



Artificial Intelligence

Development Portfolio



About us

ASSIST Software was founded in 1992 and is a software company based in Suceava, Romania. ASSIST Software specializes in outsourcing software development projects.



28 Years of
Experience



200+ Full-Time
Employees



240 Clients
around the world



463 Projects
Completed since 1992

HealthBeacon

Health Beacon is a medication adherence technology company. They develop smart tools for managing medication. The Health Beacon is a smart sharps bin for patients who self-inject medications at home. It is digitally connected and programmed with your personal medication schedule and uses customized reminders to help you start and stay on track with your medication.

ASSIST Software developed a **web application** for managing the devices, patients and medical staff. The technology used is **Django Python** and the application is directly integrated with the devices firmware.

The application is hosted on **AWS** and is **HIPPA compliant**. The entire cloud architecture is designed and maintained by ASSIST Software in production.



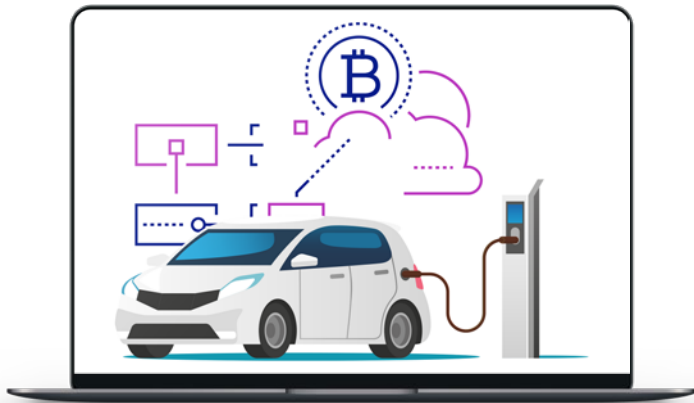
ML-DRIVEN SWARM DRONES

The Machine Learning-Driven Swarm Drones is an R&D project developed by ASSIST Software in cooperation with one of our clients with the main purpose of **disrupting** the way **simulation software** is used by training users to control and augment their high-level strategic actions with the help of autonomous drones. The application focuses on **military scenarios**, but the core logic is flexible enough such that the application can easily be used for other purposes.

To achieving this target, the application has four spearhead core features:

- a combat AI and a path-finding solution that can be used in large-scale scenarios with a focus on swarm behavior
- a finite state machine AI that decides each primary action such as moving, collision avoidance and weapon fire.
- a machine learning component that will replace or augment the human player in controlling the drone swarm by high-level strategic commands
- a user interface capable of providing the user with a wide range of input options and real-time data.





Smart EVC Platform

Smart EVC is a software platform for the management of EV charging stations on top of the latest OCPP version. Some of the most important features of this platform include an AI module for smart scheduling, a Blockchain system for peer-to-peer charging, and a wrapper over the OCPP protocol. The backend of the SmartEVC Platform is currently being developed using the **Ruby on Rails framework**.



SmartEVC

Blockchain platform

The main objectives of the Smart EVC Platform are:

- Development of a platform meant to unify the different methods of connecting the electric vehicles to the charging stations.
- Unification of payment methods for charging electric vehicles by using **Blockchain technology**.
- Development of an intelligent reservation module for charging stations, using machine learning algorithms.
- Development of a mobile application that facilitates the user's interaction with the charging stations and that generates intelligent alerts on the upcoming charging options, using various parameters such as driving style or technical parameters of the vehicle.
- Strengthen charging station networks by supporting and encouraging private station owners to allow reservations and recharging for a fee.

ASSIST Software is responsible for the development of the online charging platform, mobile applications, intelligent reservation module for charging stations, using machine learning algorithms.

Virtual Biodome

The machine learning driven virtual dome through its disruptive technologies desires to change the way we perceive learning materials and bridge the gap between theoretical “know how” and practical usability in a wide range of fields.

MACHINE LEARNING AGENTS

Analyse the input data (earth mineral composition, water volume, temperature) and add the required corrections to achieve a biodome that sustains the growth of plants in the best condition.

VR READY

Provide an immersive and exciting learning experience with fully integrated HTC Vive and Oculus Rift hardware.

REAL-TIME PROCEDURAL VISUALIZATION SOLUTION

Displaying the impact of the external factors on the plant's growth and life cycle

KNOWLEDGE PLATFORM

Analyzing and simulating the complex processes and environmental factors that impact the growth of plants



ML powered Threat Detector

ENGAGE is a **machine learning-powered threat detector** that aims to identify public threats in real-time by searching through live video feeds (outdoor or indoor surveillance camera images) for possible threats to human life (people with weapons or wild animals).

