

Impact Lab Projects

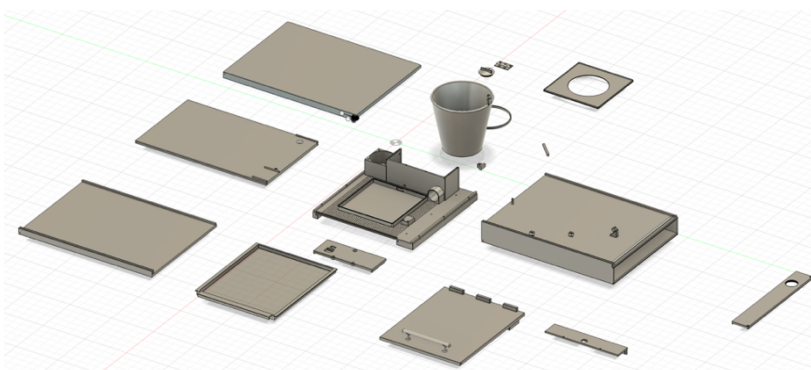
1. Phototherapy Device (Congo – Neonatal Health)

Neonatal jaundice is a leading cause of preventable infant mortality in low- and middle-income countries. In partnership with the Fondation Congolaise de Recherche Médicale (FCRM), our students in Brazzaville have co-developed a low-cost, 3D-printed phototherapy lamp optimized for local usage. The device is designed for on-site production, repair, and adaptation, empowering hospitals to reduce dependence on costly imports. Its modular form allows repairs with locally available parts, and ongoing iterations focus on energy resilience, infrared heating, and quality control. This project highlights how distributed engineering and student innovation can directly strengthen healthcare capacity in low-resource environments.



2. BioBox (Geneva – Smart Agriculture & Education)

Co-designed with student, the BioBox is a mini greenhouse for a single potted plant, fully 3D-printed and sensor-driven. It controls light, humidity, temperature, and irrigation to create the perfect growing conditions, with future versions app-controlled. Initially developed for school science projects, the BioBox could scale to provide low-cost,



automated plant care systems for classrooms and low-resource settings, making advanced agricultural technology accessible to school and university students across the globe.

3. Mine Detection (Conflict Zones – Humanitarian Safety)

In collaboration with University College London, our students are developing a low-cost, AI-based system to detect “butterfly” landmines — small plastic mines that threaten civilians in conflict and post-conflict zones. Detection is based on using selective heating and



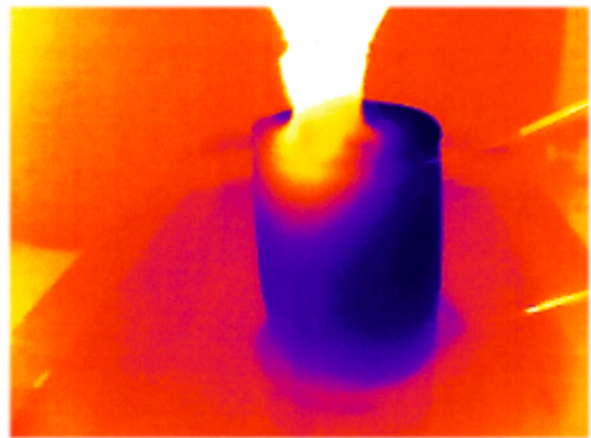
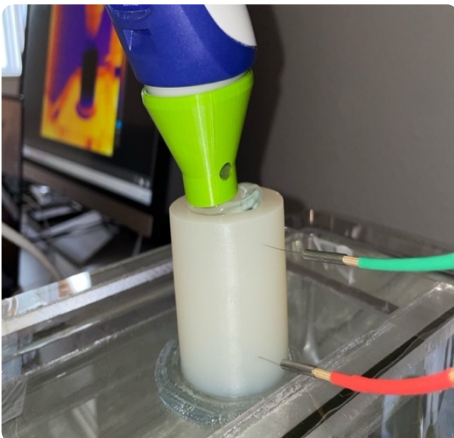
thermal imaging, with early results showing promise for image-based identification that could be deployed on low-cost drones. The long-term goal is to provide communities and humanitarian

organizations with safer, affordable tools for mine clearance, reducing reliance on expensive, imported high-grade technologies.



