

Course Information

- No textbook. All study materials will be provided
 - Lecture notes (uploaded to LMS before each class starts)
 - Lab materials (uploaded to LMS)
 - Suggested reading for more info (not required)
 - Practical Deep Learning for Cloud, Mobile, and Edge
(Anirudh Koul, Siddha Ganju, Meher Kasam; O'Reilly)



- Teamwork for Labs and Projects
 - Work in a team of 2 members
 - Email TA for your team preference
 - Or we will make teams for you 😊
 - NVIDIA Jetson Nano board will be provided per team
 - Need to return the board at the end of semester!



[NVIDIA Jetson Nano board](#)

Final Project Goal



- **[Skill]** Use Jetson Nano to run “real” Deep Learning models
- **[Knowledge]** Apply knowledge you learn about deep learning (especially CNNs) to make your own application
- **[Novelty]** Invent an interesting AI application that can solve a real-world problem

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[NVIDIA Jetson Nano board](#)

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Final Project Examples



Jungwook Choi

- Jetson Community Projects

<https://developer.nvidia.com/embedded/community/jetson-projects> (Ex 1, Ex 2)

The screenshot shows a Chrome browser window displaying the NVIDIA Developer website at <https://developer.nvidia.com/embedded/community/jetson-projects>. The page is titled "Community Gallery". It features several project thumbnails:

- DESCRIPTIVE AI** by D KENDRI: A street scene with a car and a person, overlaid with green text and lines.
- MONITORING WITH JETSON NANO** by R LO: A screen showing a stick figure with colored segments (blue, green, yellow, orange) and a small video feed in the bottom right.
- POSE ESTIMATION ON JETSON WITH OPENPIPPAF** by GALLIDY: A busy city street with people walking and cycling.
- INTERACTIVE MAPPING** by J. L. S. VIEIRA: A collage of three images showing a person interacting with a screen displaying a map.
- NO ENTRY** by J. L. S. VIEIRA: A hallway with a "NO ENTRY" sign; a person is standing near it, and a camera is mounted on the wall.
- Face Detection**: A diagram illustrating a face detection pipeline with three stages: "Input Image", "Feature Extraction", and "Classification".

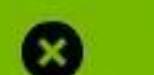
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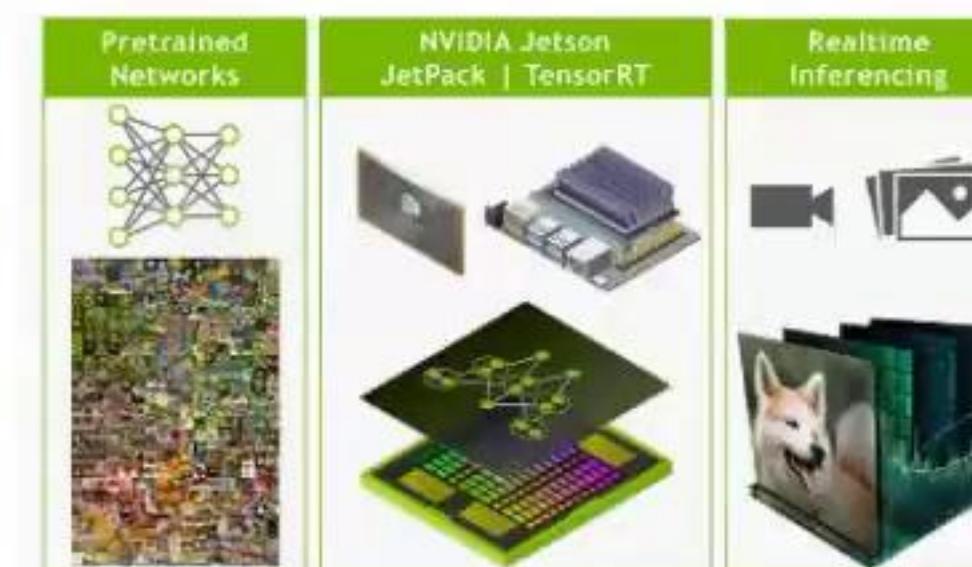
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Get Started with these Projects

[Jetbot](#)[Hello AI World](#)[JetRacer](#)[Real-time Human Pose Estimation](#)



