The Velox Neuro

Machine Learning Inference Engine

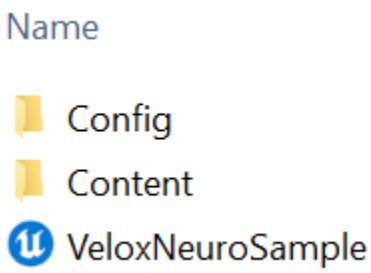
This document will show you how to use a demo project with the Velox Neuro plugin

1. Before started you need:

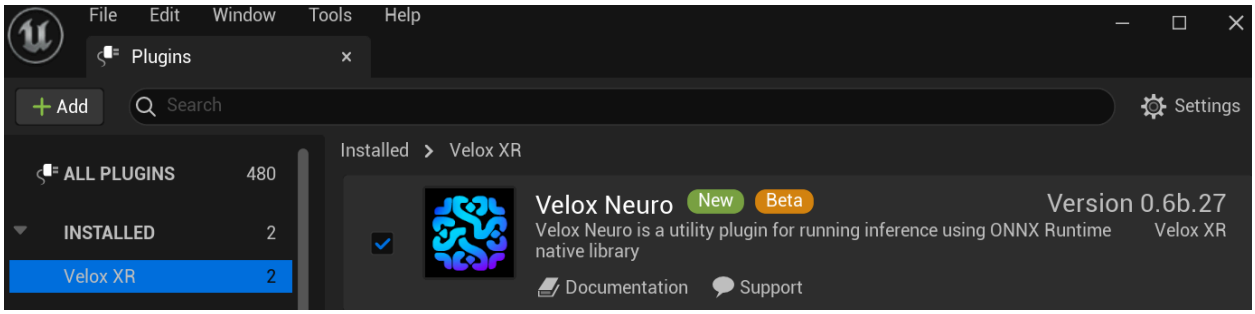
- **UE5** (5.1, 5.2, 5.3) from *Epic Launcher*
- Install **VeloxNeuro** plugin *or from Epic Marketplace*
- *Download **VeloxNeuroSample**.*
- *Download ONNX models used by the sample and unzip it to a local folder*
  - ***YOLOv7** - WongKinYiu/yolov7: Implementation of paper - YOLOv7: Trainable bag-of-freebies sets new state-of-the-art for real-time object detectors (github.com)*
  - ***Robust Video Matting** - PeterL1n/RobustVideoMatting: Robust Video Matting in PyTorch, TensorFlow, TensorFlow.js, ONNX, CoreML! (github.com)*
  - ***MiDaS v3.1** - isl-org/MiDaS: Code for robust monocular depth estimation described in "Ranftl et. al., Towards Robust Monocular Depth Estimation: Mixing Datasets for Zero-shot Cross-dataset Transfer, TPAMI 2022" (github.com)*

Let's get started

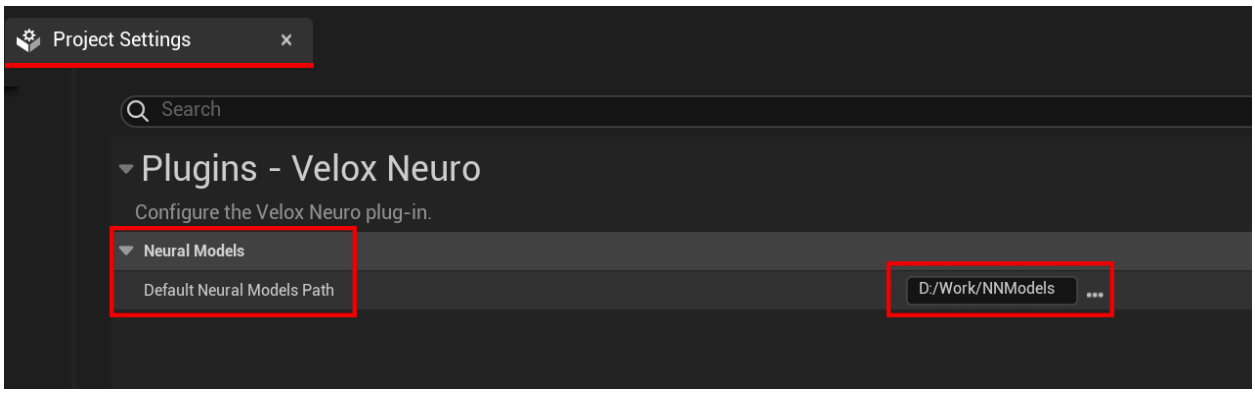
2. Open the **VeloxNeuroSample** project



