LIVIA PANEZ

PORTFOLIO

Start

LONGEVITY

DEPIN SPIRU

DPIN SPIRULINA IN YOUR HOUSE

DPIN(Decentralized Physical Infrastructure Network) IoT Device

A small device connected to Wi-Fi or Bluetooth to monitor and control the crop.

Temperature, pH, light, and oxygen sensors.

A mobile app to control parameters.

Smart Lighting System

Adjustable LEDs to optimize spirulina growth.

Light sensor to adapt intensity based on the time of day.

Water and Nutrient Control

Automatic pump to move water and distribute nutrients.

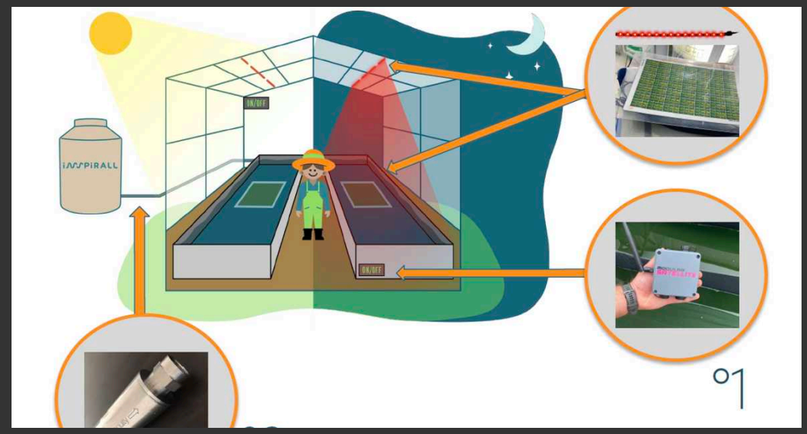
Low nutrient alert via the app.

Home-Friendly Structure

Compact design, similar to an aquarium or vertical pod.

Easy installation and maintenance.

BEFORE



AFTER

RESEACH

PRIVACY-PRESERVING DATA

PROJECT ABSTRACT

Incorporate privacy, cryptography, participatory design, and community activism to co-design and co-create privacy and cryptography applications and infrastructure by and with vulnerable Indigenous communities in the rainforest.

🌱 DESCI GUARD: PROTECTION AND JUSTICE FOR INDIGENOUS KNOWLEDGE
CONTEXT: IN THE AMAZON, INDIGENOUS COMMUNITIES HAVE SAFEGUARDED KNOWLEDGE ABOUT BIODIVERSITY, ANCESTRAL MEDICINE, AND NATURAL MATERIALS FOR CENTURIES. HOWEVER, THIS KNOWLEDGE IS AT RISK OF BEING EXPLOITED WITHOUT THEIR CONSENT OR COMPENSATION.

PROBLEM:
🔷 LACK OF PROTECTION: THERE ARE NO EFFECTIVE MECHANISMS TO SAFEGUARD INDIGENOUS KNOWLEDGE IN A DIGITALIZED WORLD.
🔷 EXPLOITATION WITHOUT CONSENT: RESEARCHERS AND COMPANIES HAVE ACCESSED THIS KNOWLEDGE WITHOUT COMPENSATING COMMUNITIES.
🔷 UNEQUAL DATA GOVERNANCE: CURRENT INTELLECTUAL PROPERTY MODELS DO NOT ALIGN WITH COMMUNITY STRUCTURES.

SOLUTION – DESCI GUARD:
A DECENTRALIZED SYSTEM BASED ON BLOCKCHAIN AND ZERO-KNOWLEDGE CRYPTOGRAPHY (ZK-PROOFS) THAT ALLOWS COMMUNITIES TO DOCUMENT, PROTECT, AND MONETIZE THEIR KNOWLEDGE IN A SECURE, PRIVATE, AND SOVEREIGN MANNER.

