tree" to a broader perspective ,We are trying to develop sustainable homes or NET 0 ENERGY BUILDINGS meaning the total amount of energy used by the building on an annual basis is equal to the amount of renewable energy created on the site itself like:
- Electricity production through bio fuel
- Fresh clear air
- Spirulina is a popular dietry supplement and ingredient made from blue green algae , like it's basically a by product formed as a result of photosynthesis , which is incredibly healthy



- The "bio-adaptive facade Pipes", uses live microalgae growing in glass louvres to generate renewable energy and provide shade at the same time.





PRESS RELEASE FOR AI TREE

अब घर में एआइ ट्री से बना सकेंगे आक्सीजन

जागरण विशेष

राकेश मिश्र ● लखीमपुर

प्रदूषण और कोरोना महामारी के बीच सांसों के लिए शुद्ध हवा यानी आक्सीजन की पूर्ति के नये तरीके खोजे जा रहे हैं। सरकारें आक्सीजन प्लांट लगवा रही हैं और कंपनियां आक्सीजन कंसंट्रेटर बनाकर लोगों को सुविधा दे रही हैं। अब भारतीय प्रौद्योगिकी संस्थान (आइआइटी), बीएचयू के एक छात्र ने प्रकृति और तकनीक के समावेश से ऐसा उपकरण बनाया है जो घर व दफ्तर में आसानी से आक्सीजन की उपलब्धता सुनिश्चित करेगा। आर्टिफिशियल इंटेलीजेंस ट्री यानी एआइ ट्री नामक यह उपकरण नवप्रवर्तक साहिल अली सलमानी ने तैयार किया है।

उत्तर प्रदेश में खीरी के फूलबेहड़ ब्लाक के ग्राम ढखवा निवासी साहिल का आविष्कार तकनीक के बड़े मंचों पर सराहा गया है। अब वह इसे बड़े स्तर पर तैयार कर रहे हैं ताकि इसका उपयोग फैक्ट्री व अन्य स्थानों पर किया जा सके।

साहिल का बनाया एआइ ट्री हवा, पानी और सूर्य के प्रकाश से चलता है। प्रतिदिन इससे 128 किलोग्राम आक्सीजन उत्पन्न होती है। यह उपकरण आकार में काफी छोटा है, जिसे आसानी से घर और कार्यालय में रखा जा सकता है। इसे तैयार करने में सलमानी के साथी अमन सिंह और आइआइटी बीएचयू के इनक्यूबेशन सेंटर का भी योगदान रहा है। यह उपकरण वायुमंडल से कार्बन डाइ आक्साइड को खींचता है और आक्सीजन में बदलता है। साहिल के पिता किसान हैं। दो भाई और तीन बहनों में साहिल सबसे बड़े हैं।

आइआइटी बीएचयू के छात्र साहिल अली सलमानी द्वारा बनाया गया एआइ ट्री ● जागरण

अब बड़े माडल पर कर रहे हैं काम

साहिल अली सलमानी ●

साहिल का कहना है कि उपकरण बनाने का उद्देश्य बढ़ते प्रदूषण में शुद्ध आक्सीजन उपलब्ध कराना है। उन्होंने बताया कि इसके पेटेंट की प्रक्रिया आरंभ कर दी है और अब फैक्ट्री के लिए उपकरण के बड़े माडल पर काम कर रहे हैं। साहिल सफलता का श्रेय आइआइटी बीएचयू के शिक्षक विवेक कुमार सिंह को देते हैं। विवेक ने भी साहिल के आविष्कार को सराहा और कहा कि ऐसे नवोन्मेष युवाओं के लिए प्रेरणादायक है।