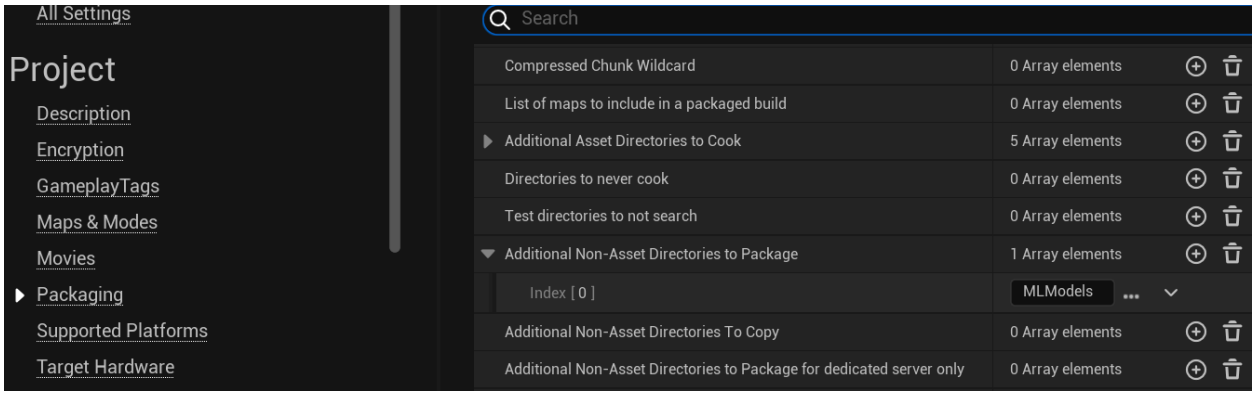
3. *Make sure that Velox Neuro playgin is* ***activated***



4. In the project settings find **VeloxNeuro** and set the path to the folder with unpacked *ONNX* files from *step_1*.
NOTE: Path can be absolute or relative to the Project Content' folder. For example: **MLModels**



IMPORTANT: This path is used in the Editor only and for standalone builds copy all ONNX files into **Content/MLModels** path and make sure it's added for packaging as Additional Non-Asset directory.