💡 KEY FEATURES:
✅ PRIVACY AND CONTROL: WE IMPLEMENT ZERO-KNOWLEDGE PROOFS (ZK-PROOFS) TO ENSURE THAT KNOWLEDGE IS ONLY SHARED UNDER AGREED-UPON TERMS.
✅ FAIR COMPENSATION: SMART CONTRACTS DISTRIBUTE REVENUE TO COMMUNITIES VIA TOKENIZED MODELS AND ON/OFF-CHAIN PAYMENTS.
✅ DECENTRALIZED STORAGE: USE OF IPFS/FILECOIN TO ENSURE DATA IS IMMUTABLE AND CENSORSHIP-RESISTANT.
✅ PARTICIPATORY GOVERNANCE: MODELS BASED ON INDIGENOUS WORLDVIEWS, INTEGRATING INFORMED CONSENT PROTOCOLS.

EXPECTED IMPACT:
🌍 COMMUNITY EMPOWERMENT: COMMUNITIES MAINTAIN SOVEREIGNTY OVER THEIR KNOWLEDGE.
⚖️ EPISTEMIC JUSTICE: A MODEL THAT CHALLENGES DATA COLONIALISM AND PROTECTS BIOCULTURAL HERITAGE.
🚀 TECHNOLOGICAL INNOVATION: FUSION OF DATA SCIENCE, BLOCKCHAIN, AND ETHNOBOTANY FOR SUSTAINABLE SOLUTIONS.

📣 JOIN DESCI GUARD AND BE PART OF THE ETHICAL REVOLUTION IN SCIENCE AND TECHNOLOGY

Grant Proposal

How to avoid Biopiracy and create a new way to cooperate with indigenous communities on ethereum

By Livia Panez

Project Abstract

Biopiracy and misappropriation of traditional knowledge represent significant threats to Amazonian Indigenous communities and the integrity of global scientific research. This study presents DesciGuard, an innovative system based on Zero-Knowledge (ZK) technology on blockchain designed to facilitate equitable collaborations between scientific laboratories and Indigenous communities possessing ancestral knowledge about biodiversity.

DesciGuard implements smart contracts that guarantee proper attribution, co-authorship, and fair compensation for traditional knowledge contributions to scientific discoveries. Through immutable blockchain records, the system transparently documents knowledge sources, establishing a trust framework that enables verification by research teams while incorporating a cryptographic layer to protect contributor identities.

The methodology combines decentralized science (DeSci) principles with ZK proof mechanisms that protect privacy while verifying contribution authenticity. This approach addresses the historical power imbalances in biological research where Indigenous knowledge has often been exploited without recognition or compensation.

Our findings demonstrate that DesciGuard successfully facilitates more ethical research partnerships by creating verifiable pathways for acknowledging Indigenous contributions. The system significantly reduces intellectual property conflicts through its transparent attribution mechanisms. Additionally, it creates direct economic incentives for conservation by linking ecosystem preservation with sustainable economic opportunities for Indigenous communities.

Case studies from initial implementations show improved collaboration dynamics between scientific laboratories and Amazonian communities. Indigenous participants report greater willingness to share traditional knowledge when assured of recognition and fair compensation through cryptographically secured agreements. Scientific teams benefit from accessing previously unavailable ethnomedical and ecological insights while maintaining ethical standards.

The implications of DesciGuard extend beyond the Amazon, offering an adaptable model for protecting Indigenous biocultural heritage worldwide. By creating technological infrastructure for equitable scientific collaboration, the system contributes to both biodiversity conservation and the preservation of cultural knowledge systems at risk of disappearing.

This framework establishes a precedent for inclusive global scientific partnerships that equitably recognize all knowledge sources while advancing ethical scientific discovery,

Link

PROJECT UNICEF

SIKUAR – DECENTRALIZED PLATFORM

PROJECT ABSTRACT

SIKUAR IS A DECENTRALIZED, PRIVACY-PRESERVING DIGITAL PLATFORM DESIGNED TO ADDRESS SYSTEMIC SEXUAL VIOLENCE AGAINST INDIGENOUS GIRLS AND ADOLESCENTS IN THE PERUVIAN AMAZON, PARTICULARLY WITHIN AWAJÚN AND WAMPÍS COMMUNITIES. IN AREAS LIKE CONDORCANQUI, OVER 500 CASES OF ABUSE HAVE BEEN REPORTED SINCE 2010—MANY INVOLVING SCHOOLTEACHERS AS PERPETRATORS—UNDERSCORING THE ABSENCE OF RULE OF LAW AND SYSTEMIC INSTITUTIONAL FAILURE.

