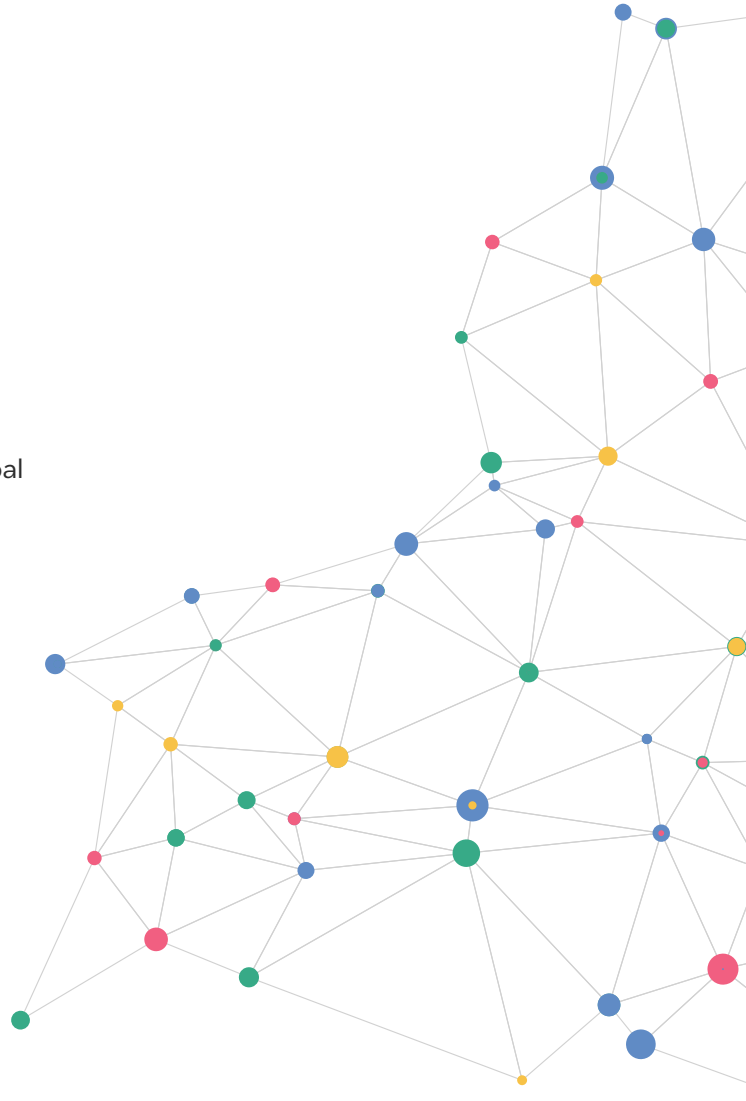
intel digital readiness

AI Changemakers 2023

Leveraging the promise of AI for a sustainable tomorrow

Index



Foreword

Sarah Kemp

Vice President,
International Government Affairs,
Intel Corporation

Welcome to the third edition of "AI Changemakers"! It is with great pleasure that I share this compendium of innovative AI impact projects from Intel® AI Global Impact Festival 2023. These projects, thoughtfully curated by Intel for their impact and alignment with the United Nations Sustainable Development Goals (SDGs), showcase the power of AI to drive unprecedented transformation in industries and society across the world.

As our world becomes increasingly digitized, AI emerges as a remarkable superpower driving unprecedented transformations. It presents us with a unique opportunity to tackle longstanding challenges, be it climate change, social inequity, or global pandemics. Emerging technologies like AI usher in hope for real and actionable solutions. Governments and organizations like the United Nations, in alignment with the 17 SDGs, are investing in technology initiatives to drive positive change and address the most pressing global issues.

Within these pages, you will find inspiring stories of how the next generation of technologists, future developers, and innovators are leveraging the power of AI, Data Science, and 5G to create new solutions for local and global challenges. Intel, as a leader committed to demystifying and democratizing emerging technologies, launched the AI Global Impact Festival to support student developers and young AI innovators. The theme, "Enriching Lives with AI Innovations," captures the essence of our purpose - to create world-changing technology that improves the lives of every person on the planet.

Our commitment to the United Nations' universal call for shared corporate responsibility, aimed at ending poverty, protecting the planet, and ensuring peace and prosperity for all[1], is clearly evident throughout these programs. All ideas and solutions shared here strongly align with the UN SDGs and have been developed as part of Intel® Digital Readiness Programs, actively running in more than 27 countries worldwide. You can find more information about these programs at **www.intel.com/digitalreadiness.**

Happy reading! We are committed to bringing AI everywhere and making AI skills truly accessible and inclusive for all. I hope these AI innovations by the next generation of technologists inspire you to make a difference and enrich lives.

[1] https://www.undp.org/sustainable-development-goals

About AI Changemakers

Intel's Digital Readiness Programs[1] goal is to empower the next generation with the skill sets, mindset, toolsets, and opportunities to harness technology super powers like AI to create positive social impact and enrich the lives of everyone on the planet.

In 2021, Intel launched the annual Intel AI Global Impact Festival to democratize and celebrate AI innovations and impact[2]. This Festival is a unique platform for next-gen technologists to showcase their AI-enabled solutions to the world and develop their AI skills, in partnership with governments, academia, and communities.

In 2023, the Festival took place virtually from September 13th to September 22nd, offering various engagement opportunities over the course of the event. With visitors from more than 84 countries and participation from 27 countries, the Festival showcased 97 innovative AI solutions by next-gen technologists and 29 innovative teaching-learning practices for AI skilling by educators from across the globe. 44 awards, including 3 AI Accessibility awards, were also presented in recognition of exceptional innovations developed for bringing a positive change in the world. In addition, the festival also provided an opportunity for government partners, academic institutions, and implementation partners, to share best practices adopted in AI skilling and implementation to promote digital readiness.

This book is a compilation of the 97 AI-based solutions featured during the Impact Festival. These cutting-edge solutions, created by students from around the world, illustrate the potential of AI in addressing the UN SDGs. Divided into two sections, the book highlights the top innovative AI-based social impact solutions by the Global Award Winners of the Intel AI Global Impact Festival 2023, as well as other AI-based solutions that align with the UN SDGs.

It has been divided into two sections:

- Top innovative AI-based social impact solutions by Global Award Winners, Intel® AI Global Impact Festival 2023
- Cutting-edge AI-based social impact solutions in alignment with UN SDGs

The showcased solutions in this book demonstrate the impact of Intel Digital Readiness Programs, implemented in collaboration with the government, academic institutions, and implementation partners. Each solution aims to contribute to one or more United Nations Sustainable Development Goals, making a lasting positive impact on the world.

[1] http://www.intel.com/DigitalReadiness
[2] http://www.intel.com/impactfestival

Leveraging the promise of AI for a sustainable tomorrow

Top AI solutions by Global Award Winners, Intel® AI Global Impact Festival 2023

This section is a showcase of AI-driven solutions that emerged as winners from among the entries received from 27 countries.

Each Global Award Winner received $5,000 in prizes, an Intel-powered laptop, and mentorship opportunities

Eye tracking for communicating patients with Amyotrophic Lateral Sclerosis (ALS)

This solution is a low-cost communication system for patients with Amyotrophic Lateral Sclerosis (ALS). It utilizes computer vision and facial recognition through the DLib library enabling ALS patients with low motor capacity to communicate with their peers.

SDG 3 Good Health And Well Being

Laura Jeronimo

Pedro Costa

Raíssa Daloia

Country/Region/Territory - **Brazil**

Age Group:
13 – 18 Years

Target audience of this solutions:
Patients with Amyotrophic Lateral Sclerosis (ALS) with impaired motor skills of movement and speech

QR code to open YouTube video of project submitted by student

Melody of Fingers – Application based on PyTorch, CNN, and AIxBoard

Melody of Fingers is an app for sign language learners. Our app development process deploys the Intel® Distribution of the OpenVINO™ toolkit on AIxBoard, CNN, and PyTorch. This solution captures the user's motion and gives real-time feedback, along with testing their degree of mastery.