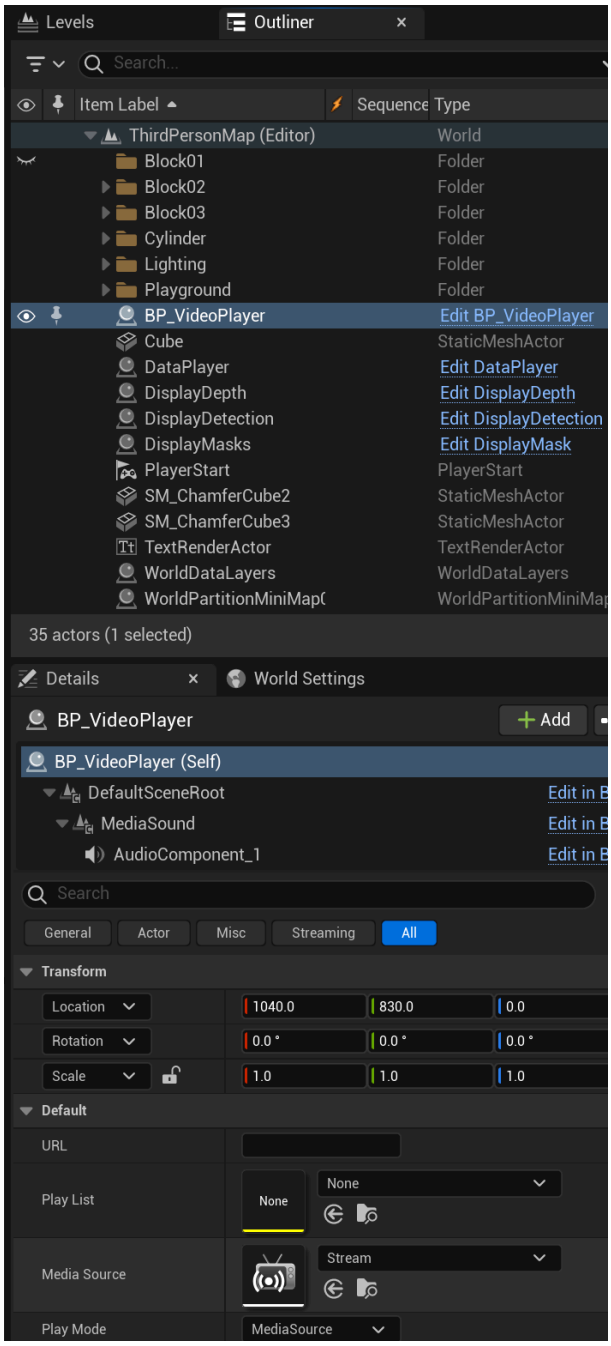


5. After opening the ThirdPersonMap level you will see this viewport

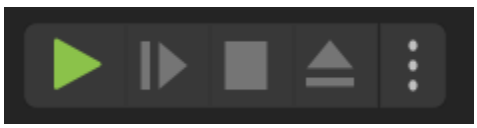
6. Choose a media source and configure the **BP_VideoPlayer** instance.

In the *Outliner* find **BP_VideoPlayer** and choose a media source setup. There are 3 options:

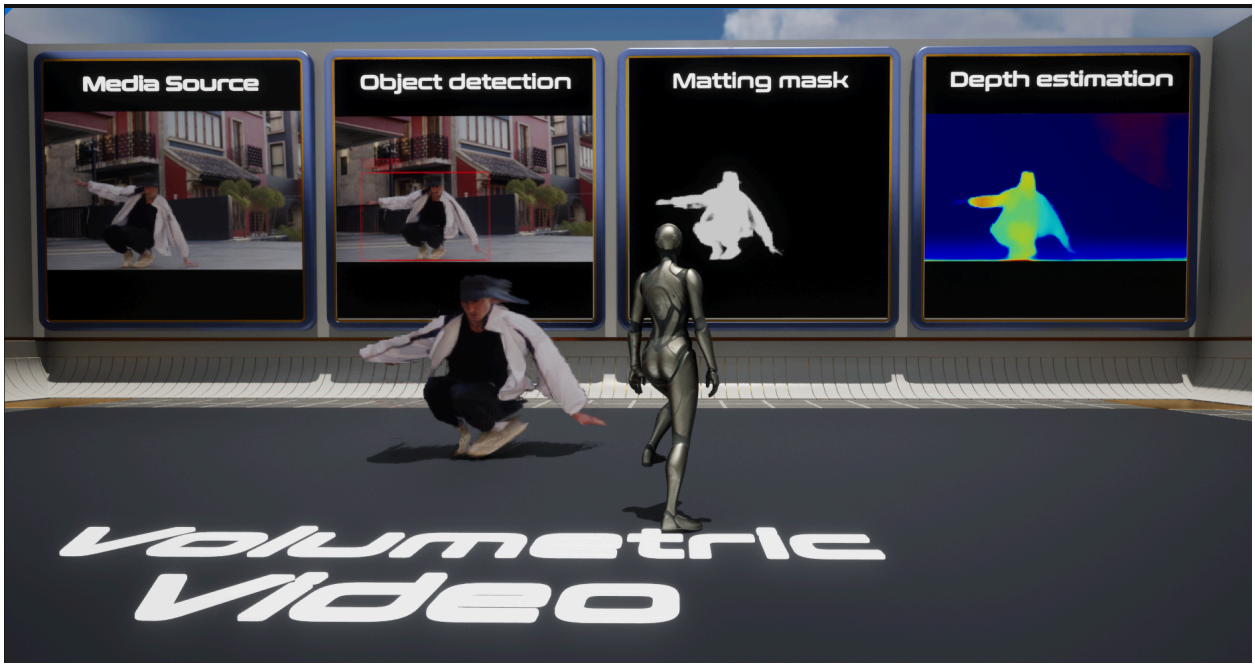
- MediaSource: reference to a media source asset (e.g. a file or a stream)
- PlayList: a list of media source assets
- URL: Open Media Player with this URL (e.g. a webcam)



