

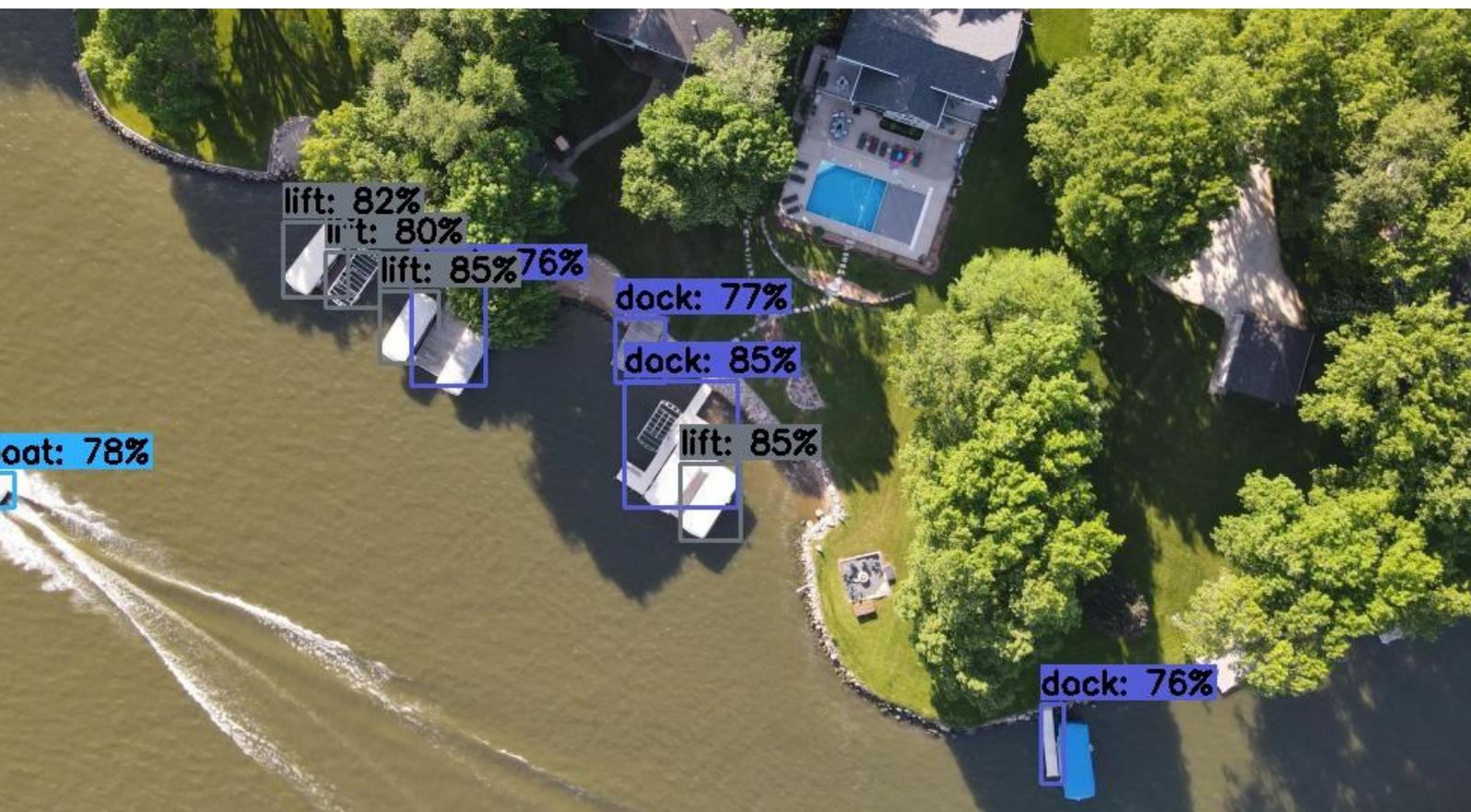
FirstStep.ai Designer

Application Overview

"The key to artificial intelligence has always been the representation." - Jeff Hawkins