SDG 10 Reduced Inequalities

Jingyan Li

Shiyu Chu

Tianyi Liu

Country/Region/Territory - **China**

Age Group:
13 – 18 Years

Target audience of this solutions:
Those willing to learn sign language in order to help the disabled

QR code to open YouTube video of project submitted by student

Utilizing AI to help Native Bees

This solution is a biosecurity terminal for the capture and construction of an atlas of bees in the world. It utilizes vector neural network instructions and the Intel® Distribution of OpenVINO™ toolkit architectures for object detection, it swiftly detects unknown species or those that are at risk from an altered ecosystem.

SDG 17 Partnerships for the Goals

Mariana Acuña Cordero

Melanie Espinoza Hernández

Nicolle Daniela Gamboa Mena

Country/Region/Territory - **Costa Rica**

Age Group:
Above 18 Years

Target audience of this solutions:
All people who are doing anything in the front of the computer/laptops, either sitting or standing. The application is highly inclusive. It's easily accessible.

QR code to open YouTube video of project submitted by student

AI powered platform to empower women in STEM

This solution is an AI-powered learning platform for girls in STEM. It uses conversational agents providing motivation through role model stories from women in STEM while identifying and recording behavioural patterns.

SDG 5 Gender Equality

Yash Yadav

Country/Region/Territory - **India**

Age Group:
13 – 18 Years

Target audience of this solutions:
Female School Students

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RescueAI: Smart City Disaster Digital Twin with Robotic Autonomy

RescueAI helps emergency responders to visualize available resources for disaster management and flood prevention. This solution uses technologies like digital twin, NLP with speech-to-text optimized by OpenVINO, drones equipped with AI instance segmentation (YoloV8 optimized by OpenVINO), and real sense d435i for object avoidance. It also deploys Intel UP Board as a static camera installed in the city for real-time detection.

SDG 11 Sustainable Cities And Communities

Cajun Ka Joon Tai

Joo Kiat Ng

Rohit Thomas

Country/Region/Territory - **Malaysia**

Age Group:
Above 18 Years

Target audience of this solutions:
Citizens, Public Agencies, NGOs in helping to save human and marine lives

QR code to open YouTube video of project submitted by student

StraightenUp – Posture Assistant

StraightenUp is a browser extension that helps maintain a healthy posture while being in front of a computer. This solution gently blurs the viewport when it detects the user has slouched. It is powered by Intel® technologies and uses a neural network trained on 23k classified images of diverse people.

SDG 3 Good Health And Well Being

Maciej Jałocha

Country/Region/Territory - **Poland**

Age Group:
Above 18 Years

Target audience of this solutions:
All people who are doing anything in the front of the computer/laptops, either sitting or standing. The application is highly inclusive. It's easily accessible.

QR code to open YouTube video of project submitted by student

Top AI solutions by AI for Accessibility Award Winners, Intel® AI Global Impact Festival 2023

This section is a showcase of AI-driven solutions that emerged as AI for Accessibility Award winners from among the entries received from 27 countries.

Each Global Award Winner receives $1,500 in prizes, an Intel certificate, and mentorship opportunities

Way Back Home

Way Back Home tackles the challenges faced by dementia patients in navigating physical spaces. This solution uses augmented reality, indoor positioning systems, and voice-activated assistants to empower individuals with dementia to navigate confidently.

SDG 11 Sustainable Cities And Communities

Meiyu Huang

Country/Region/Territory - **Singapore**

Age Group:
Above 18 Years

Target audience of this solutions:
Seniors, dementia patients, and caregivers

QR code to open YouTube video of project submitted by student

BRINL: Braille Interactive Learning

BRINL(Braille Interactive Learning) utilizes AI and Intel® technologies to improve Braille learning for visually impaired individuals. This solution uses 11th Gen Intel® Core™ i7-18800H processors, Intel® oneMKL, Intel® DevCloud, and Intel® Distribution for Python.

SDG 10 Reduce Inequalities

Teerapat Sardsud

Roryon Wannapraserd

Phachara Phuansup

Country/Region/Territory - **Thailand**

Age Group:
13 – 18 Years

Target audience of this solutions:
Visually impaired individuals aged 7 and up

QR code to open YouTube video of project submitted by student

AI-Powered Robotic Service Animal for People with Visual Disabilities

Here-Charlie is a robotic service dog that uses AI and Intel® technologies to provide aid to the visually impaired. This solution uses IR sensors, cameras, ultrasonic sensors, and LIDAR, the robot to help its owner navigate through different environments. It is powered by the Intel® Distribution of OpenVINO™ toolkit.

SDG 3 Good Health and Well-being

Kevin Vo

Larry Le

Ryan Huynh

Country/Region/Territory - **United States of America**

Age Group:
13 – 18 Years

Target audience of this solutions:
People with category 3 and 4 visual disabilities, who need assistance for walking or locating items

QR code to open YouTube video of project submitted by student

Cutting-edge AI-based social impact solutions in alignment with UN SDGs

This section brings cutting-edge solutions built by next-gen technologists and innovators from 27 countries categorised according to the SDGs they address.

Country/Region/Territory Winners received prizes worth $1,000 and an Intel certificate

Each student received $500 in prizes and an Intel certificate

2 ZERO HUNGER

Zero Hunger

End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

It is estimated that approximately 690 million people or 8.9% of the world population are hungry. This alarming statistic shows that if no swift action is taken, the number of people affected by hunger would exceed 840 million by 2030. This goal aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

PadiGuard

PadiGuard deploys IoT and AI to combat bird pests in Indonesian rice fields. This solution uses cameras connected to speakers, along with computer vision and deep learning, to detect bird movement. When captured, the camera triggers the speaker to emit noise, deterring the birds and safeguarding crop yields.

Created by Febriyanti Nur'Aini, Muhammad Yafi Taqiyuddin Nauval Attafrih

Country/Region/Territory - Indonesia

Age Group: 13 – 18 Years

Target audience:
Farmers who have problems with bird pests.

QR code to open YouTube video of project submitted by student

RAPID (Rice Affliction Pathogen Identification and Detection)

RAPID (Rice Affliction Pathogen Identification and Detection) uses AI to pinpoint detrimental crop diseases to farmers, enabling timely and effective treatment decisions. This solution helps with identification, treatment, and prevention recommendations.

Created by Gizza Cahya Widyastuti, Muhammad Farhan Abdul Azis Reafalino Aditama Pasya

Country/Region/Territory - Indonesia

Age Group: 13 – 18 Years

Target audience:
Farmers who face problems with crop diseases.

QR code to open YouTube video of project submitted by student

E-griculture

E-griculture is a community pest control educational drone that uses AI to detect and manage pests, birds, and insects that threaten crops. This solution utilizes external sensors such as water and light sensors, ensuring optimal crop growth while minimizing water waste.

Created by ARSA MUHAMMAD NAUFAL, KOH WEI LE, WAYNE PALCONGAN SHANIEL CASTILLO

Country/Region/Territory - Singapore

Age Group: 13-18 years

Target audience:
Educators, students, and horticultural enthusiasts

QR code to open YouTube video of project submitted by student

Green AI

Green AI addresses the agricultural challenge of pest control using AI. This solution uses the Intel® Distribution of OpenVINO™ toolkit to swiftly detect pests and the Intel® RealSense™ depth camera D435 allows targeted pesticide application.

Created by Makoma Motloutsi, Unathi Morake

Country/Region/Territory - South Africa

Age Group: Above 18 years

Target audience:
Commercial and subsistence farmers as well as farming departments.

QR code to open YouTube video of project submitted by student

IFSAI (Improving Food Security through AI)

IFSAI (Improving Food Security through AI) addresses the global challenge of food waste and improves food security using customer-centric solutions, efficient communication with food stakeholders, feedback mechanisms, and school program integration. This solution utilizes Intel® RealSense™ and the Intel® Distribution of OpenVINO™ toolkit.

Created by Adebanke Damola-Fashola, Fisayo Jassey-Jabarr Leonardo Chica

Country/Region/Territory - United States of America

Age Group: Above 18 years

Target audience:
Humanitarian organizations, policymakers and government agencies, and educational institutions

QR code to open YouTube video of project submitted by student

My Interactive Plant

My Interactive Plant is a customizable smart planter that will monitor the plant's condition. This solution utilizes an AI-powered plant-type detector and a disease detector.