इस खबर को विस्तार से पढ़ने के लिए स्कैन करें

आगे बढ़ाते हैं। **बद्री नारायण** का आलेख। ● पेज 8

जागरण विशेष

अब घर व आफिस में एआइ ट्री से बना सकेंगे आक्सीजन

लखीमपुर: कोरोना महामारी और प्रदूषण के बीच आक्सीजन की जरूरत की पूर्ति के नए तरीके खोजे जा रहे हैं। सरकारें आक्सीजन प्लांट लगवा रही हैं। आइआइटी बीएचयू का छात्र घर पर ही एआइ के जरिए आक्सीजन बनाने में सफल रहा है। पेज-11

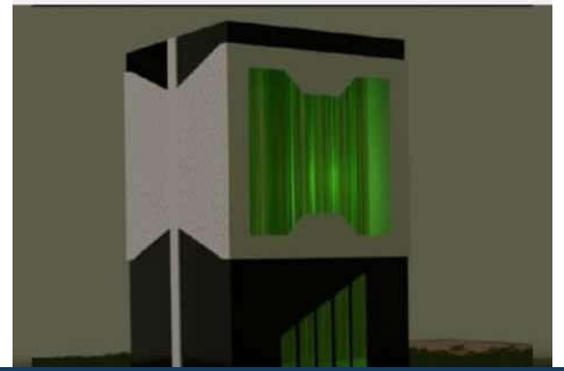
हिंदी न्यूज / उत्तर प्रदेश / लखनऊ

अब घर-आफिस में एआइ ट्री से बना सकेंगे आक्सीजन, आइआइटी बीएचयू के छात्र ने बनाया उपकरण

आर्टिफिशियल इंटेलीजेंस ट्री यानी एआइ ट्री नामक यह आविष्कार नवप्रवर्तक साहिल अली सलमानी ने तैयार किया है। उत्तर प्रदेश में खीरी के फूलबेहड़ ब्लाक के ग्राम ढखवा निवासी साहिल के बनाए उपकरण को तकनीक के बड़े मंचों पर सराहा गया है।

ANURAG GUPTA

Tue, 18 Jan 2022 07:09 AM (IST)



Runs by wind, water and sunlight : The AI tree made by Sahil runs on air, water and sunlight. It produces 128 kg of oxygen per day. This device is quite small in size which can be easily kept at home and office. Salmani's partner Aman Singh and IIT-BHU's Incubation Center have contributed in its preparation. This device removes carbon dioxide from the atmosphere and converts it into oxygen. The whole world is in crisis due to increasing carbon in the atmosphere, to deal with which this tool will prove to be effective. Sahil Ali

जागरण E-paper ePaper Play

fresh National Special Election 2

POWERED BY

Hindi News Uttar Pradesh Lucknow

Now oxygen can be made from AI tree in home-office, IIT BHU student made

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Milestones and Timeline

Duration	Milestones	Action Points	Required Funds (inclusive of grant & owners contribution)
1st 6 months	• Will Start Algae cultivation on larger scale which is a primary requirement for our project. • We have a target of selling 500+ residential units after the mvp phase is tested and well tried.	• Will Collaborate with 50+ farmers and help them understand the utilities of growing algae and increasing their profit. • Will Collaborate with space designers architectural firm(similar firms- 10+) for selling our product to the residences designed by them.	5.2 lac
Next 6 months	• We have a target of selling 50+ industrial unit model for the core industries in which the pollutants were directly released into the air from the chimneys without being filtered. • Will work on directly introducing algae tubes into facades, walls after we reach our target customers.	• Will work upon AI optimisation, website and app so that we can start our B2B model as soon as possible and increase our contacts via various channels to reach the core industry sector. • Will Reduce green algae decay rate by optimising pH,explaining good farming methods to 50+ farmers ,to increase the oxygen efficiency rate by 10% from the previous figures.	4.1 lac

Growth Projection

Duration	Year 1	Year 2	Year 3
Per Unit Price(INR) (a)Residential (b)Industrial	 8,000/- 25,000/-	 8,000/- 25,000/-	 10,000/- 30,000/-
Projected Sale (a)Residential units (b)Industrial units	 500 50	 2000 100	 5000 200
Projected Revenue	52,50,000	1,85,00,000	5,60,00,000
Projected Expenses	40,00,000	1,30,00,000	3,40,00,000
Profit/Loss	12,50,000	55,00,000	2,20,00,000

Business Model Canvas:

Key Partners

Farmers
Industrialist
Offices
Hospitals

Key Activities

Training for proper algae growth to farmers and make good profit.