Product Version: **2021**

Document Revision: **2021-11-26**



Product Name

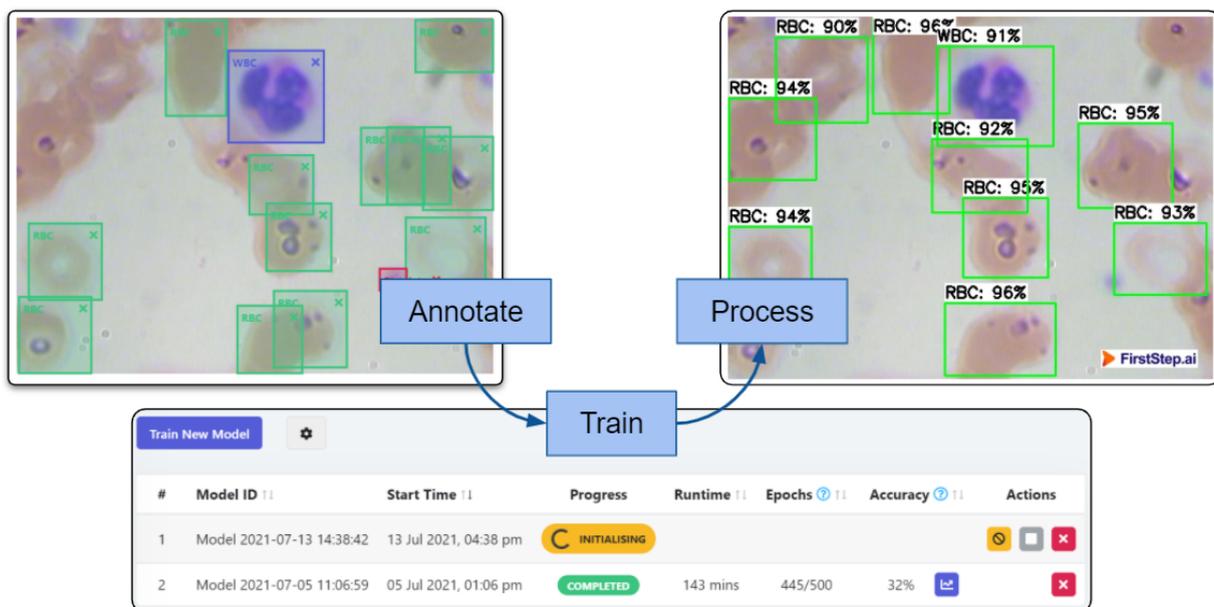
FirstStep.ai Designer

Product Overview

The FirstStep.ai Designer is a novel web-based ML training platform, where you can rapidly train and deploy Machine Learning (ML) models, leveraging our cloud GPU infrastructure. Our AI training platform is designed for non-developers, and offers quick-time-to-value for clients.

Our ML models can be deployed to mobile and IoT devices. Each device can receive independent AI training, and can communicate independently to a central server application where object metadata and image data is processed and archived.

FirstStep.ai allows for quick deployment across a range of platforms (IoT Edge devices, Android apps, Web browsers, and Cloud Servers) in a range of formats (e.g. .pb, .tflite, quantized and non-quantized models).



Benefits

The platform is a simple to use and elegant solution into Machine Learning, a domain that has to-date been reserved for highly skilled professionals.

While it is simple enough for the average user, it is also an invaluable tool for software development teams that need to implement machine learning into their projects but are not ready to hire machine learning developers.



Creating Projects

Users can create their own projects for each ML application. Each project is a collection of all relevant data, allowing for a quick overview of all user projects and their status. Users can quickly duplicate an existing project if they wish to try to make changes without losing their original project.