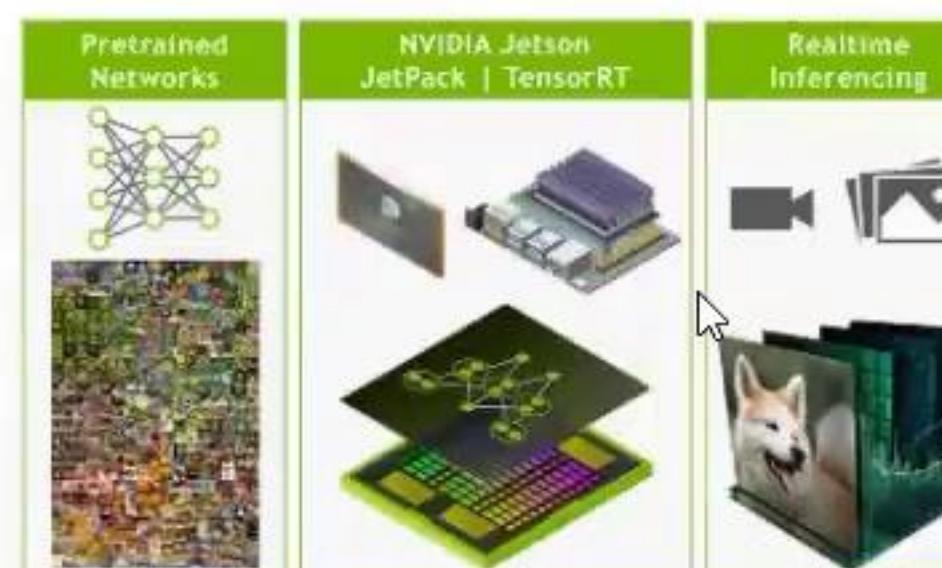
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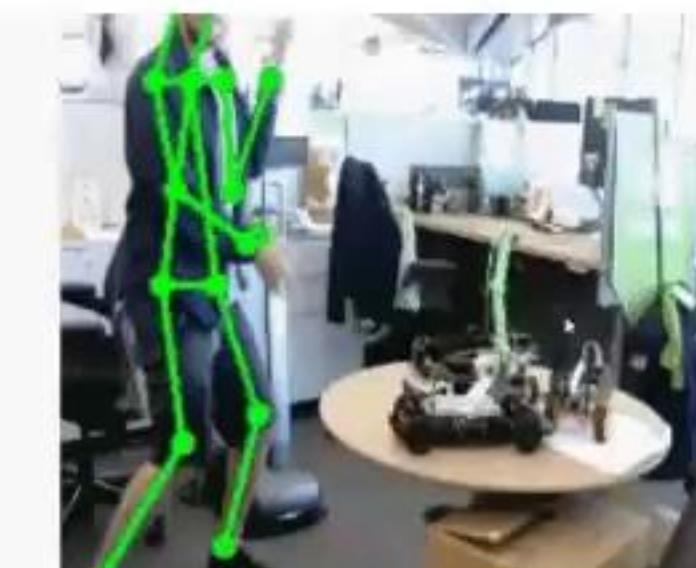
Jetbot



