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Build AI Solution with Edge Agent

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Agenda

- Overview of Edge Agent
- Introduction to Edge Agent GitHub
- Tips and Pitfalls for Installing Edge Agent
- Quick Demo Projects
  - Factory Outfit Detection
  - Clearance Space Detection
- How to Ask Questions on Edge Agent GitHub

Course Material: https://github.com/chunyu1021/2025-Advantech-Leap-Camp

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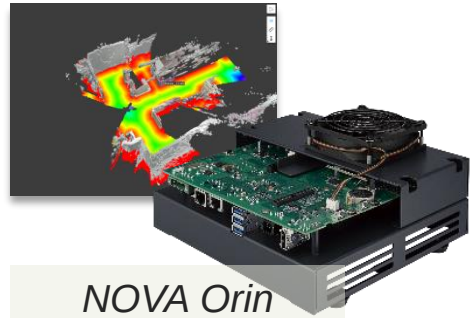
Overview of Edge Agent

ISP Accelerate to Enter the Edge AI Market

Accelerating AI Biz via Innovation Solution Pilot

Nvidia AI Lab	Jetson Platform Service	Holoscan	Isaac ROS
			
Edge Agent	*AI NVR*	*Holoscan*	*NOVA Orin*

MIC-AI platforms

Pre-install native SDKs from NVIDIA

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Edge Agent Project Profile

- Originated from Nvidia AI Lab's Agent Studio
- Additional features from Advantech's engineering
- Works on ***MIC-733-AO6A1 (64GB)*** + ***JetPack6.0***
- Features:
  - No code platform for building AI workflow
  - Easy access to LLMs, VLMs, and TTS models
  - NanoDB for RAG-powered model enhancement