7. Play in Editor

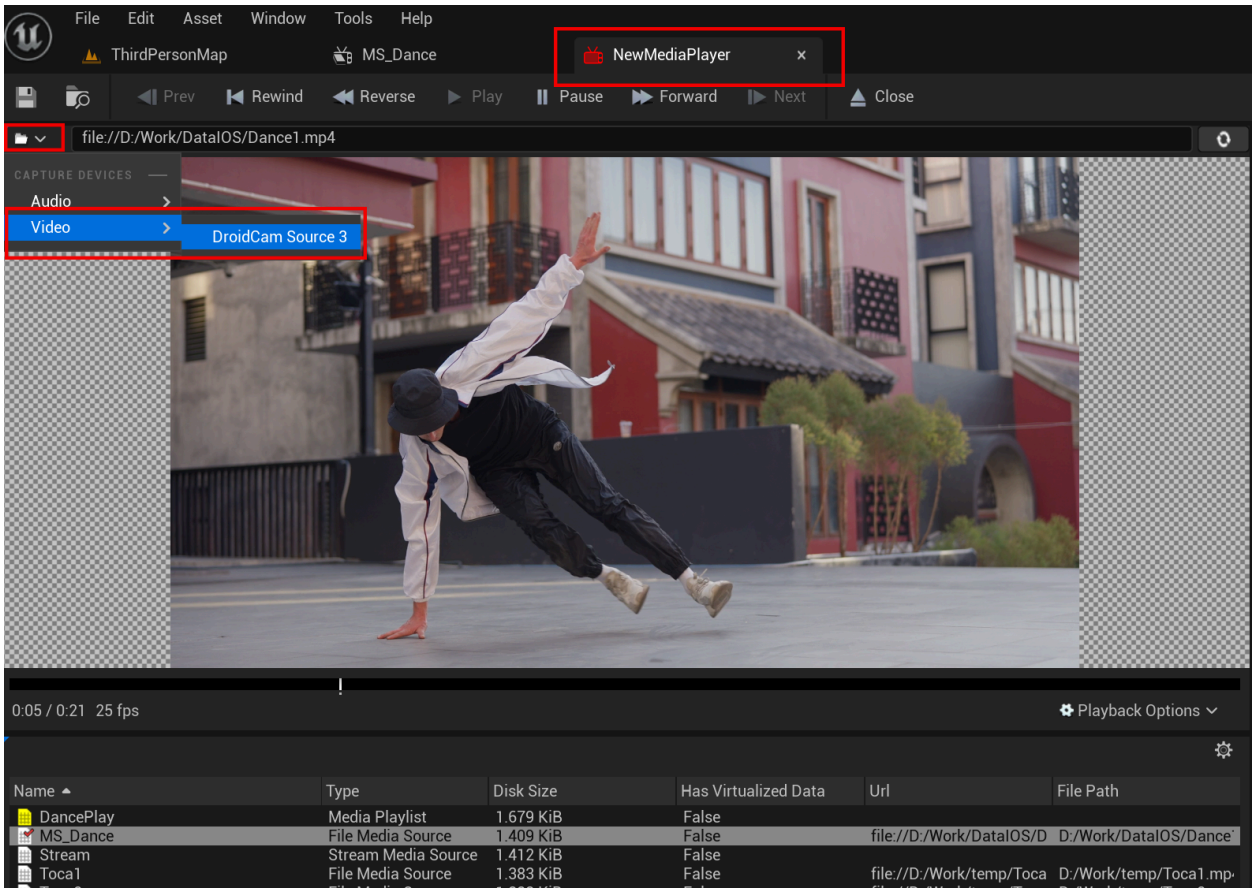


8. The screens in the viewport will show the output of 3 Neural Models played in real-time. *Note that the actual framerate of the 3D animation will depend on the performance of your machine*.