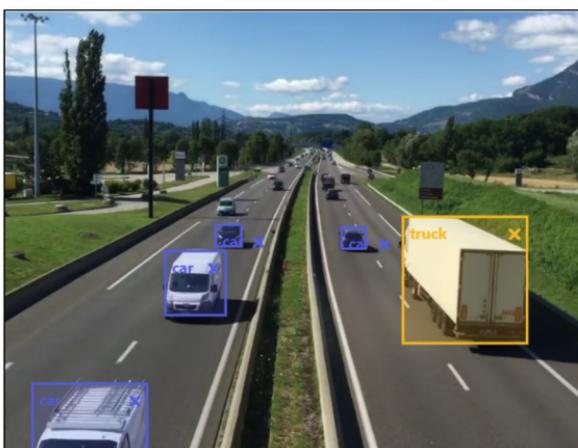
The screenshot shows a web interface titled "Your Projects" with a sub-header "Create your Machine Learning Projects". There is a "Create New Project" button and a "Current Projects" button. Below is a table with the following data:

#	Project Name	Dataset Preview	Open Project	Project Type	Date Created	Accuracy	Delete
1	Forklift			Object Detection	09 Jul 2021, 12:21 am	88%	
2	Delivery Packages			Object Detection	29 Jul 2021, 06:00 am		

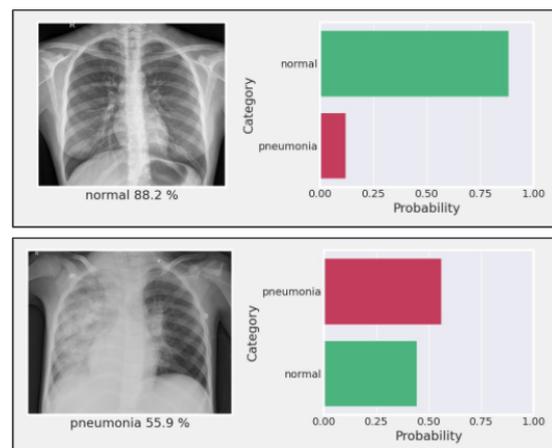
ML Model Types

Different applications require different tools, so we provide a wide range of models to choose from. When creating a new project, users can choose from Object Detection or Object Classification project types. Users can also choose from existing project templates, or start a new project from scratch.

Object Detection



Object Classification



Object Detection identifies objects in images or videos, both their identity and their location. While Object Classification will classify the entire image as a whole, giving the user a breakdown of probabilities of classification.

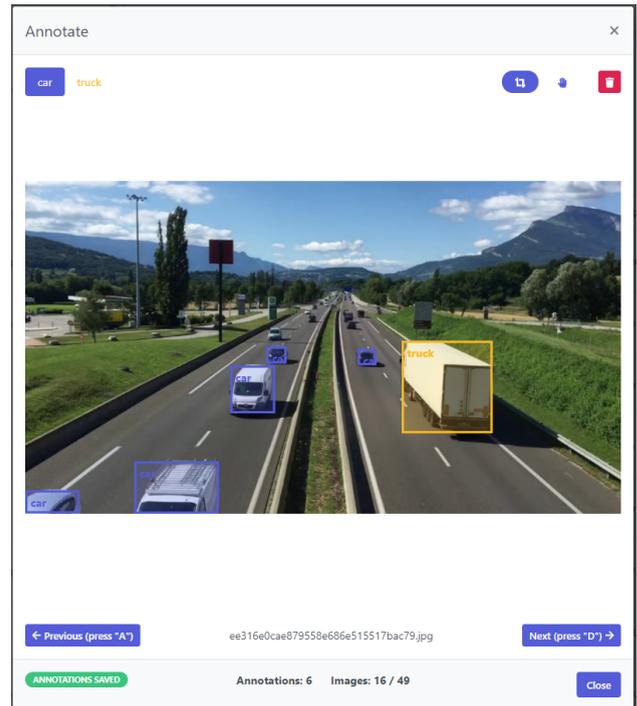
Datasets & Annotations

The FirstStep.ai Designer allows users to add and annotate their own datasets by uploading images and marking them up.