Why Use Edge Agent

Connect Nodes Function to Deploy Your AI Projects

No Code AI Workflow

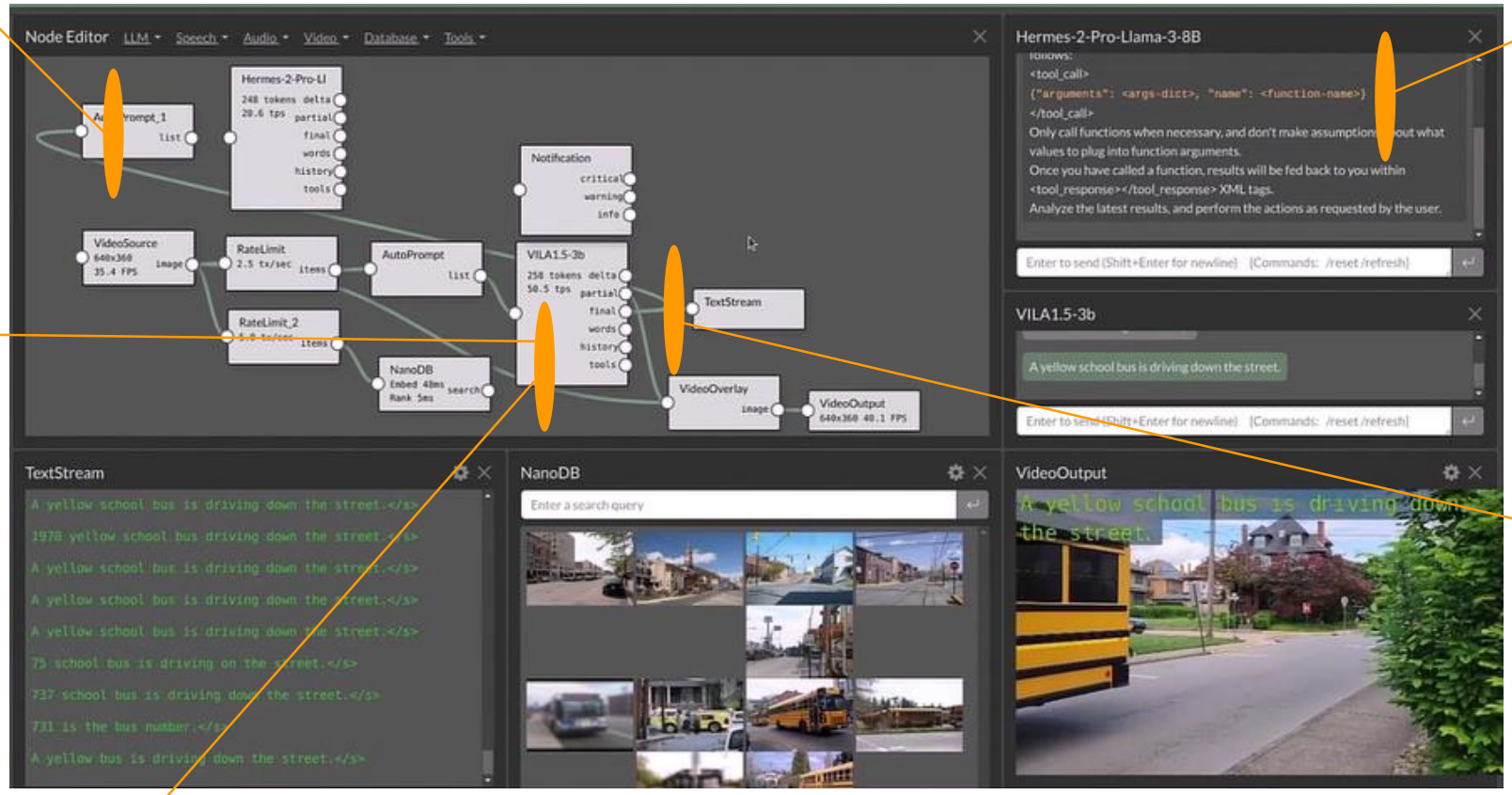
- Drag-and-drop function nodes

LLMs/VLMs/ NanoDB

- Preset models fetching directories
- Download the models with a click

Low Code Adjustments

- Flexible parameter adjustments for models



Text Stream /Piper TTS

- Text/audio interactions with models

Connect Node to Node

- Connect Nodes to activate AI workflow

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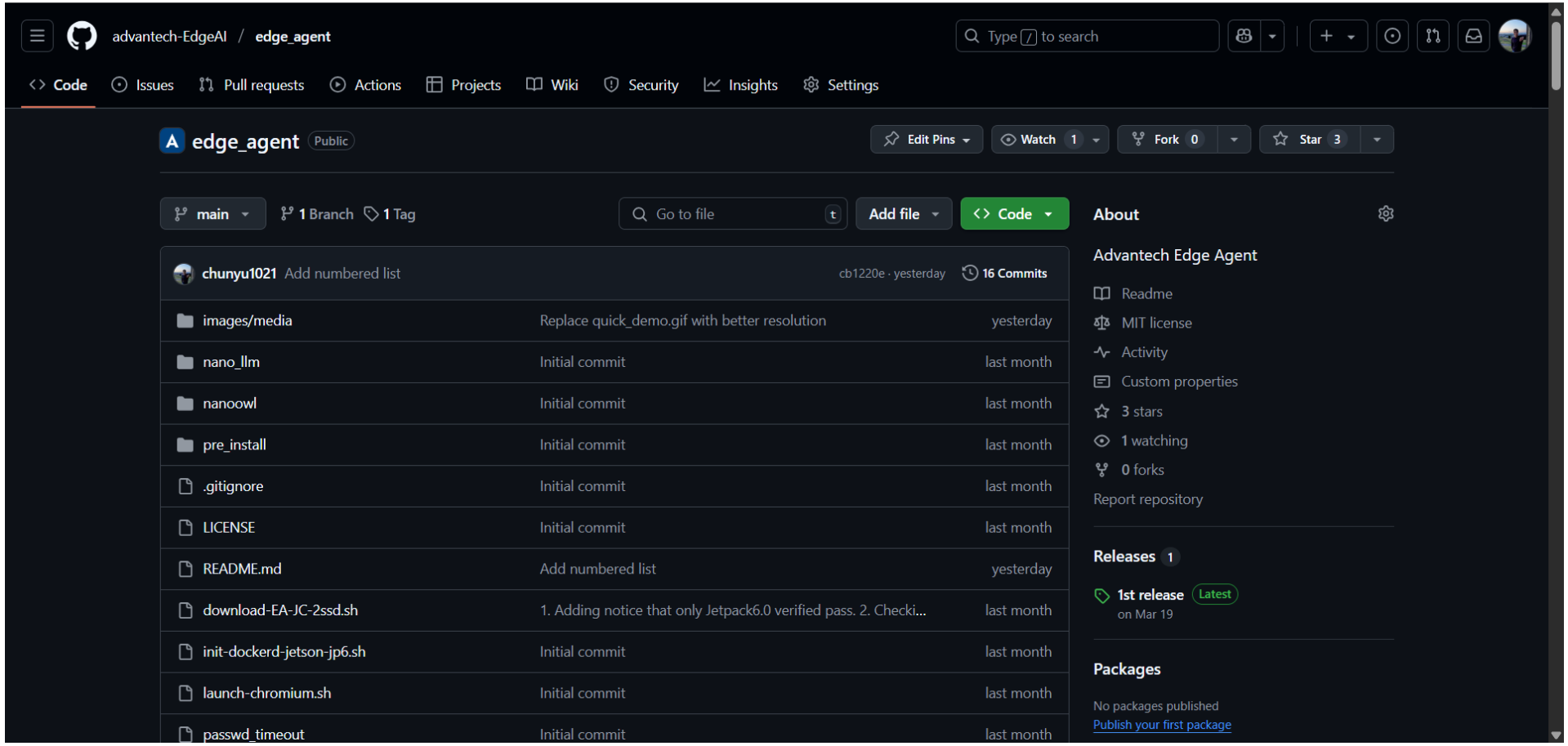
Introduction to Edge Agent GitHub