Hello AI World



JetRacer

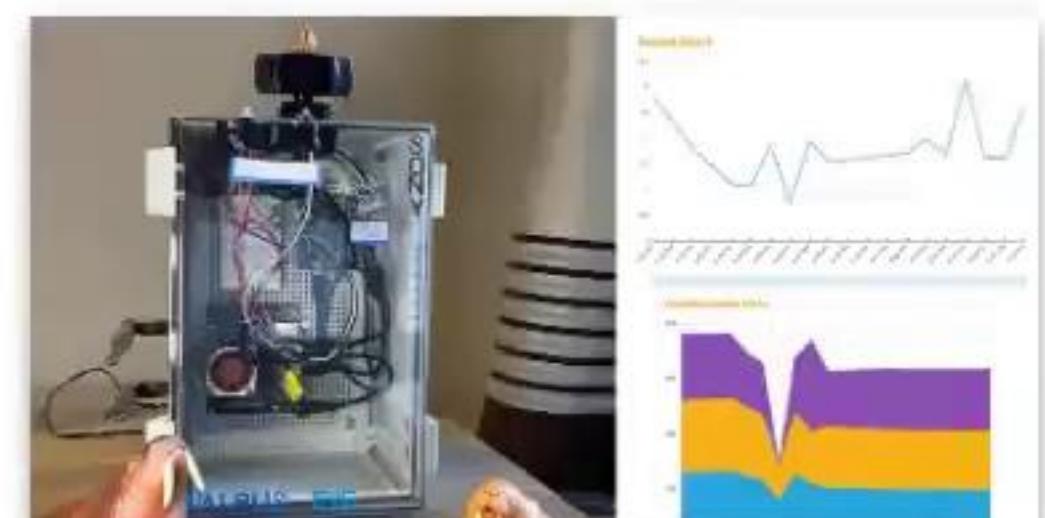


Real-time Human Pose Estimation

Filters

Found 189 results

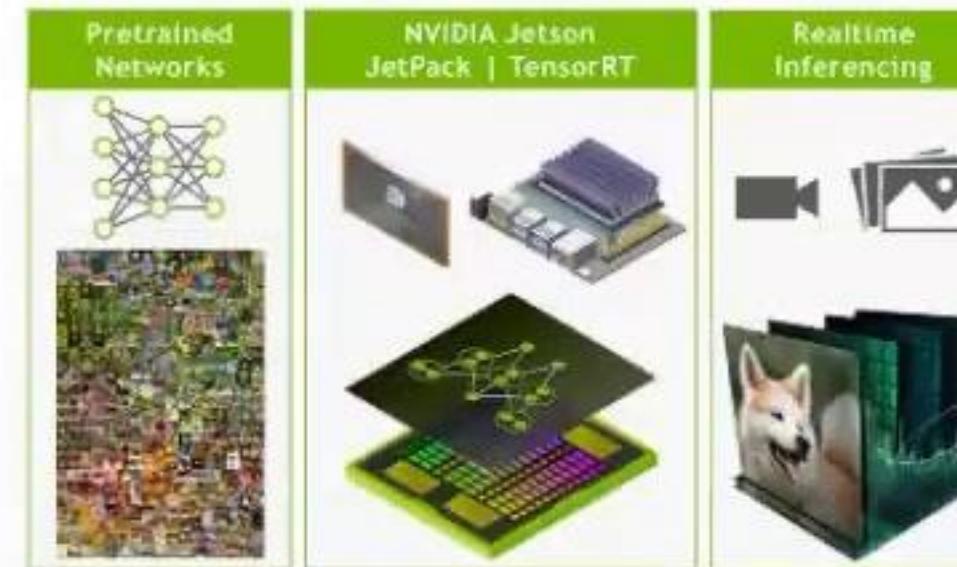
Works with...



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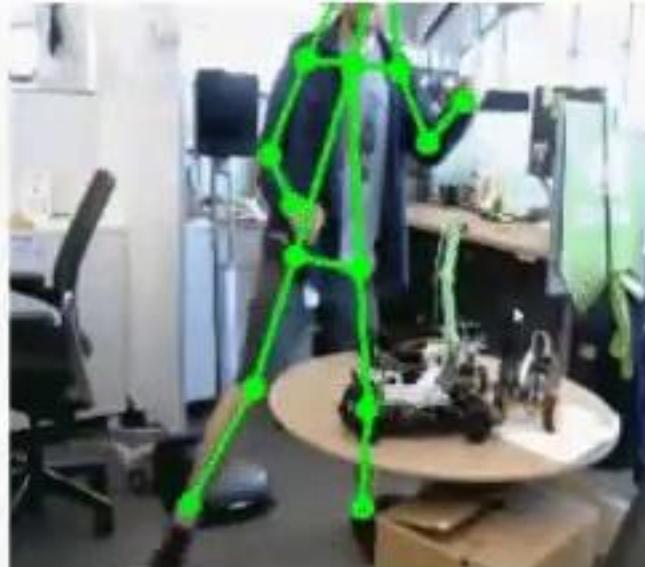
Jetbot



Hello AI World



JetRacer



Real-time Human Pose Estimation

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Works with...