Users start by creating labels that represent the objects which need to be detected. Next, users can upload images to create a dataset. Users can also upload videos and we will split your video into frames.

Users then use the annotation tool to draw boxes around objects in images using our intuitive web-based annotation tool. Changes are saved automatically and users can navigate easily between images in the dataset.

The ML model will learn from the annotations, so the more you annotate, the more data the models will have to learn from, creating better models.



Dataset Analysis

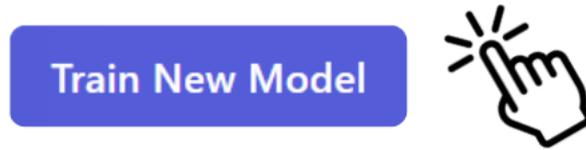
After the images have been annotated, the FirstStep Designer provides users with a real-time analysis of the annotated dataset, showing you how many images have been annotated, the total image count, and even an annotation balancing score (that shows how balanced the dataset is in terms of objects distribution by classes).

This analysis tool assists the user in creating a well-balanced data search for efficient machine learning model training. The more balanced the dataset is, the higher the mAP (mean average precision).

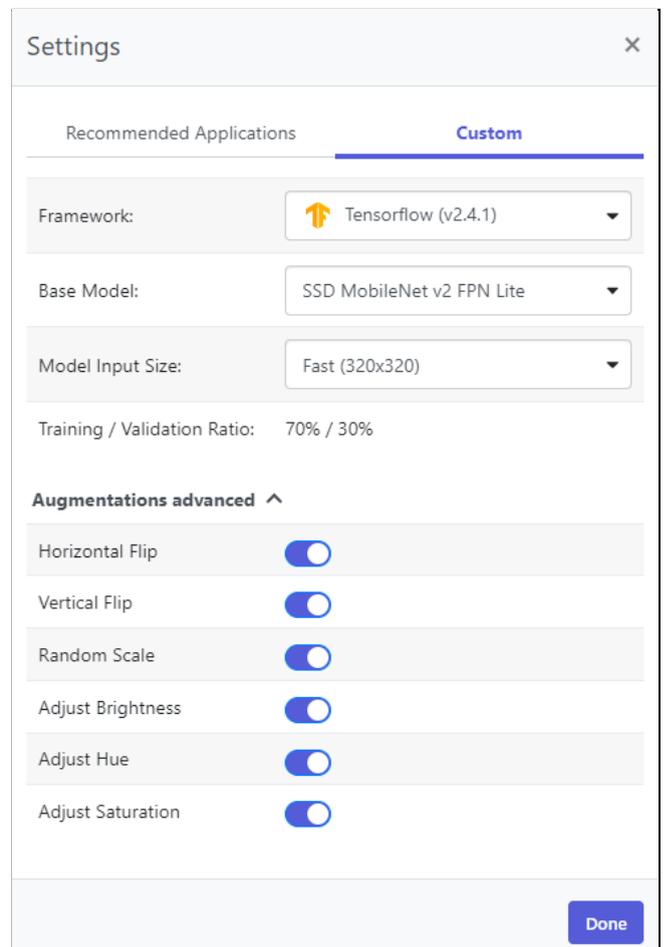
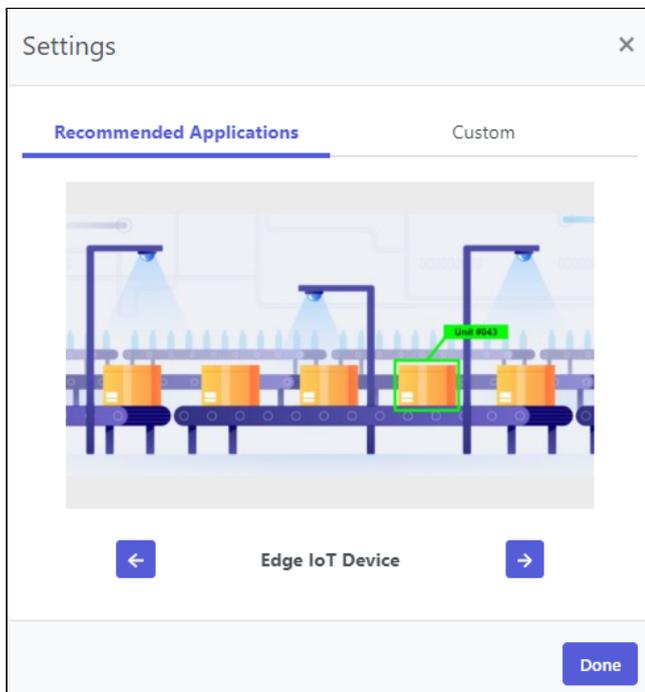