Created by Adrián Villalba, Alejandro Carmona, Javier Piulachs

Country/Region/Territory - Spain

Age Group: 13-18 years

Target audience:
Youngsters and adults who don't know how to care for plants

QR code to open YouTube video of project submitted by student

3 GOOD HEALTH AND WELL BEING

Good Health and Well-being

Ensure healthy lives and promote well-being for all at all ages

In 2018, roughly 5.2 million children under 5 years died mostly from preventable and treatable causes. Health crises pose a global risk and have highlighted the importance of having a response strategy. The purpose of this goal is to ensure healthy lives and promote well-being for all at all ages.

AI-enabled Computer Vision for Tuberculosis Detection From MRI Scans

Country Winner Award

This solution aims to use AI to detect tuberculosis on X-ray images of the lungs. X-ray images of TB lungs have special characteristics that can be recognized and distinguished from normal lungs. With AI, the diagnostic process will be faster and easier, reducing the risk of human error.

Created by Andhika Rahmanu, Bayu Rahmat Wibowo, Tabitha Andrea Putri

Country/Region/Territory - Indonesia

Age Group: Above 18 years

Target audience:
Healthcare professionals

QR code to open YouTube video of project submitted by student

Cell Detection Using AI

Country Winner Award

This solution deploys AI in response to the limited access to laboratories equipped with specific cell-counting and detecting devices. It utilizes a convolutional neural network to detect and count Eosinophils, Lymphocytes, Monocytes, and Neutrophils, thus aiding a more accurate blood-based disease diagnosis.

Created by Adrian Badan, Marian Soltan

Country/Region/Territory - Moldova, Republic of

Age Group: 13-18 years

Target audience:
Doctors or students interested in biology

QR code to open YouTube video of project submitted by student

Cancel the Cancer

Country Winner Award

Cancel the Cancer offers quick skin change assessments via a user-friendly website. This solution based on transfer learning from the ISIC archive dataset, facilitates rapid predictions.

Created by Mateusz Torzewski, Paweł Gołata, Wiktor Fajkowski

Country/Region/Territory - Poland

Age Group: 13-18 years

Target audience:
Everyone

QR code to open YouTube video of project submitted by student

AI-cognito

Country Winner Award

AI-cognito is a youth-led social telehealth solution that uses AI for global early screening and community-based engagement in dementia and Parkinson's disease. This solution focuses on an educational segment for general public awareness, and preventive care with timely interventions, personalized care plans, and support networks.

Created by Noa Evan Wong Ji Wang, Runlin Gu, YUUVITRA D/O SELVARAJA SINGKA

Country/Region/Territory - Singapore

Age Group: 13-18 years

Target audience:
Seniors with and without diagnosed dementia, caregivers of persons with dementia, and youth

QR code to open YouTube video of project submitted by student

Socio-economic Status Causing High-level Distress Amongst Communities

Country Winner Award

This solution focuses on early stress detection through algorithm development. It identifies stress levels promptly and enables timely referrals for appropriate intervention and support.

Created by Justice Langene, Lebogang Mpete, Letlhogonolo Matlaela

Country/Region/Territory - South Africa

Age Group: Above 18 years

Target audience:
Workplaces and health facilities

QR code to open YouTube video of project submitted by student

EIPCA (Electrocardiogram Interpretation Patterns for Cardiovascular Abnormalities Prediction)

Country Winner Award

EIPCA (Electrocardiogram Interpretation Patterns for Cardiovascular Abnormalities Prediction), a web application and portable device designed for convenient screening of cardiovascular diseases (CVDs). This solution allows the screening process to be simplified into three easy steps: screen, wait, and receive.

Created by Khunasin Sooksri, Patcharada Tawaditap Peerapat Wattanakit

Country/Region/Territory - Thailand

Age Group: 13-18 years

Target audience:
Patients in rural areas who suffer from cardiovascular disease

QR code to open YouTube video of project submitted by student

MedINtel: Automated Triage Machine (ATM)

Country Winner Award

MedINtel is an AI-driven solution to speed up patient data collection by building different versions of a medical Automated Traige Machine (ATM). This solution utilizes Intel® Core™ processors, Intel® FPGAs, the Intel® Distribution of OpenVINO™ toolkit, and Intel® SGX to address challenges like long wait times. It also uses Intel® RealSense™ for high-quality patient data capture, and Intel vPro® to ensure hardware-based encryption.

Created by Muskaan Shahzad, Ruben Trevino, Sumesh Surendran

Country/Region/Territory - United States of America

Age Group: Above 18 years

Target audience:
Healthcare institutions/providers with patient intake and triage

QR code to open YouTube video of project submitted by student

Application of Artificial Intelligence in Cervical Pre-Cancer Detection

Country Recognition

This solution is a U-net segmentation deep learning neural network, trained with cervical images with histologically proven precancers for early detection of cervical cancer. It helps users access a cloud-based software platform where an image of a female cervix can be analyzed and the problematic zones are marked by the AI.

Created by Georgi Pranndzhev, Yoanna Acheva

Country/Region/Territory - Bulgaria

Age Group: Above 18 years

Target audience:
Small medical centers, hospitals and hospital groups, individual practitioners, outpatient, and screening offices

QR code to open YouTube video of project submitted by student

Hantavirus Prevention Through AI

Hantavirus is an acute viral disease transmitted by wild mice, especially long-tailed mice, through their saliva, feces, and urine. This solution aims to implement an artificial intelligence system that will detect this species of rodents, allowing for their monitoring in order to reduce the spread of the virus.

Created by Francisco Suero Guevara Lynch

Country/Region/Territory - Argentina

Age Group: Above 18 years

Target audience:
Farmers who have problems with bird pests.

QR code to open YouTube video of project submitted by student

Multiple Disease Prediction System

The Multiple Disease Prediction System is a cutting-edge project that addresses the pressing need for early detection and prediction of multiple diseases. The solution uses the power of AI and Intel® technologies to analyze extensive medical data.

Created by Md Zubayer Hossain Patowari

Country/Region/Territory - Bangladesh

Age Group: 13-18 years

Target audience:
Those who are suffering from heart disease, diabetes and various fevers

QR code to open YouTube video of project submitted by student

Early Diagnosis of Colorectal Cancer

This solution designed the microfluidic dual-mode circulating tumour cell device, using electrochemical detection and visual detection to diagnose colorectal cancer. The Intel® Distribution of OpenVINO™ toolkit helps collect the colorectal cancer patients' blood samples, conduct dynamic analysis, and provide personalized diagnosis and treatment.

Created by Siyang Chan, Xiaoya Tang, Yaoyi Wu

Country/Region/Territory - China

Age Group: Above 18 years

Target audience:
People who have colorectal cancer and those who may encounter colorectal cancer

QR code to open YouTube video of project submitted by student

Know it Then Eat It

Know it Then Eat It is powered by the Intel® Distribution of OpenVINO™ toolkit. This solution uses OCR text recognition, CNN deep learning algorithm, and LLM large language model to aid sensitive individuals, like those with diabetes, in identifying and receiving guidance about their food choices.

Created by Chen Li, Yiming Zhou, Yixian Wang

Country/Region/Territory - China

Age Group: 13-18 years

Target audience:
Sensitive people such as diabetes patients and allergic people

QR code to open YouTube video of project submitted by student

AI Solution for MDD and Anxiety Patients Using CNN

This solution utilizes AI using CNN and TensorFlow and is an automated monitoring and alerting system. It detects emotions, heart rate, temperature, GSR, and blood pressure of MDD and anxiety patients, enabling therapists to comprehend the circumstance and provide treatment remotely.

Created by Himank Arora

Country/Region/Territory - India

Age Group: 13-18 years

Target audience:
Patients with suicide-prone depression (MDD) and anxiety

QR code to open YouTube video of project submitted by student

SIM-T (Seizure Identification Mechanism in Toddlers)

SIM-T was developed to address underdiagnosis and the escalation of seizure problems in toddlers. This solution is designed to monitor vital signs such as heart rate, oxygen saturation, body temperature, and body jerks.