Live Demo

- Edge Agent GitHub: https://github.com/advantech-EdgeAI/edge_agent



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Tips and Pitfalls for Installing Edge Agent

Before Installation…

- Check BSP version of your MIC-733
  - Only JetPack 6.0 is verified
- Prepare at least 200 GB NVMe SSD and install it on MIC-733
- Connect your MIC-733 with Internet

During Installation…

- Why we need to install Docker?
  - Edge Agent and most of its components are running in Docker containers.
- Why we need to migrate Docker directory to SSD?
  - Models will be downloaded to Docker directory while using Edge Agent. We use extra SSD to hold the storage-demanding Docker directory.
- Highly recommended verifying Docker directory is moving to SSD
- “Download Essential Data” will take 5 to 10 minutes, be patient.
- Essential Data includes:
  - Demo data (images, videos, etc.)
  - Preset projects
  - Entire Edge Agent service (approx. 30 GB)

After Installation…

- If you find MIC-733 entering emergency mode after rebooting…
  - Press “Ctrl + D” to continue entering system
  - Remove a redundant file (`sudo rm -rf /etc/udev/rules.d/70-nvme.rules`)
- To start Edge Agent:
  - By script: `bash startEA.sh`
  - Manually
- Plug in your USB camera before you start the Edge Agent.
- Use Chrome (or Chromium) to run Edge Agent

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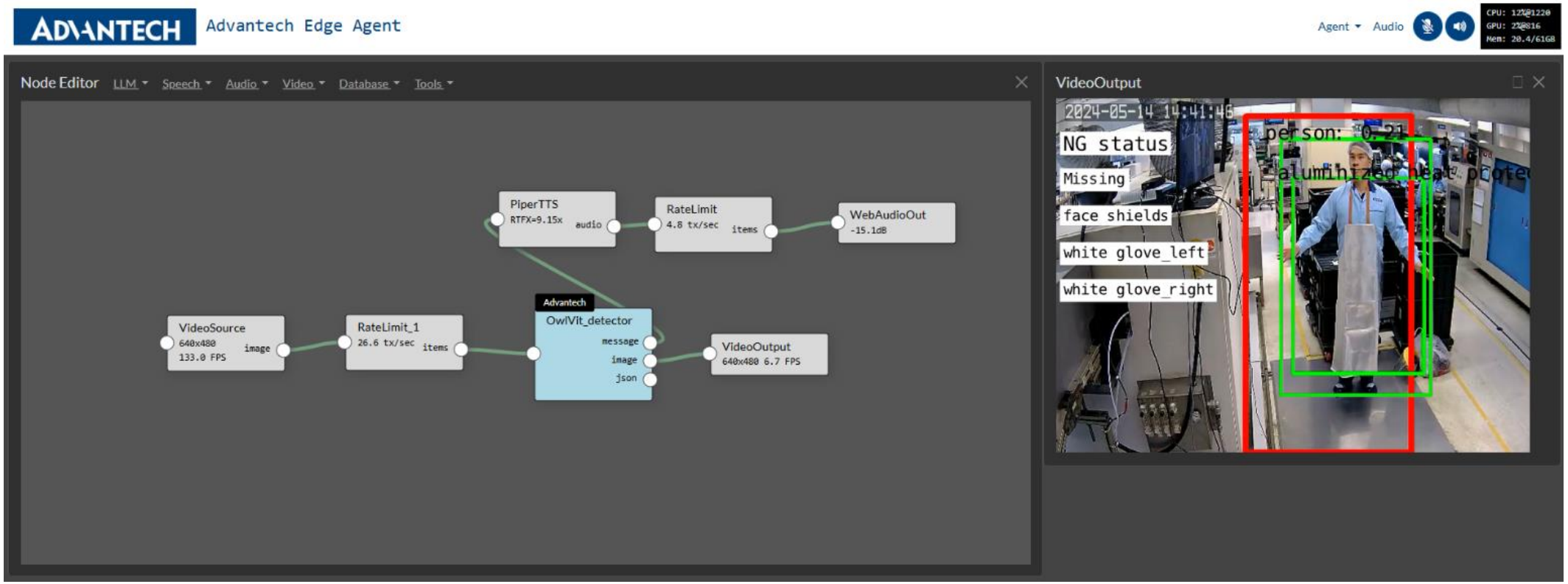
Quick Demo Projects