Model Training

Once the dataset has been annotated, users can start training their own machine learning model with our 1-click model training.



Users can choose from predefined configuration templates (e.g. Mobile device, IoT Edge deployment, or Cloud Server deployment), while advanced users can configure custom training parameters (e.g. Tensorflow or PyTorch framework selection, base model options, model input size options, and even augmentation options).

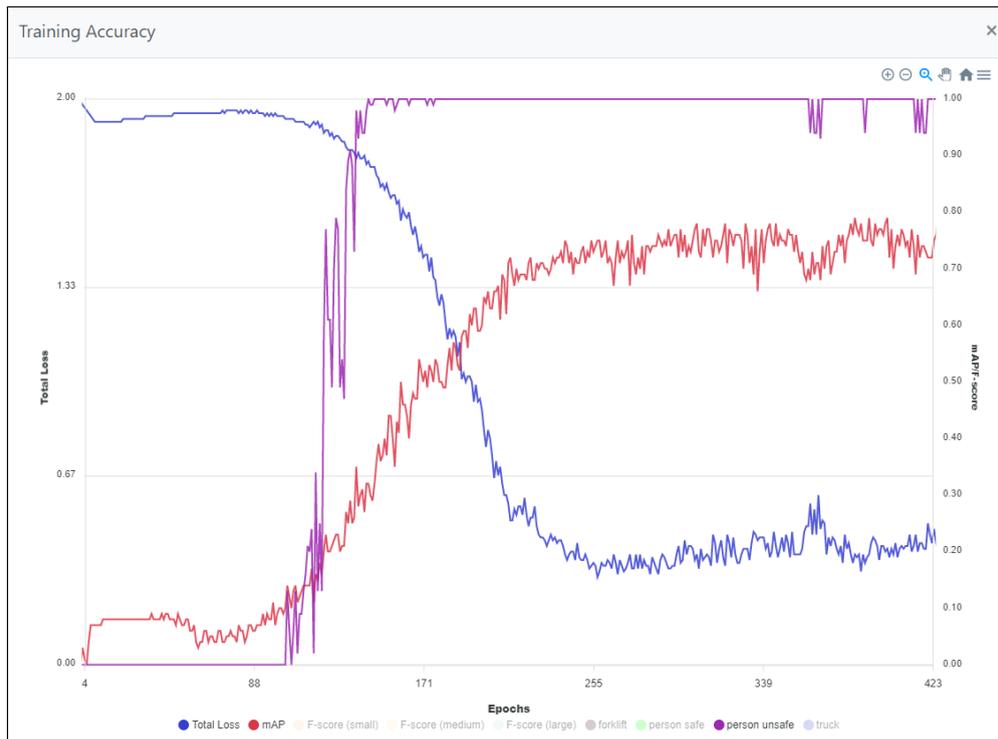


Model Training Results

Users can see their model training progress, as well as a list of all previously trained models. The FirstStep.ai Designer leverages state-of-the-art Cloud computing architectures for AI training, so that you don't have to provision your own infrastructure.