Created by Raunak Dhoot, Vanya Gupta

Country/Region/Territory - India

Age Group: 13-18 years

Target audience:
Toddlers under the age of 7

QR code to open YouTube video of project submitted by student

Advanced AI Monitoring and Control

This solution utilizes the Advanced AI Monitoring & Control solution to enhance community safety with ultrasonic and buzzer sensors to promptly alert lost individuals and their communities. It deploys GPS technology, to accurately locate lost individuals, whether they are a child, a pet, or someone with a specific condition.

Created by Jad Ali, Nishan Abu-libdeh, Ruba Al-Qadi

Country/Region/Territory - Israel

Age Group: 13-18 years

Target audience:
Children, pets, and individuals with conditions like Alzheimer's disease, epilepsy, and hard addictions

QR code to open YouTube video of project submitted by student

Analisis

Analisis deploys AI to offer a simple and accessible solution addressing the problem of individuals with physical skin injuries. This solution combines the capabilities of GPT-3, a language model, and our classifier, a fine-tuned version of RESNET-50 to provide creative step-by-step treatment.

Created by Laura Aviv Shaked, Daniel Varkin, Eitan Worms

Country/Region/Territory - Israel

Age Group: 13-18 years

Target audience:
Elderly and those with no access to medical professionals

QR code to open YouTube video of project submitted by student

Angel by Me

Angel by Me communicates with people living alone to lessen mental illness and diagnose health conditions with speech and vision information. This solution analyzes their speaking voice and aids in the early detection of acute diseases such as stroke.

Created by Hyunwoo Kim, Youngseok Kim
Country/Region/Territory - Korea, Republic of
Age Group: Above 18 years

Target audience:
People who live alone

QR code to open YouTube video of project submitted by student

Turtle Neck Syndrome Prevention AI Chair

This solution is designed to prevent turtle neck syndrome. It is powered by the Intel® Distribution of OpenVINO™ toolkit and high-performance pose estimation model.

Created by Hyo yeong Cho, Hyun min Kim
Country/Region/Territory - Korea, Republic of
Age Group: 13-18 years

Target audience:
Everyone

QR code to open YouTube video of project submitted by student

Antygarb

Antygarb is an app that utilizes TensorFlow libraries with a user-friendly interface and detects body position to track posture statistics. This solution uses the Intel® DevCloud server and Intel® Distribution of OpenVINO™ toolkit to optimize model execution.

Created by Kamil Wybraniec, Mikołaj Śleziak, Radosław Wolański
Country/Region/Territory - Poland
Age Group: 13-18 years

Target audience:
People who face a problem with correct posture body

QR code to open YouTube video of project submitted by student

BTDS (Brain Tumour Diagnosis System)

BTDS (Brain Tumour Diagnosis System) deploys AI to address the issue of low accuracy in brain tumour diagnoses. This solution utilizes an intuitive user interface with an advanced class categorization algorithm, the incorporation of dual-screening input, and a pre-emptive detection module.

Created by Tomasz Kozłowski
Country/Region/Territory - Poland
Age Group: 13-18 years

Target audience:
Healthcare professionals and patients

QR code to open YouTube video of project submitted by student

LiSA (Locked-in Syndrome Assistant)

LiSA (Locked-in Syndrome Assistant) allows significantly paralyzed people or those with locked-in syndrome to communicate with each other through the patient's eye movements. This solution utilizes AI to detect the patient's face, receives eye blinks as input, and converts those inputs into a word from a customized dictionary and shows it on the GUI.

Created by Jakub Brzozowski

Country/Region/Territory - Poland

Age Group: Above 18 years

Target audience:
People who face communication difficulties due to paralysis, their families, caretakers and care facilities

QR code to open YouTube video of project submitted by student

PROLIGMOLAB

PROLIGMOLAB is a unified online laboratory designed to streamline Drug-Target Interaction (DTI) predictions and related tasks. This solution uses Intel® Core™ Processors as it offers the best compatibility while addressing the fragmented approach.

Created by Kenneth Foo Zi Yang, Zhuoxi Li

Country/Region/Territory - Singapore

Age Group: Above 18 years

Target audience:
Scientists

QR code to open YouTube video of project submitted by student

Facial Expression Detection System

The Facial Expression Detection System detects people's emotions using their facial expressions. This solution deploys computer vision and machine learning algorithms to identify people's emotional states and analyse user interactions.

Created by Nthabiseng Mathekga

Country/Region/Territory - South Africa

Age Group: 13-18 years

Target audience:
Psychologists, teachers and social workers

QR code to open YouTube video of project submitted by student

SafeGuard

SafeGuard is a mobile application built in Android Studio, using Java, with the goal of helping save students' lives. This solution uses the Intel® Distribution of OpenVINO™ toolkit for facial recognition to find a targeted student.

Created by Aaron Strock, Alexander Culp, Noah Diana

Country/Region/Territory - United States of America

Age Group: 13-18 years

Target audience:
Schools or organizations around the world who have a problem with physical or mental security

QR code to open YouTube video of project submitted by student

4 QUALITY EDUCATION

Quality Education

Ensure inclusive and equitable quality education

It was projected that more than 200 million children would be out of school, and only 60% of young people would be completing upper secondary education in 2030. This was before the COVID-19 pandemic hit. Education has the power to enable upward socioeconomic mobility and escape poverty. Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all is what this goal is all about.

Aimers Summarizer

Country Winner Award

Aimers Summarizer uses AI to easily summarize any news or other articles. This solution allows the summary to be played as an audio file, translated into any language, and be saved as a text file for later.

Created by Fuad Al Firoj, Md Ishrak Hasan, Md Merabbi Hasan Siam

Country/Region/Territory - Bangladesh

Age Group: 13-18 years

Target audience:
General public, but specially for students and busy people

QR code to open YouTube video of project submitted by student

Virtual Assistant for Education

This solution is an educational web platform featuring a virtual assistant to reduce the problem of misuse of artificial intelligence. It utilizes AI to guide and inform students on various topics without executing tasks.

Created by Damián Alejandro Herrera Salas

Country/Region/Territory - Costa Rica

Age Group: 13-18 years

Target audience:
Professors and students

QR code to open YouTube video of project submitted by student

Document Summarization by Pictures

This solution is an efficient tool for summarizing text in documents. It utilizes an AI model called PaddleOCR, implemented for character recognition, and OpenAI API(GPT3.5) is used to summarize sentences in this app. Also, Intel® Distribution of OpenVINO™ Toolkit is used to optimize the inference of character recognition.

Created by Keishi Ohya, Yusuke Uegaito, Yutaro Ito Letlhogonolo Matlaela

Country/Region/Territory - Japan

Age Group: Above 18 years

Target audience:
Students who are learning

QR code to open YouTube video of project submitted by student

Robot for Personalized Learning

CON-IA improves the educational experience of high-school students, an artificial intelligence robot that has been designed to teach students in an interactive and engaging manner. This solution provides detailed explanations of complex topics and asks questions to ensure that students understand the material.

Created by Amanda Yoselin Azamar Ramon, José Alejandro Velazquez Lagunés, José Luis Flores Villegas,

Country/Region/Territory - Mexico

Age Group: Above 18 years

Target audience:
High school students and teachers

QR code to open YouTube video of project submitted by student

6 CLEAN WATER AND SANITATION

Clean Water and Sanitation

Ensure access to water and sanitation for all

Access to safe water, sanitation and hygiene is the most basic human need for health and well-being. Billions of people will lack access to these basic services in 2030 unless progress quadruplesThe demand for water has outpaced population growth, and half the world's population is already experiencing severe water scarcity at least one month a year. Water scarcity is projected to increase with the rise of global temperatures as a result of climate change.

Raman Spectrum Machine Learning to Detect Pollutant Molecules

This solution helps bionic structures using beetle wing templates to transfer PDMS (polydimethylsiloxane) and combines SERS analysis and CNN for pollutant R6G molecule detection with an accuracy of 98-99%. It utilizes Intel® Distribution of OpenVINO™ toolkit to optimize performance and testing platform, Intel® DevCloud, and uses the high-performance Intel® Xeon® Gold 6128 processor.