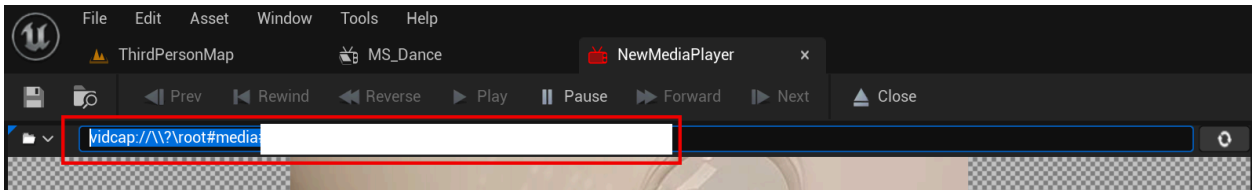


9. The Webcam connecting.

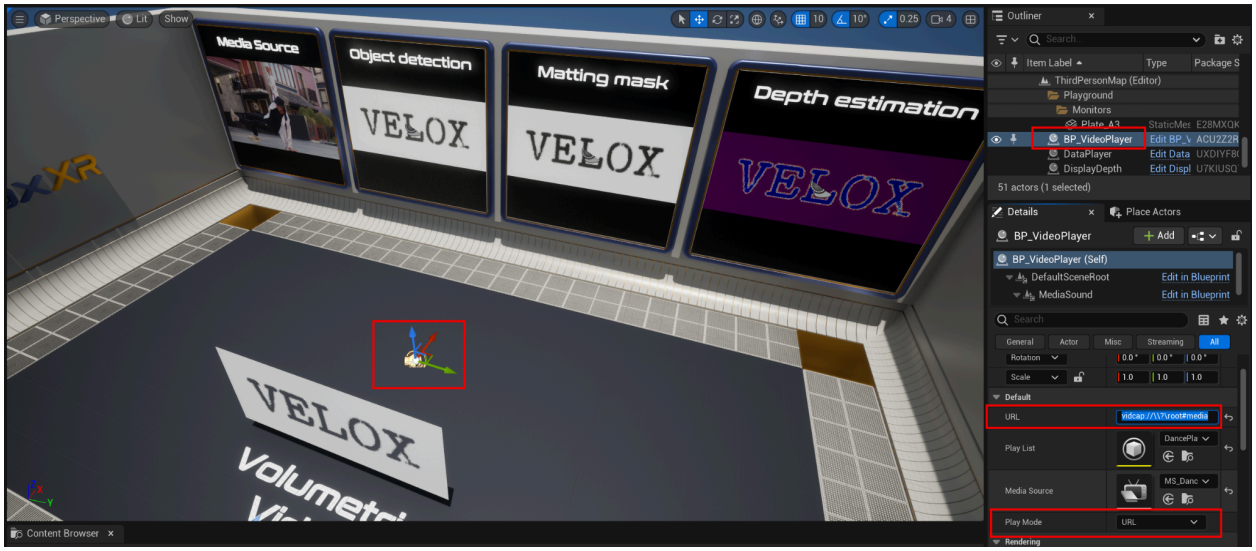
- Open *MediaPlayer* and pick your webcam from the drop list
-



- Copy *URL*



- Find *BP_VideoPlayer* in the *Outliner*, set *PlayMode* to *URL*, insert your *URL* to the fild



- Click *Play* in the *Editor*

DisplayMasks actor has parameter *Remove Insignificant Object*.
By set to *True* the *NeuralModel* will leave the largest object in the scene based on *Object detection.*

(This is useful if there are unwanted objects in the background. If there are two (or more) actors in the scene you want to show, leave the box on *False*.)