- Jetson AGX Orin
- Jetson AGX Xavier
- Jetson Nano
- Jetson Nano 2GB



Project of the Month July 2022

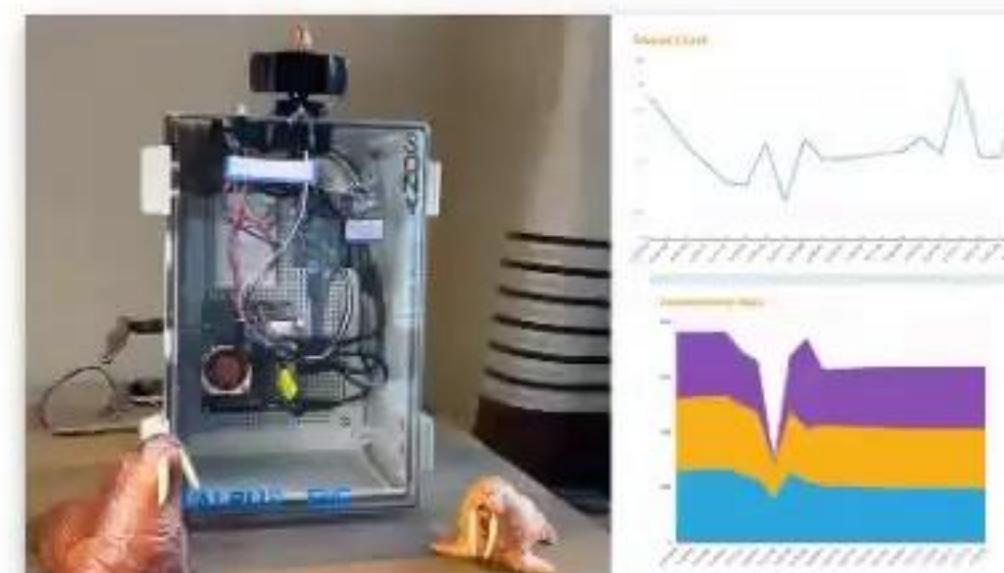
SSL-Detector

João G. Melo



Nvidia HPC Autopilot

E Neto



WalrusEye

R Singh

Filters

Works with...

- Jetson AGX Orin
- Jetson AGX Xavier
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- Jetson Nano 2GB
- Jetson Orin NX
- Jetson TX2
- Jetson Xavier NX

NVIDIA Frameworks

- CUDA

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SSL-Detector

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JetClean

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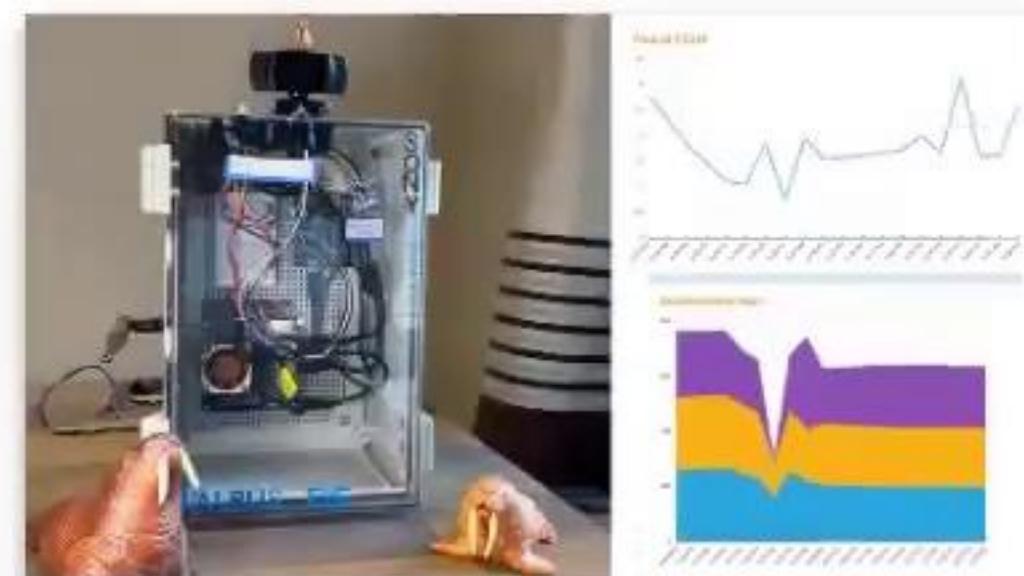


Nvidia HPC Autopilot

E Neto

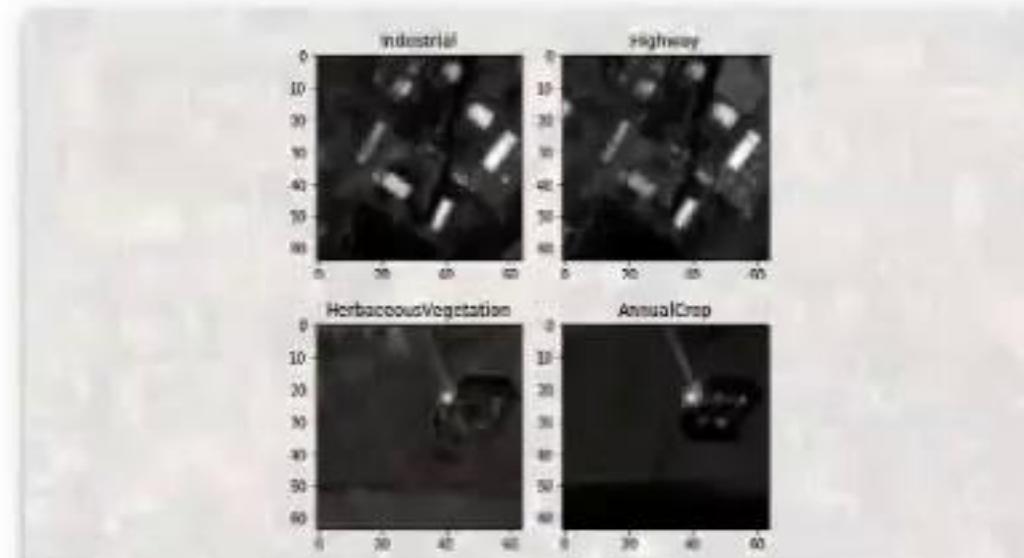


YOLO-ReT: Towards High Accuracy Real-time Object Detection on Edge



WalrusEye

R Singh



NYC Land Cover Pseudo-segmentation and Analysis



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WORKS WITH...