Created by CHEN-HSIN LU, XIN-HAN TSAI, YEH ANTHONY AN-CHIH

Country/Region/Territory - Taiwan

Age Group: 13-18 years

Target audience:
Governments, environment protection groups, and farmers

QR code to open YouTube video of project submitted by student

AI Drone That Cleans up Garbage in the Water

This solution aims to address the problem of water pollution by using a drone equipped with AI technology. It detects and targets trash in the water efficiently, with greater precision and effectiveness, reducing the negative impact of water pollution on marine life and human health.

Created by David Rojas Marquez, Rafael de Jesús López Márquez, Valeria Palacios Cruz

Country/Region/Territory - Mexico

Age Group: Above 18 years

Target audience:
Organizations and governments responsible for cleaning and conserving bodies of water, and those interested in environmental preservation

QR code to open YouTube video of project submitted by student

8 DECENT WORK AND ECONOMIC GROWTH

Decent Work and Economic Growth

Promote inclusive and sustainable economic growth, employment and decent work for all

Multiple crises are placing the global economy under serious threat. Global real GDP per capita growth is forecast to slow down in 2023 and with ever increasing challenging economic conditions, more workers are turning to informal employment. The global unemployment rate declined significantly in 2022, falling to 5.4 per cent from a peak of 6.6 per cent in 2020 as economies began recovering from the shock of the COVID-19 pandemic

Cotton Quality Detector

Country Winner Award

With women playing a crucial role in growing cotton, they face an unequal bargaining power among producers. This project is capable of certifying the quality of cotton through an image comparison system in the post-harvest stage. It evaluates variables such as fibre length, colour, and impurities, enabling producers to increase their competitiveness.

Created by Elvira Contreras

Country/Region/Territory - Argentina

Age Group: Above 18 years

Target audience:
Cotton producers and related state institutions

QR code to open YouTube video of project submitted by student

Artificially Intelligent Virtual Assistant Based on ChatGPT and AI Voice Models

The intelligent voice assistant is an AI-powered virtual assistant that utilizes NLP and ML to provide a seamless and intuitive conversational experience. This solution possesses a wide range of capabilities, including speech recognition, language understanding, and context awareness.

Created by Jawadur Rahman Jawad

Country/Region/Territory - Bangladesh

Age Group: 13-18 years

Target audience:
General public

QR code to open YouTube video of project submitted by student

Organimate

Organimate helps in boosting farmers' economic growth, increasing the demand for organic produce, and benefiting the environment. This solution uses an RNN algorithm hosted on an Intel-powered cloud platform that utilizes various parameters to suggest suitable crops. It focuses on gradually converting sections of fields over a five to ten-year plan based on risk capacity.

Created by Ansh Sharma, Aran Agarwal, Kushal Agrawal

Country/Region/Territory - India

Age Group: Above 18 years

Target audience:
Farmers who want to increase profits and transition to organic farming

QR code to open YouTube video of project submitted by student

Personalized Financial Management and Projection Assistant

This solution is an AI-based financial management and projection assistant for individuals who lack financial literacy. It utilizes economic parameter data, sourced from government websites to predict inflation rates and employs an LSTM model for currency rate projections.

Created by Banu Chrisnadi Yohanes, Ivan Adito Arba Putra, Muhammad Redin Birezqic

Country/Region/Territory - Indonesia

Age Group: Above 18 years

Target audience:
People who want to improve personal finance management

QR code to open YouTube video of project submitted by student

Artificial Intelligence for Better Work Environment

This solution implements a hand recognition model designed to enhance machinery control in various work environments. It prioritizes the safety of workers by enabling them to operate machinery from a safe distance.

Created by Dumitru Vleju
Country/Region/Territory - Moldova, Republic of
Age Group: 13-18 years

Target audience:
Citizens over the age of 18

QR code to open YouTube video of project submitted by student

Checking a Link for Malicious Code

This solution utilizes ML to effectively detect phishing links within ads, mitigating the risk of ransomware attacks and data breaches. It prioritizes user privacy and security.

Created by Ivan Pavlidis, Serghey Volkovich
Country/Region/Territory - Moldova, Republic of
Age Group: 13-18 years

Target audience:
Internet users

QR code to open YouTube video of project submitted by student

Employee Safety System

The Employee Safety System addresses a key industry problem by employing artificial intelligence and computer vision to detect potential workplace hazards. This solution uses five trained neural networks, built using Intel® DevCloud, offering a high level of detection efficiency.

Created by Miłosz Mikołajczyk, Szymon Marciniak
Country/Region/Territory - Poland
Age Group: Above 18 years

Target audience:
Companies, employers, and employees

QR code to open YouTube video of project submitted by student

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Industry, Innovation and Infrastructure

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Through industrialization, innovation and infrastructure, the world can open a new horizon of economic opportunities that generate employment and income. However, this can only be achieved when the world is inclusive in its progress because 16% of the global population does not have access to mobile broadband networks. Least developed countries, in particular, need to accelerate the development of their manufacturing sector if they are to scale up investment in scientific research and innovation. This goal's objective is to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

HIL Simulation of Auto-Driving Control System Based on Intel Platform

Country Winner Award

Based on Intel® Smart Edge, the vehicle chassis and simulation scenarios were designed. This solution focuses on functions like cooperative adaptive cruise control, cooperative adaptive control, lane keeping assist, and automatic emergency braking.

Created by Hantian Shi, Hao Sun, Xiang Wang

Country/Region/Territory - China

Age Group: Above 18 years

Target audience:
N/A

QR code to open YouTube video of project submitted by student

Safety Traffic Through AI Analysis of Dashcams in Delivery Riders

Country Winner Award

The dashcams of people who drive on motorcycles are analyzed and data is scored using an Intel® RealSense™ camera and the Intel® Distribution of OpenVINO™ toolkit. This solution utilizes incentives or penalties imposed on delivery riders who ride rashly, based on their score.

Created by Mikyeong Kim, Minkyu Seol

Country/Region/Territory - Korea, Republic of

Age Group: Above 18 years

Target audience:
Delivery drivers

QR code to open YouTube video of project submitted by student

Smart Attendance System

Country Winner Award

Smart Attendance System uses face recognition technology for real-time tracking of students or employees. This solution utilizes an Intel® RealSense™ depth camera D435, capturing data such as date, time, and location.

Created by Liyanda Ndlovu, Nompumelelo Musiliu, Oluchi Ugbaja

Country/Region/Territory - South Africa

Age Group: 13-18 years

Target audience:
Law enforcement and home affairs departments/department of homelands

QR code to open YouTube video of project submitted by student

AI and Deep Learning-based Advanced Security System Using Multiple Cameras

Country Recognition

This solution uses AI and deep learning to revolutionize modern security systems by seamlessly integrating multiple cameras, it enhances threat detection, electrical equipment control, and overall surveillance capabilities. It employs advanced face detection, tracking, and anomaly detection algorithms, such as Convolutional Neural Network (CNN), Histogram of Oriented Gradient (HOG), and Haar Cascade, ensuring precise surveillance and security response.

Created by Abdulla Mahamud Shejan, Imtiaz Uddin, MD. Mehedi Hasan Monna

Country/Region/Territory - Bangladesh

Age Group: Above 18 years

Target audience:
Offices, industries, and educational institutions

QR code to open YouTube video of project submitted by student

Augmented Vision Projector

Augmented Vision Projector can assist seniors in visual inspection tasks and eliminate the need for individuals to change their focus, resulting in a two-fold improvement in efficiency. This solution directly displays the image recognition results on the objects themselves.

Created by Haruto Senba, Shuto Komatsu, Sora Shimamoto

Country/Region/Territory - Japan

Age Group: Above 18 years

Target audience:
Industries that require visual inspections

QR code to open YouTube video of project submitted by student

BeyondYourData

BeyondYourData focuses on new samples and classifies them, resulting in the creation of larger and trainable image datasets. This solution utilizes the sequential use of Generative Adversarial Networks (GANs) and Convolutional Neural Networks (CNNs).