PROBLEM :
IN THE AMAZON, GIRLS AS YOUNG AS 14 ARE FREQUENTLY SUBJECTED TO SEXUAL ABUSE BY TEACHERS AND AUTHORITY FIGURES. DUE TO CORRUPTION, FEAR OF RETALIATION, AND DEEP MISTRUST IN THE JUSTICE SYSTEM, THESE CRIMES OFTEN GO UNREPORTED. MANY COMMUNITIES LACK INTERNET ACCESS, JUDICIAL INFRASTRUCTURE, AND PROTECTIVE SERVICES, LEADING TO IMPUNITY AND GENERATIONAL TRAUMA.

COMPONENTS :
- ANONYMOUS, IMMUTABLE REPORTING SYSTEM
  SURVIVORS AND ALLIES CAN REPORT INCIDENTS WITHOUT COMPROMISING THEIR IDENTITY, WITH ENCRYPTED DOCUMENTATION STORED VIA BLOCKCHAIN TO ENSURE EVIDENCE PRESERVATION.
- INTER-INSTITUTIONAL DATA PIPELINE
  VERIFIED REPORTS CAN BE USED BY THE MINISTRY OF WOMEN AND VULNERABLE POPULATIONS (MIMP), WHICH CAN THEN FORMALLY REQUEST LEGAL ACTION FROM THE MINISTRY OF JUSTICE.
- PILOT IMPLEMENTATION WITH UNICEF
  THE PLATFORM IS BEING CO-DEVELOPED AND TESTED IN COLLABORATION WITH UNICEF TO ENSURE LOCAL AND ETHICAL DEPLOYMENT ACROSS HIGH-RISK ZONES.

INNOVATIONS:
- ZERO-KNOWLEDGE PROOFS (ZKPS)
  USED TO VALIDATE THE AUTHENTICITY OF REPORTS WITHOUT EXPOSING SENSITIVE SURVIVOR INFORMATION.
- GRAPH NEURAL NETWORKS (GNNS)
  APPLIED TO IDENTIFY ABUSE PATTERNS, RECURRENT OFFENDERS, AND THE SOCIAL GRAPH OF COMPLICITY—THUS ENABLING PREVENTIVE INTERVENTIONS.
- DATA SOVEREIGNTY PROTOCOLS
  INSPIRED BY VANA AND OTHER PRIVACY INFRASTRUCTURES, USERS RETAIN OWNERSHIP OF THEIR DATA WHILE CONTRIBUTING TO COMMUNITY-LEVEL AI MODELS THROUGH DATA LIQUIDITY POOLS (DLPS).

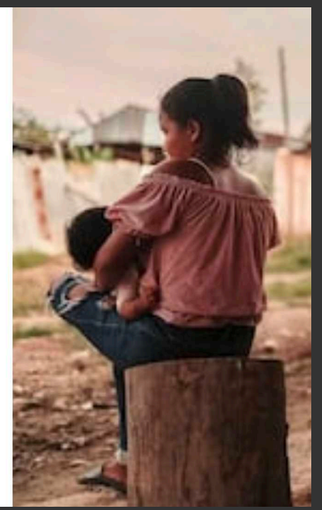
LEGAL AND ETHICAL FRAMEWORK:
- SURVIVOR CONSENT AND CONTROL
- ANCESTRAL DATA STEWARDSHIP PRINCIPLES
- DECENTRALIZED DATA COORDINATION BETWEEN MINISTRIES, NGOS, AND COMMUNITIES

LONG-TERM VISION AND REPLICABILITY:
WHILE ROOTED IN PERU, SIKUAR AIMS TO SERVE AS A GLOBAL MODEL FOR DECENTRALIZED JUSTICE INFRASTRUCTURE, PARTICULARLY IN AREAS WHERE FORMAL LEGAL SYSTEMS FAIL TO PROTECT MARGINALIZED GROUPS. IT INTEGRATES TRAUMA-INFORMED DESIGN, CULTURALLY GROUNDED DATA STEWARDSHIP, AND EMERGING AI ETHICS FRAMEWORKS.

Sikuar: An Anonymous Reporting Platform

Addressing violence against women and girls in indigenous communities of the Peruvian Amazon.