Providing spirulina to organic farms

Making net 0 energy buildings by using algae in facade(smart ai homes)

Key Resources

Management & Staff
Stakeholders

Value Proposition

Increasing farmers productivity

Reducing pollutants from atmosphere via industrial unit.

Meeting oxygen demand via residential unit

Making smart homes i.e all electricity needs fulfilled by biofuel spirulina which is our byproduct.

Helping food industries with dietary supplement - super food ,our bi product.

Customer Relationships

With social media, live chat support 24 hours Call support

Channels

amazon

Customers

Residential Industries , offices ,hospitals , organic farms, etc

Cost Structure

Manufacturing cost
Training cost
Transportation cost
Installation cost etc.

Revenue Streams

Residential Unit
Industrial Unit
Spirulina

MARKET SIZE

$ 16.2 Billion

Total Available Market (TAM)

Market Overview
The global air purifier market was valued at USD 16.2 billion in 2020, and it is expected to reach USD 30 billion by 2027, registering a CAGR of more than 12% during the forecast period of 2022-2027.

$ 12.4 Billion

Serviceable Available Market (SAM)

The global ketogenic diet market size was valued at USD 9.57 billion in 2019 and is expected to expand at a compound annual growth rate (CAGR) of 5.5% from 2020 to 2027

$ 56 Million

Serviceable Obtainable Market (SOM)

The SOM is a smaller fraction of the SAM that is the target of a serviceable and realistically achievable market in the short to medium term.

COMPETITIVE ADVANTAGE

No such product available in India Till now will the intended use cases as ours.

Creative

We may offer products or services that are unique or new to the market.

Innovative

Offer the cost of producing a product or providing services at a lower price.

Effective

Offers a market advantage that is more focused according to market needs than a more general market.

Efficient

Relationships are a gift because they greatly influence the exposure of our products and services.

Market Driven

The availability of resources is an absolute competitive advantage that we have due to tie up with various farmers

Agile

Brand loyalty can be used as an advantage of our products / services. Brand image, positioning and marketing strategy can make customers loyal to a brand.

THE SUPER TEAM

SAHIL ALI SALMANI

- Managing Team And Proposing Ideas For Betterment Of Project.
- UI/UX
- Currently In 3rd Year At IIT BHU
- Winner @International Virtual Hackathon,TDRA Dubai,WSIS FORUM 2022
- Special Prize Winner@HACK OF PI 2021

AMAN SINGH

- Developing Ai Models ,And Linking It With The Current Prototype
- Market Analysis ,Product Growth And Strategy.
- Currently In 3rd Year At IIT BHU.
- Winner @International Virtual Hackathon,TDRA Dubai,WSIS FORUM 2022
- Special Prize Winner@HACK OF PI 2021

IMPORTANT LINKS

Repository link-

https://github.com/1701aman/AI-Tree

VIDEO-

https://youtu.be/b9vXh5oj83Q

SOURCE CODE-

ZIP FILE

IMPORTANT LINKS

ARE ALGAE USED IN THE PRODUCT POISONOUS IN NATURE?

The mother culture of a variety of algae named Chlorella Vulgaris is been used in our product AI TREE. Chlorella vulgaris showed no toxicity at the dose of 2000 mg kg−1 BW. In conclusion, C. vulgaris can be categorized as unclassified according to the Globally Harmonised Classification System (GHS) for chemical substances and mixtures.