Created by Hector Bordas, Judith Cardona, Victor Pottier

Country/Region/Territory - Spain

Age Group: 13-18 years

Target audience:
AI developers, whether they are companies or individuals

QR code to open YouTube video of project submitted by student

Journey Buddy

The AI-powered trip scheduler deploys AI and Intel® technologies to address the time-consuming travel process of researching, booking, and creating itineraries. This solution analyzes data to generate intelligent travel planning, making it convenient for everyone.

Created by Geart Ferhati

Country/Region/Territory - Albania

Age Group: 13-18 years

Target audience:
Individuals who love to travel and seek a convenient and personalized experience

QR code to open YouTube video of project submitted by student

Motor Vehicle Telematics Maneuver Recognition

This solution aims at reducing accidents with motor telematics by detecting manoeuvres in trip data by combining dashcam footage and sensor data, i.e. it detects patterns within driving data that can be classified and labelled for all drivers. To accomplish this, PyTorch LSTM models and Intel® Core™ processors are used.

Created by Jonathan Schuster

Country/Region/Territory - Germany

Age Group: Above 18 years

Target audience:
Academia, insurance companies, public authorities, mobility NGOs, and motor OEMs

QR code to open YouTube video of project submitted by student

Predicting Customer Churn in the Telecommunication Industry: A Data-driven Approach

This solution addresses the problem of customer churn in the telecom industry using predictive modelling. It utilizes the source code to showcase the entire churn prediction pipeline, from data preprocessing to model training and evaluation. A churn prediction model is then built using the XGBoost Random Forest Classifier.

Created by Gusti Padaka, Muhammad Alfi Hidayat, Muhammad Farel Rafiffawwas

Country/Region/Territory - Indonesia

Age Group: Above 18 years

Target audience:
Telecommunication companies

QR code to open YouTube video of project submitted by student

Solar Panels' Defects Prediction App

This solution is an AI-powered application that collects and analyses data from panels' sensors to find performance differences. It focuses on real-time analysis and future performance of solar panels using ML and notifies owners of possible component failures. It utilizes AI and Intel® technologies to ensure accurate predictions, enabling users to optimize energy production and reduce costs.

Created by Ciprian Moisenco, Mihaela Untu

Country/Region/Territory - Moldova, Republic of

Age Group: Above 18 years

Target audience:
Owners and operators of solar panel systems or professionals in the renewable energy industry

QR code to open YouTube video of project submitted by student

AI Assets Management System

AI Assets Management System is an algorithm that can manage, monitor, and safeguard assets in the college. This solution utilizes Intel® RealSense™ cameras, Intel® Movidius™ Neural Compute Stick, and the Intel® Distribution of OpenVINO™ toolkit software.

Created by ELISA MOSESENYANE, Johannes Mokami, KOKETSE REBECCA SIKHU

Country/Region/Territory - South Africa

Age Group: Above 18 years

Target audience:
Colleges, companies, and private and public institutions

QR code to open YouTube video of project submitted by student

UTIM (Universal Traffic Intersection Model) for Public Safety - Digital Twin Technology

UTIM (Universal Traffic Intersection Model) uses an intersection model, to boost the performance of AI-enhanced imaging to solve many public safety problem areas. This solution focuses on building an enhanced sample city intersection with the latest imaging technologies and GIS mapping technologies.

Created by Neethi Anand Gangidi

Country/Region/Territory - United States of America

Age Group: Above 18 years

Target audience:
AI academia and industry professionals, government agencies, and industries where digital evidence and surveillance are required

QR code to open YouTube video of project submitted by student

10 REDUCED INEQUALITIES

Reduce Inequality Within and Among Countries

The world's wealth is distributed unevenly with a small group holding a large share. This inequality leads to financial and social discrimination. Today, at least 1 in 5 people have experienced some kind of discrimination on the grounds prohibited under international human rights law.1 To help countries flourish and promote equality and prosperity, this goal strives towards reducing inequality within and among countries.

[1]UN Stats, 'The Sustainable Development Goals Report 2022'

Sign Language AI Detector for Online Conferences

Country Winner Award

This solution can help bridge the communication gap and enable deaf individuals to participate more fully in society. It utilizes a model trained on American Sign Language (ASL) letters. With an 83% accuracy rate, the model successfully detects all 26 letters of the alphabet.

Created by Anastasia Panfil, Vlada Pulbere

Country/Region/Territory - Moldova, Republic of

Age Group: Above 18 years

Target audience:
Corporates that have deaf employees and applications destined for online meetings

QR code to open YouTube video of project submitted by student

AssistVisor

AssistVisor is a user-friendly desktop application designed to empower visually impaired individuals in their independent travel journeys. This solution utilizes the advanced MASK RCNN model for accurate object segmentation and the Intel® RealSense™ camera SR305 for precise distance estimation, AssistVisor can detect nearby obstacles and provide voice alerts on directions when users approach them.

Created by Chew Wen Hoh, Shaun Xin Hong Liew, Shue Yi Tam

Country/Region/Territory - Malaysia

Age Group: Above 18 years

Target audience:
Visually impaired individuals

QR code to open YouTube video of project submitted by student

Handslate

Handslate is a two-way application that detects sign language signed out by deaf and mute people and then translates the signs into readable words and spoken voiceovers. This solution uses CV for gesture recognition and NLPs for speech recognition and it is powered by an Intel® Core™ processor and an Intel® UHD Graphics video card.

Created by Yi Qing Neoh

Country/Region/Territory - Malaysia

Age Group: 13-18 years

Target audience:
Deaf and mute people, as well as able people who need to communicate with the deaf and mute

QR code to open YouTube video of project submitted by student

Real-time American Sign Language (ASL) Interpretation

This project utilizes a convolutional neural network and long short-term memory to build a deep learning model that classifies five American Sign Language (ASL) signs into phrases. Then, the deep learning model is optimized using the Intel® Distribution of OpenVINO™ toolkit to effectively reduce the inferencing time and generated IR model.

Created by Jocelyn Shuang Ru Teh

Country/Region/Territory - Malaysia

Age Group: Above 18 years

Target audience:
General public, starting from restaurant owners for use at front counters

QR code to open YouTube video of project submitted by student

LASDY (Literacy Assistant for Delayed Literate Individuals)

LASDY (Literacy Assistant for Delayed Literate Individuals) helps in achieving minimum proficiency levels in reading and mathematics. The solution uses 3rd Gen Intel® Xeon® Scalable processors and the Intel® Distribution of OpenVINO™ toolkit to provide learner recommendations and evaluations, arranging individual lessons.

Created by Atikhun Chaiwanna, Chanunpat Tajareanmeuang, Phasakorn Meechai

Country/Region/Territory - Thailand

Age Group: 13-18 years

Target audience:
Children who are experiencing delayed literacy or reading difficulties

QR code to open YouTube video of project submitted by student

EquiSelect

Equiselect utilizes AI to scan CVs, decide if each part of the text has mostly good or bad attributes, and display them as a percentage. This solution takes candidates with a high percentage to the next stage of hiring.

Created by Ava Chaplin

Country/Region/Territory - United Kingdom

Age Group: 13-18 years

Target audience:
Employers and job recruiters

QR code to open YouTube video of project submitted by student

11 SUSTAINABLE CITIES AND COMMUNITIES

Sustainable Cities and Communities

Make cities and human settlements inclusive, safe, resilient and sustainable

Even though cities and metropolitan areas are powerhouses of economic growth—contributing about 60% of global GDP, they also account for about 70% of global carbon emissions and over 60% of resource use. Rapid urbanization is increasing the number of slum dwellers, inadequate and overburdened infrastructure and services, worsening air pollution and unplanned urban sprawl. This goal targets making cities and human settlements inclusive, safe, resilient and sustainable.

ASRV (Automatic System for Road Violation)

Country Winner Award

ASRV (Automatic System for Road Violations) uses Intel® Distribution of OpenVINO™ toolkit to detect speeding, illegal parking, and irregular movements. This solution detects an incident, automatically saves the license plate, and notifies the police.