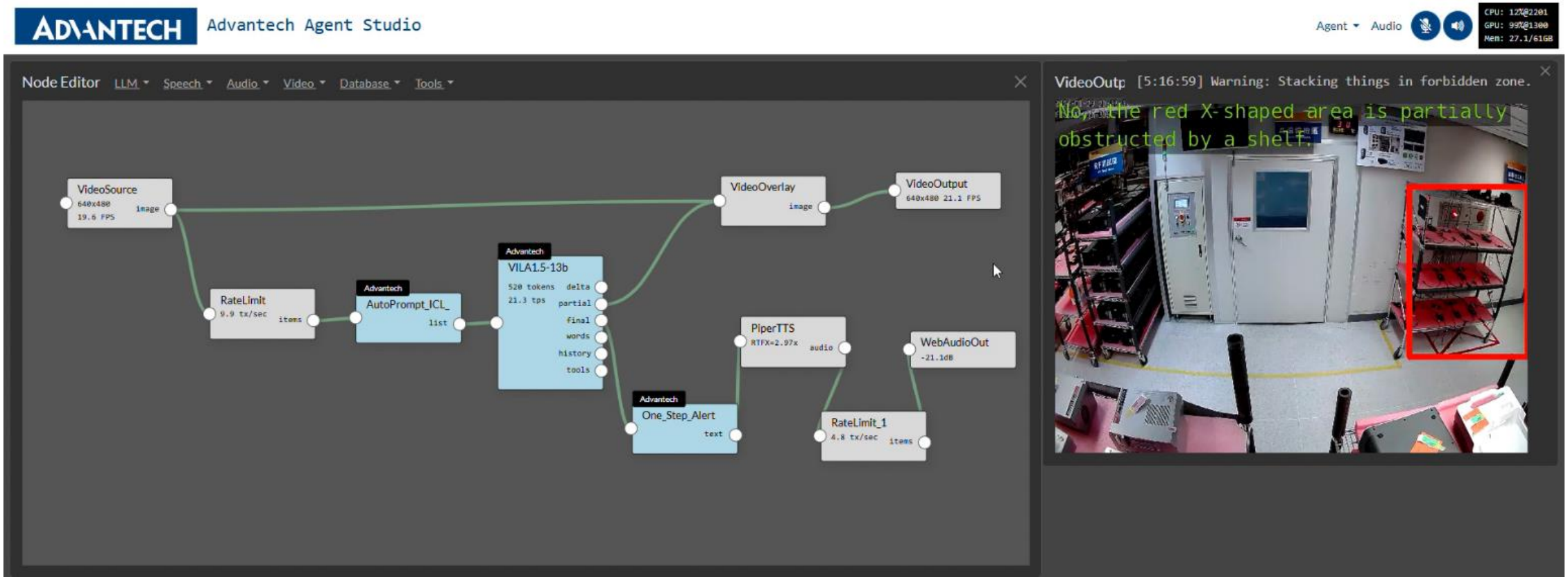
Factory Outfit Detection

- https://github.com/advantech-EdgeAI/edge_agent/wiki/Factory-Outfit-Detection



Clearance Space Detection

- https://github.com/advantech-EdgeAI/edge_agent/wiki/Clearance-Space-Detection



AI Tools in Edge Agent

- Supported models:
  - Vision Language Models (VLM):
    - Describing images verbally or ***answering questions about visual content***
    - LLaVA
    - VILA
  - Vision Transformers (ViT)
    - Analyzing features within an image itself for tasks like ***object recognition***
    - OWL-ViT
- Add your own data: NanoDB + RAG
  - NanoDB: a vector database often used with LLMs for RAG
  - Retrieval Augmented Generation (RAG): a process that helps AI models “looks thing up” before they answer.
  - Enhance VLM with RAG

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How to Ask Questions on Edge Agent GitHub

Ask Questions on GitHub

- We use GitHub Issues to track questions.
- Before creating an issue…
  - You must sign in your GitHub account.
  - Try to find the answer in FAQ first.
- When you are creating a new issue…
  - Specify which BSP you are using.
  - Describe your question with details.
  - Always consider to upload supportive materials (e.g. screenshots, logs, etc.).
- After you submit an issue…
  - We will tag your issue with a label (e.g. bug, enhancement, question, etc.).
  - We will reply to your issue ASAP (you will be notified automatically by email).

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