#	Model ID	Start Time	Framework	Model Info	Dataset Info	Progress	Runtime	Epochs	Accuracy
1	Model (ID: 005)	26 Nov 2021, 05:19 pm	↑	i	i	INITIALISING	2 mins		
2	Model (ID: 004)	28 Oct 2021, 12:17 pm	↑	i	i	COMPLETED	340 mins	757/1000	82% i
3	Model (ID: 003)	28 Oct 2021, 12:17 pm	🔄	i	i	COMPLETED	26 mins	585/1000	75% i
4	Model (ID: 002)	11 Aug 2021, 07:58 pm	🔄	i	i	COMPLETED	38 mins	1000/1000	84% i
5	Model (ID: 001)	30 Jul 2021, 05:05 pm	↑	i	i	COMPLETED	110 mins	332/1000	78% i

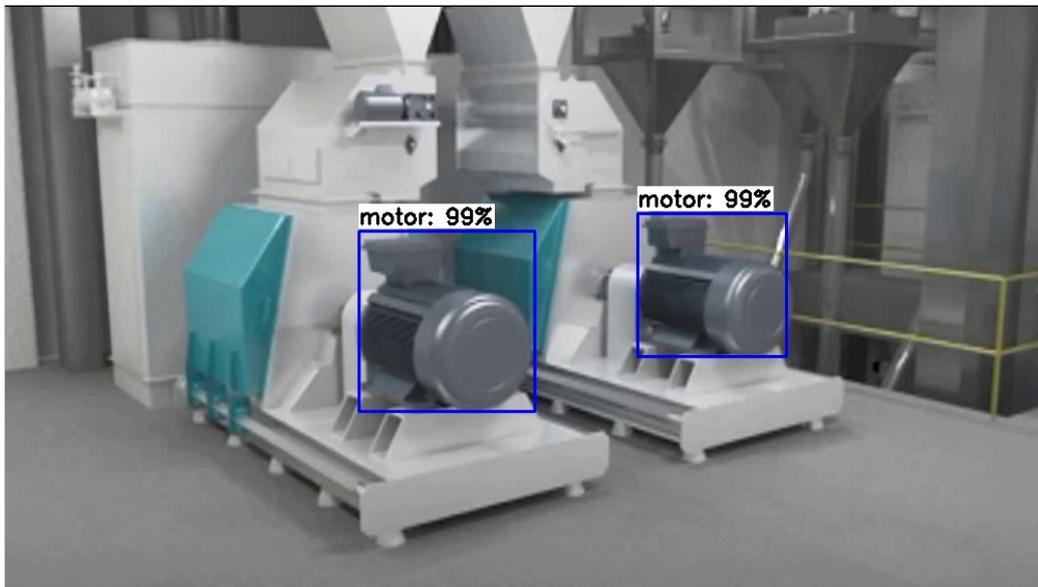
During the training process users can see real-time information on how their model is improving its detection accuracy.



After the model has been trained, users can check on the final mAp and decide on whether it is high enough or if they want to improve it. If users wish to improve on your accuracy score, they can go back to the dataset and add more images, increase its balancing score, adjust the training parameters, and simply re-train another model.

Model Simulation

Users can test their ML models inside the FirstStep.ai Designer by uploading images and videos (not included in the training dataset) to see how well the model is able to detect and classify objects.



Model Download

Professional users can download the ML models in various formats, ready for production deployment. Users can download the following types of applications / models:

- Cloud server models (Pytorch or Tensorflow)
- IoT EDGE device format (Tensorflow)
- Mobile app format (Tensorflow TFLITE)
- Android APK builds (a ready-made Android app for demos)
- Android APK source code (for developers to extend)
- High-performance formats (Int8, Float16, or Float32 Quantized)



Looking for Assistance?

If you would like our team's support with annotating datasets, or training your ML models, reach out to us and we'll gladly discuss your application with you, and provide you with additional guidance.

More Information

For more information visit firststep.ai or contact: sales@firststep.ai