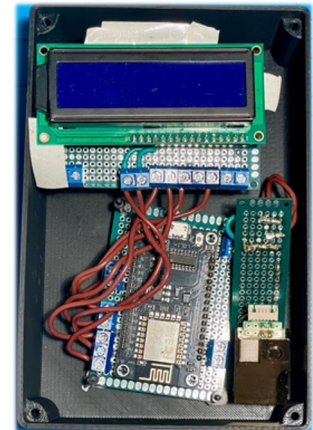
4. Ultrasound Hyperthermia (ETH Zurich – Cancer Treatment)

In cooperation with the University of Zurich, students are testing low-cost ultrasound devices that can gently heat human tissue to improve cancer treatment by enhancing drug uptake. Using agar gels and simulations, the project explores how affordable hyperthermia could support more effective, accessible cancer therapies, bridging the gap between laboratory innovation and global healthcare needs.



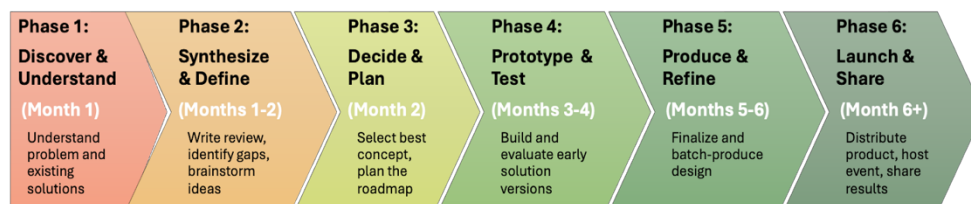
5. CO (Geneva – Climate Change Education)

The CO₂ project is designed to help students get first hand information on the causes of climate change. Students are developing an internet-connected detector that identifies changes in CO₂ levels in real time. Designed to be compact, affordable, and locally manufacturable, the system supports schools in showing to students the impact that students have on their environment. Future versions could expand to measure broader indoor air quality, giving schools and families open-source tools for safer learning spaces.



6. HeatGuard Cooling Scarf (Kuwait – Worker Safety)

In collaboration with high school students in Kuwait, we are designing a cooling scarf that uses phase-change materials (PCMs) and color-changing pigments to reduce heat stress among outdoor workers in the Middle East. By making heat risk visible and providing active cooling, this project addresses a major occupational health issue in a region facing extreme temperatures due to climate change.

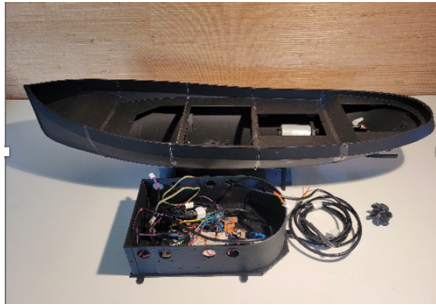


7. Snack Lab (Jordan – Food Innovation & Sustainability)



Our team is developing a new kind of snack bar in Jordan — one that combines a unique, fun texture with biodegradable wrappers to reduce waste. The project originates in the students' passion for cooking and blends food science, business, and sustainability, giving students hands-on experience with product design while tackling global challenges of plastic pollution and sustainable nutrition.

8. Aqua-Voyager (Geneva-Environmental Safety)



Microplastic pollution of the seas has grabbed many headlines recently – but few people realise that our waterways, including Lake Geneva, also suffer from high microplastic contamination. Aqua-Voyager is a student led project to build a small boat that can collect information about microplastic pollution in lakes, and to research potential mitigation strategies. Currently under design, the boat will probably be made in a monitoring version, and a plastic collection version, and will be controlled and share real time data with students via a custom built phone app.

9. Additional Photo (Geneva-3D printer Set Up)