SOURCE-https://link.springer.com/article/10.1007/s10811-020-02195-0#:~:text=Chlorella%20vulgaris%20showed%20no%20toxicity,for%20chemical%20substances%20and%20mixtures.

WORKING-

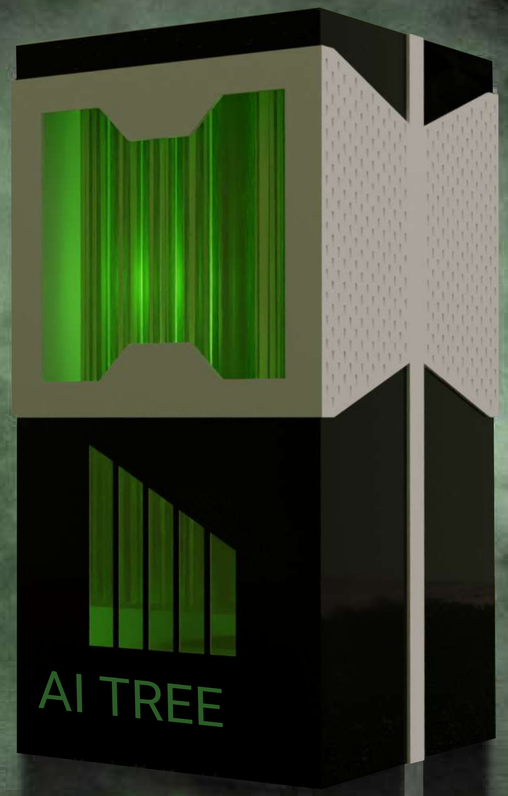
•Sensor cluster-

•Arduino
•NODEMCU - ESP8266
•Water Temperature Sensor : DS18B20
•Humidity sensor : DHT11
•Water Level Sensor
•Lighting sensor
•CO2 sensor
•PID Controller
•Cloud-based infrastructure
•Custom spectrophotometer to measure algae density with automated valves
•Custom CV enabled automated microscope to measure cell health
•Conveyor pump system eases the strain on algae
•Full growth and maintenance web dashboard interface
•Data API for centralized retrieval of AI TREE data

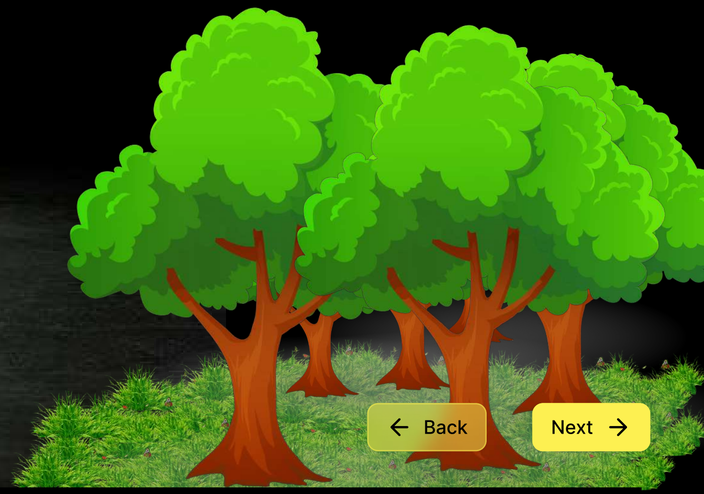
MODEL:

•The device is based on a closed-system model, with every part of the growth process being tightly controlled and optimized with machine intelligence to maximize CO2 consumption.
•In future it will come paired with a mobile application that will provide the status of the carbon capture, will detect anomalies, and provide current and historical reporting of CO2 sequestration and biomass production. A cloud-based infrastructure can then connect multiple devices, allowing them to learn from each other, optimize for new environments, and provide global insights.
•The bigger vision is of collecting data from the interconnected network of algae reactors to globally communicate and continuously optimize devices

THANK YOU



1 AI TREE = 400 TREES



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