Created by Ermi Tafili, Gerti Dermani, Endri Zaganjori

Country/Region/Territory - Albania

Age Group: 13-18 years

Target audience:
Citizens of the Shkodër region in Albania and other cities in Albania

QR code to open YouTube video of project submitted by student

Detect Driving Fatigue Levels Using Real-time Deep Learning

Country Winner Award

A drowsiness detection technology for safe driving, utilizing Kaggle's Drowsiness Detection Dataset. This solution uses the power of OpenCV, Keras, and TensorFlow to monitor the driver's alertness in real time with accuracy. When signs of drowsiness are detected, visual and auditory alerts are triggered to prompt necessary breaks, prioritizing safety for drivers and passengers.

Created by Ahmad Safiul Annam, Benhur Rafael Ebeka Yolmen Connary Zahra Rameyzanawa

Country/Region/Territory - Indonesia

Age Group: 13-18 years

Target audience:
Drivers

QR code to open YouTube video of project submitted by student

ARSS (AI Recycling Separation System)

Country Winner Award

ARSS (AI Recycling Separation System) for the disabled, uses a dual camera system, to identify and separate garbage materials. This solution eases daily life challenges for the visually impaired and fosters environmental protection.

Created by Beom Seo Hwang, Hyung Woo Cho, Jun Seo Lee

Country/Region/Territory - Korea, Republic of

Age Group: 13-18 years

Target audience:
People who are blind

QR code to open YouTube video of project submitted by student

Smart Home A-eye Bin

Country Winner Award

Smart Home A-eye Bin is a smart trash sorter that utilizes Raspberry Pi and its camera to capture images, program AI to identify the type of material, and Lego Mindstorms EV3 to create a conveyor belt system. This solution uses an Intel® Core™ i5-8250U processor for programming along with Intel® DevCloud for better performance and portability.

Created by Chong Yao Ong, Yi Jie Quah, Zi Xuan Mok

Country/Region/Territory - Malaysia

Age Group: 13-18 years

Target audience:
Domestic households, families, and regular consumers

QR code to open YouTube video of project submitted by student

EyeQuake

EyeQuake is an AI-based disaster application that uses AI to predict earthquakes by analyzing historical seismic, soil, and building data. This solution focuses on two systems: an Earthquake Prediction System, forecasting earthquake probabilities, and a Building Information System, providing building durability insights on a map.

Created by Alp ÖZDEMİR, Bora ESEN

Country/Region/Territory - Türkiye

Age Group: Above 18 years

Target audience:
Countries with settlements in the earthquake zone and construction industry

QR code to open YouTube video of project submitted by student

Unitecture

This solution transforms written architectural ideas into 3D models using AI-driven technology, with an immersive VR experience for hands-on design exploration. It utilizes the advanced capabilities of ChatGPT 4 API to accurately interpret user-written architectural descriptions.

Created by Firdeus Kasaj, Kevin Lika, Xhurian Shaba

Country/Region/Territory - Albania

Age Group: 13-18 years

Target audience:
Architects and those passionate about architecture

QR code to open YouTube video of project submitted by student

Intelligent Driving Assistant

Intelligent Driving Assistant is designed to reduce fatal traffic accidents and generate data to implement road safety policies. This solution captures real-time images using Intel® RealSense™ Technology and using perceived depth in the image, it displays the recommended speed and distance to the driver.

Created by Andrés Gutierrez

Country/Region/Territory - Argentina

Age Group: Above 18 years

Target audience:
National or state governments as well as security and motor companies

QR code to open YouTube video of project submitted by student

Smart Eco Sort

Smart Eco Sort is an automatic garbage bin that streamlines waste classification. This solution helps users dispose of trash through a discharge port, and a camera identifies the type, directing it to the appropriate bin via a servo. Real-time bin status is then transmitted to a server, accessible via an app.

Created by Hangchen Guo, Xiang Yu, Yueting Wen

Country/Region/Territory - China

Age Group: Above 18 years

Target audience:
N/A

QR code to open YouTube video of project submitted by student

Hell Subway Prevention Alert A

This solution aims to improve subway safety during crowded rush hours using AI. It uses head recognition to count passengers and triggers disembarkation announcements upon detecting overcrowding.

Created by Hyunchol Park, Hyunsoo Tae, Taebin Jeon

Country/Region/Territory - Korea, Republic of

Age Group: 13-18 years

Target audience:
Subway users

QR code to open YouTube video of project submitted by student

Car Safety Enhancer

Car Safety Enhancer helps in tackling urban challenges like traffic congestion and accidents, fostering a safer and more inclusive driving experience. This solution utilizes YOLO algorithms for sign detection and OpenCV for line recognition, along with hardware like Jetson Nano, it processes real-time data to assist in steering and decision-making.

Created by Cristian Basco, Nikita Moglan

Country/Region/Territory - Moldova, Republic of

Age Group: Above 18 years

Target audience:
People from the ages 16 to 26

QR code to open YouTube video of project submitted by student

Data-driven Documentation for Disaster Management in Southeast Asia

This solution focuses on the use of generative AI to create a library of templates for local leaders to respond to disasters. It helps with customized templates including evacuation plans, resource allocation strategies, risk assessment frameworks, and effective communication templates.

Created by Igwezinakachi Nmehielle, Joanna Hioe

Country/Region/Territory - Singapore

Age Group: Above 18 years

Target audience:
Government leaders, community partners, and general public

QR code to open YouTube video of project submitted by student

RecycleBot

RecycleBot is a simple Recyclable Detector Machine that detects recyclables into its four main components and automatically moves the recyclables into their respective compartments. This solution uses HTML, JavaScript, and EV3 Mindstorm.

Created by Khor Ize, Vernice Chin Xing Nie, Xu Rui Xuan

Country/Region/Territory - Singapore

Age Group: 13-18 years

Target audience:
School students

QR code to open YouTube video of project submitted by student

CRIME PREVENTION SYSTEM

This solution is designed to address global security challenges by comparing suspect faces from CCTV footage with the government's citizen database. It is powered by Intel® Distribution of OpenVINO™ toolkit that increases model support.

Created by Angela Mokoena, Vuyolwethu Nkomo

Country/Region/Territory - South Africa

Age Group: 13-18 years

Target audience:
Law enforcement and home affairs departments/department of homelands

QR code to open YouTube video of project submitted by student

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Responsible Consumption and Production

Ensure sustainable consumption and production patterns

Our planet is running out of resources, but populations are continuing to grow. If the global population reaches 9.8 billion by 2050, the equivalent of almost three planets will be required to provide the natural resources needed to sustain current lifestyles.

Fit Your Style

Fit Your Style, an AI-driven solution addresses the challenges of waste and environmental impact in the fashion industry. This solution uses object detection and recommendation systems, empowers individuals to catalogue clothing efficiently, and creates a marketplace for selling and repurposing unused garments.

Created by Angela Allegra, Gabriele Coco, Lorenzo Zappalà

Country/Region/Territory - Italy

Age Group: 13-18 years

Target audience:
Individuals aged 14 to 65, including students, university students, and working professionals

QR code to open YouTube video of project submitted by student

SAC-use AI to Control the Electricity Device in the Room

This solution utilises AI to detect a person's presence in the classroom and intelligently control the switch. It helps in significant energy conservation by sustaining switch operation when an individual is present, and powering it down upon their departure.

Created by Mingjun Ma, Shangheng Li, Zihan Yuan

Country/Region/Territory - China

Age Group: 13-18 years

Target audience:
Schools, restaurants, offices, and residential buildings

QR code to open YouTube video of project submitted by student

NeuroCue

Assistance systems enhance plant operations and aid international worker integration through data-driven visualization for countries facing demographic changes. Brownfield plants lacking data require external material handling observation to avoid modifications. A billiard table-based approach utilizing an Intel® RealSense™ camera and YOLOv7-based neural network, detects ball positions for accurate trajectory predictions.