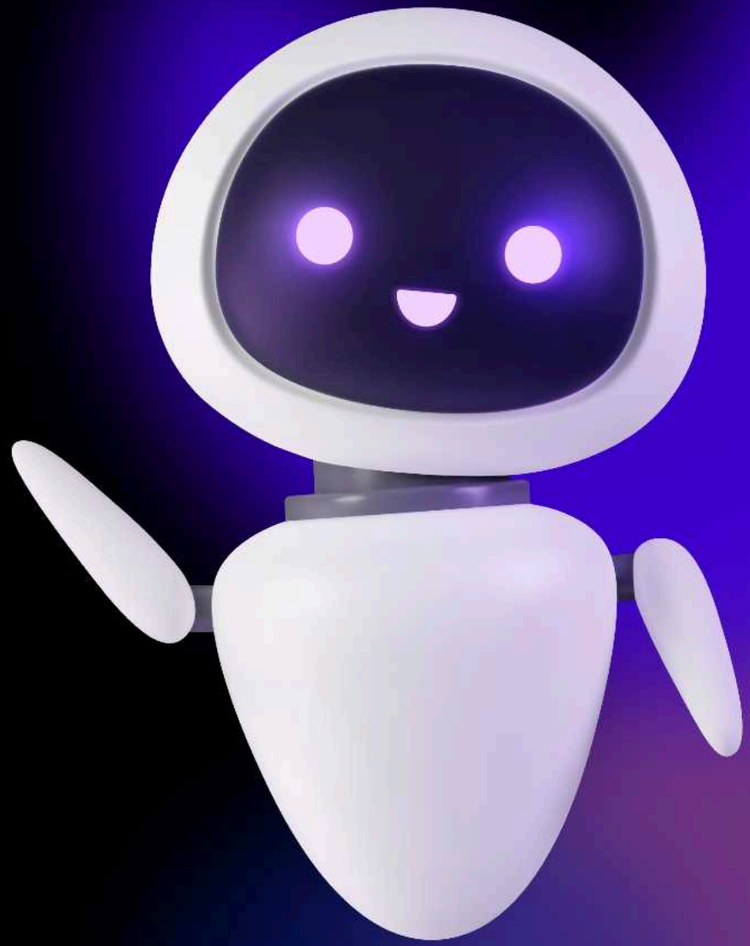
Protecting vulnerable populations through secure, confidential reporting channels.



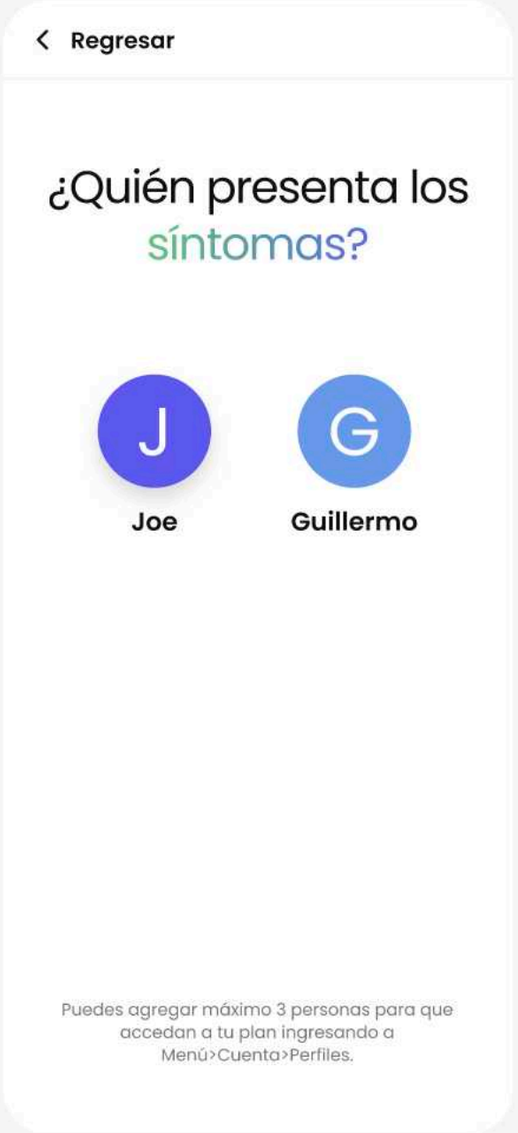
A teenage mother sits with her son in Iquitos, Peru, in a file photo. **Aldair Mejía (EFE)**[1]