The application has **two core features**:

1. The development of an object detection model based on **COCO-SSD**.
2. The **identification of multiple target objects** in a single image or a video, inside a web application.

The **target objects** for ENGAGE are:

1. Pistols
2. Rifles
3. Bears



ENGAGE uses **Tensorflow with Python for model training**, which allows the application to detect multiple items of the same class or different classes inside a single video frame. On each frame, the application makes a prediction of the target objects found in the frame, along with a bounding box to show the user the location of the object and also the confidence level for that prediction measured in percentages.

The ENGAGE application includes the following **features**:

Users have the ability to add any videos or surveillance cameras in the application for object detection. In the image below, the model has identified one of the specified classes and the application has added the incident to the timeline below the video and has also activated the Alert button.

In this picture, on the right is a training image with a bounding box given and on the left is the result of the model findings on the same training image after it was trained for **38817 steps**.

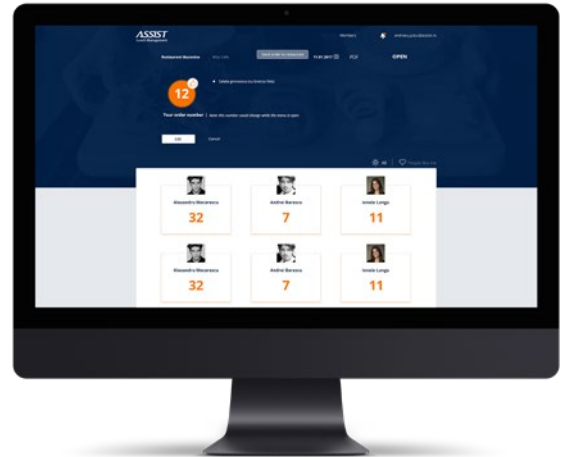


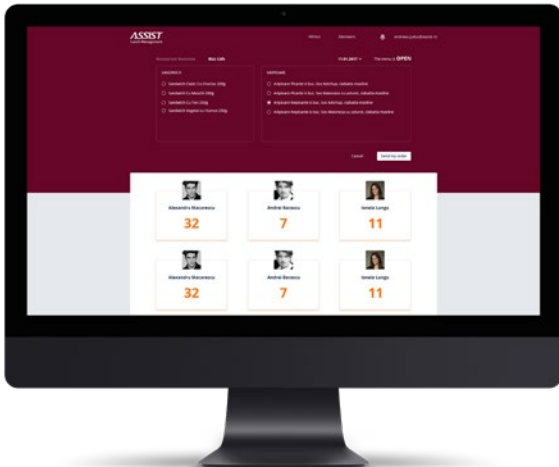
Lunch Auto Order

ASSIST Lunch App is an R&D project developed by ASSIST Software, using **Django**. Its main purpose is to allow employees to order lunch from a list of restaurants that have a delivery contract with our company. Every day each restaurant posts their menus for the next day, and the employees order based on their preferences. It also helps generate various monthly reports to help with accounting.

The **Auto Order Module** is a submodule of the Lunch App. It is used to automatically order relevant food for users when this option is activated. The module uses order history to train the models for each user individually. The implementation is simple and does not rely on external ML libraries. We've developed our own Neural Network, based on the knowledge acquired during our ML classes.

Since there are many different unique dishes (around 3000 of them) we could not use a classification approach, so instead we used a NLP/NLU strategy. The vocabulary consists of 250 unique words that make 96% of all words and are used at least 10 times in the dish names listed by the restaurants since 2013. There were a little over 500 unique words used for the dish names.





Besides dish names, we also used as inputs the day the order was made, the month, the number of days that passed, the restaurant and the type of food: first meal, second meal or fitness meal. These parameters were used to detect any periodical patterns that a user might have in his food preferences. Also a specific dish at one restaurant might be prepared in a different way at another restaurant.

This is a case of Supervised Learning. We are using a shallow network with a single hidden layer of 8 neurons. Tests with more hidden layers did not provide significant improvement in accuracy and were slow in performance. The new updates we're working on might help attain higher accuracy. Currently, a user model is trained in maximum 30 minutes or until it reaches 80% accuracy.

Benefits:

- auto order lunch
- learn food preferences
- order food by preference
- learn periodical changes

Features:

- Supervised learning
- Shallow NN
- NLP and NLU
- text interpretation
- categorical interpretation



Digital challenges? Let us help you!

assist-software.net

ASSIST
Innovative Minds