Created by Dominik Strutz, Tim Seifert

Country/Region/Territory - Germany

Age Group: Above 18 years

Target audience:
Students and industry company operators

QR code to open YouTube video of project submitted by student

ECA (Eco Chatbot Application)

ECA (Eco Chatbot Application) is an app that gives recommendations and tips for how you can be more eco-friendly. This solution educates people with easy-to-digest tips to improve eco-friendly actions and thus reduce the impact on the environment.

Created by Scarlett Teahan

Country/Region/Territory - United Kingdom

Age Group: 13-18 years

Target audience:
General public, educational platforms, and non-profit organizations focused on eco-friendly goals

QR code to open YouTube video of project submitted by student

13 CLIMATE ACTION

Climate Action

Ensure sustainable consumption and production patterns

Our planet is running out of resources, but populations are continuing to grow. If the global population reaches 9.8 billion by 2050, the equivalent of almost three planets will be required to provide the natural resources needed to sustain current lifestyles.

WasteWise

Country Winner Award

WasteWise is an AI-powered app that eliminates any excuse for improper waste disposal by simplifying recycling, making it easy and accessible to every citizen. This solution informs users on where they should dispose of their waste with localized information about waste management and additional information aimed to educate the user.

Created by Avihay Triger, Roei Kliener, Stav Solomon

Country/Region/Territory - Israel

Age Group: 13-18 years

Target audience:
Individuals who are interested in environmental conservation

QR code to open YouTube video of project submitted by student

Beach Cleaning Robot

Country Winner Award

This solution for beach pollution is an autonomous robot that implements AI and has the ability to locate, recognize, and collect garbage or any waste found on the surface of the beach sand. The robot can be used in different situations and environments, which improves the effectiveness of its work.

Created by Angelina Alvarez Ortiz, Carlos Alberto Flores Gómez, Julio Daniel López Rayas

Country/Region/Territory - Mexico

Age Group: Above 18 years

Target audience:
Companies and the general public interested in environmental conservation and care

QR code to open YouTube video of project submitted by student

14 LIFE BELOW WATER

Life Below Water

Conserve and sustainably use the oceans, seas and marine resources

Healthy oceans and seas are essential to human existence and life on Earth. The Ocean is intrinsic to our life on earth. Covering three-quarters of the Earth's surface, contain 97 percent of the Earth's water, and represent 99 percent of the living space on the planet by volume. Worryingly, marine pollution is reaching extreme levels, with over 17 million metric tons clogging the ocean in 2021, a figure set to double or triple by 2040. Plastic is the most harmful type of ocean pollution.

Eco-marine

Country Winner Award

Eco-marine uses AI to safeguard sea creatures by distinguishing organisms from plastic. This solution will scan our oceans to see the plastic levels and will be attached to purpose-built robotic devices that can collect any plastic it finds.

Created by Georgia Rawson

Country/Region/Territory - United Kingdom

Age Group: 13-18 years

Target audience:
Marine life conservation organizations, government agencies, and educational institutions

QR code to open YouTube video of project submitted by student

STP Project for Sea

This solution is driven by reports of rising water temperatures, disappearing marine life, and increasing weather abnormalities. It deploys advanced technologies to monitor, analyze, and mitigate the impacts of environmental changes, ensuring a sustainable future.

Created by SEUNG HOON LEE

Country/Region/Territory - Korea, Republic of

Age Group: Above 18 years

Target audience:
Ecological research facilities and government organizations

QR code to open YouTube video of project submitted by student

iFishSafe

iFishSafe, an AI-powered app uses ML-powered deep learning models and NLP to analyze vast photographic datasets and work towards sustainable fishing practices. This solution uses 12th Gen Intel® Core™ i5 processors and Python, allowing fishermen to capture a photo and receive instant feedback on fish consumability and local fishing regulations.

Created by Alexis Low, Lauren Low

Country/Region/Territory - United States of America

Age Group: 13-18 years

Target audience:
Fishing industry and private fishermen/fisherwomen

QR code to open YouTube video of project submitted by student

15 LIFE ON LAND

Life On Land

Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

The world is facing a triple crisis of climate change, pollution, and biodiversity loss. Between 2015 and 2019, at least 100 million hectares of healthy and productive land were degraded every year, impacting the lives of 1.3 billion people. Agricultural expansion is the direct driver of almost 90 per cent of deforestation. This is in direct relation to our food systems, and oil palm harvesting accounted for 7 per cent of global deforestation from 2000 to 2018.

Wildlife Vehicle Collisions Modelling

Country Winner Award

This solution analyzes wildlife-vehicle collision (WVC) data from Rhineland-Palatinate using AI and identifies mitigation strategies, including factors like time of day, season, and sun inclination. It enables insurance companies to implement strategies like real-time position-based warnings for drivers and community-specific approaches in high-WVC areas.

Created by Andreas Hofmann

Country/Region/Territory - Germany

Age Group: Above 18 years

Target audience:
Academia, insurance companies, public authorities, NGOs, and motor OEMs

QR code to open YouTube video of project submitted by student

Plant Species Recognition Using Deep Learning

This solution aims to identify new, unseen plant images, providing a fast and reliable method for plant species recognition using deep learning. It uses the ability of CNNs to learn and extract features from images and then classify them into different categories.

Created by Navya A, Poojitha Ulasa Venkata Raghavulu, Vembudharsini Vijaykumar

Country/Region/Territory - India

Age Group: Above 18 years

Target audience:
Botanists, researchers and new agriculturists

QR code to open YouTube video of project submitted by student

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Promote Peaceful and Inclusive Societies For Sustainable Development

The main challenges to sustainable development today are conflict, insecurity, weak institutions and limited access to justice. This is proven by the fact that the number of people fleeing war, persecution and conflict exceeded 70 million in 2018, the highest level recorded by the UN refugee agency in almost 70 years. This goal seeks to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

[1]UNHCR, 'Worldwide displacement tops 70 million, UN Refugee Chief urges greater solidarity in response', June 2019

Courage2Correct

Country Winner Award

Courage2Correct offers solutions to victims of revenge pornography by implementing a layered filtering system focused on facial recognition. This solution uses an Intel® Core™ i5 processor that provides much-needed computational power.

Created by Prerana Patil, Rammya Sakpal, Rushikesh Patil

Country/Region/Territory - India

Age Group: Above 18 years

Target audience:
Government officials, AI-ML experts, and computer vision experts

QR code to open YouTube video of project submitted by student

PhishingShield

PhishingShield detects AI-generated Content (AIGC) using machine learning to analyze data authenticity and thus combat AI-enabled crimes. This solution utilizes Intel® Xeon® E5-2690 processors as hardware support and receives assistance from Intel® DevCloud for development.

Created by Kusyaliniy Nair Saravanan, Marcus Yap, Shin Chen Wong

Country/Region/Territory - Malaysia

Age Group: 13-18 years

Target audience:
Internet users

QR code to open YouTube video of project submitted by student

Annexure

Acknowledgement

The efforts to equip students with the right skillset and mindset in AI have succeeded due to the active cooperation of all our partners. We extend our sincerest gratitude to our collaborators in government, academia, and civil society. Without them, the Intel® AI Global Impact Festival 2023 and this resulting book would not have been possible.

We would like to thank the students who shared their innovative solutions and ideas leveraging AI. In these we see the potential to create world-changing technology that improves the life of every person on the planet. We take this opportunity to acknowledge the contribution of the parents, teachers, and academic institutions who have supported the students during this journey.

We look forward to further strengthening our engagement with all the stakeholders in 2024 and beyond, as we continue to build an AI-ready generation aware of and aligned with UN SDGs.

Apart from the thought-provoking submissions received from independent innovators, we are proud to share that, the third edition of the Intel® AI Global Impact Festival brought together a showcase of Innovative teaching-learning practices for AI skilling by 29 educators, coaches, and 37 best practices on AI skilling by the AI Changeleaders.

Know more about UN SDGs

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others and that development must balance social, economic and environmental sustainability.

Countries have committed to prioritizing progress for those who're furthest behind. The SDGs are designed to end poverty, hunger, AIDS, and discrimination against women and girls.

The creativity, know-how, technology and financial resources from all of society is necessary to achieve the SDGs in every context.

Source: https://www.undp.org/sustainable-development-goals

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