Link

PACÍFICO SEGUROS

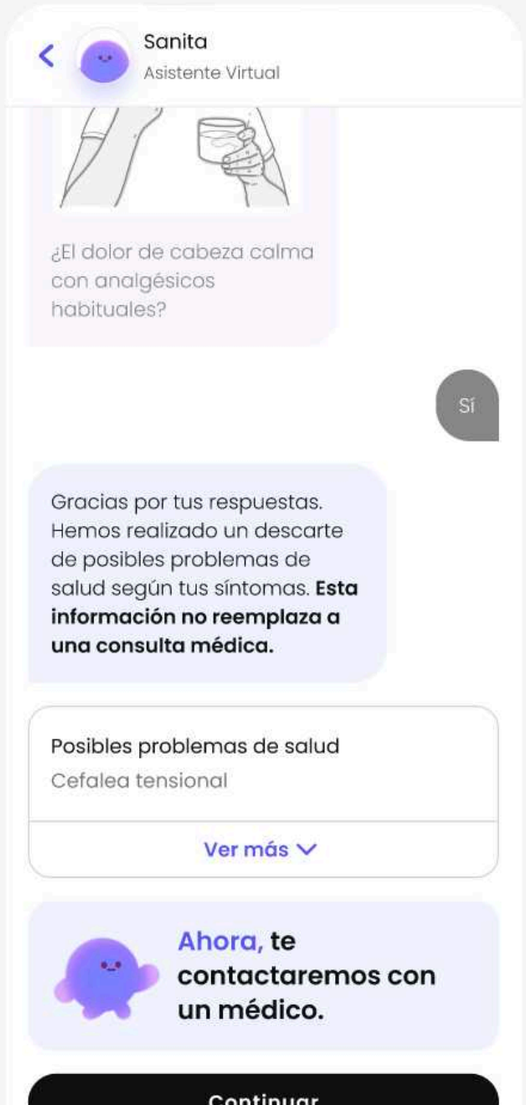


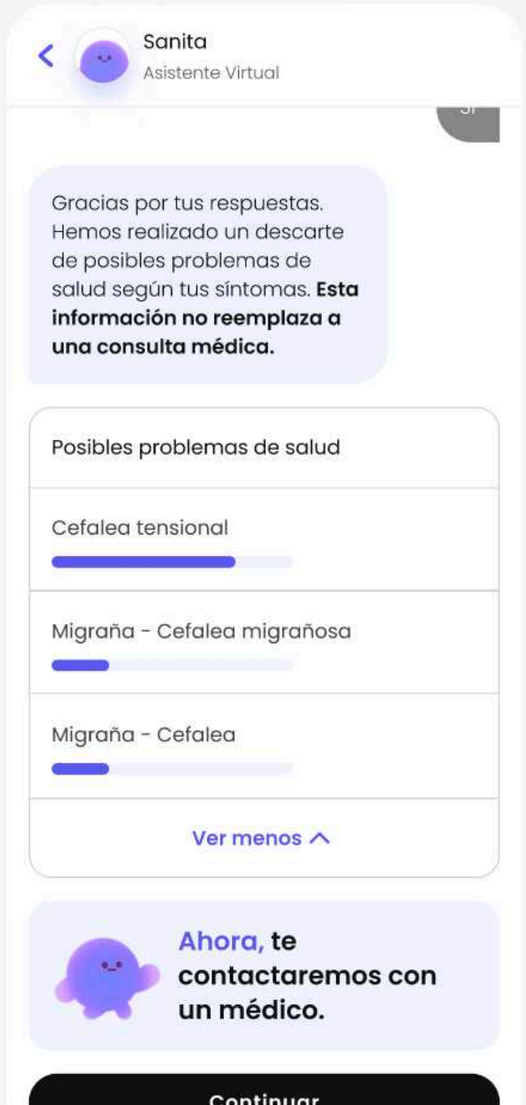
Loading / Gestiona tus perfiles



Asistente Virtual

Contactando con médico





Contactando con médico

Siguiente →