- Jetson AGX Orin
- Jetson AGX Xavier
- Jetson Nano
- Jetson Nano 2GB
- Jetson Orin NX
- Jetson TX2
- Jetson Xavier NX

NVIDIA Frameworks

- CUDA
- DeepStream SDK
- Isaac ROS
- NVIDIA TAO Toolkit
- NVIDIA TLT
- TensorFlow

Project of the Month July 2022

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Nvidia HPC Autopilot
E Neto

WalrusEye
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Qualitative Heatmap Study

YOLO-ReT: Towards High Accuracy Real-time Object Detection on Edge GPUs
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NVIDIA Frameworks

- CUDA
- DeepStream SDK
- Isaac ROS
- NVIDIA TAO Toolkit
- NVIDIA TLT
- TensorFlow
- TensorRT

Public Frameworks

- Caffe
- Darknet
- dlib
- Keras
- ncnn

JetClean
C Bendig Mundbjerg-Sunne



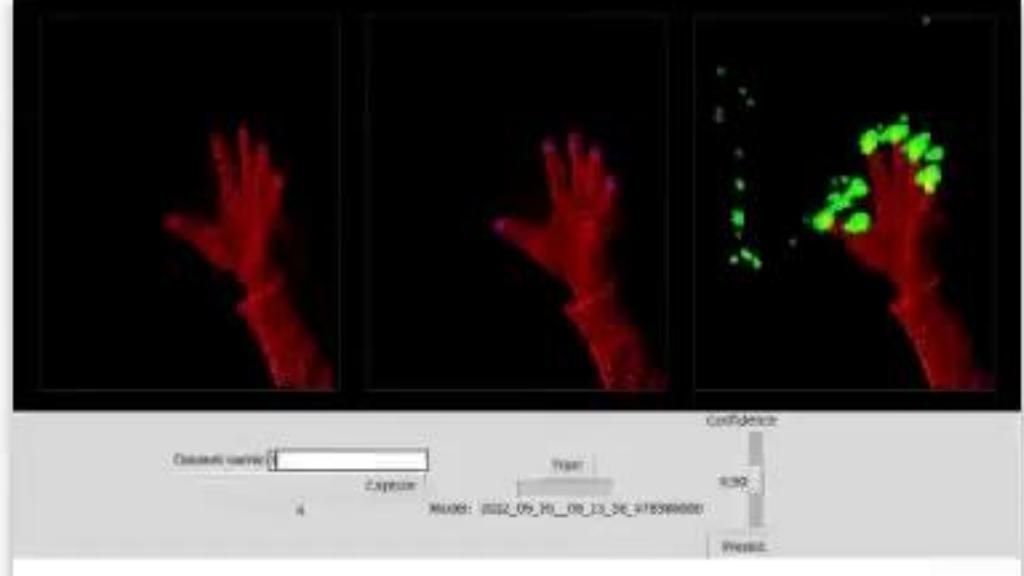
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P Ganesh



NYC Land Cover Pseudo-Segmentation and Analysis
N Kasmanoff



3D Recognizer
M Verstraete



Autonomous Off-Road Laz Boy Robot
D Niewinski



ROBOT ARM that Launches Fireworks! - Canada Day Special
D Niewinski



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tensorRT

Public Frameworks

- Caffe
- Darknet
- dlib
- Keras
- ncnn
- oneAPI
- ONNX
- OpenCV
- OpenPose
- PyTorch
- ROS
- TensorFlow

3D Recognizer
M Verstraete

Autonomous Off-Road La Z Boy Robot
D Niewinski

ROBOT ARM that Launches Fireworks! - Canada Day Special
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Autonomous Robot Bin
J Bruton, Xrobots

CameraBot: Auto Cameraman Robot Follows YOU
J Bruton, Xrobots

JetAuto ROS Robot
Hiwonder

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dlib
 Keras
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 PyTorch
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Autonomous Robot Bin
J Bruton, Xrobots

CameraBot: Auto Cameraman Robot Follows YQ!
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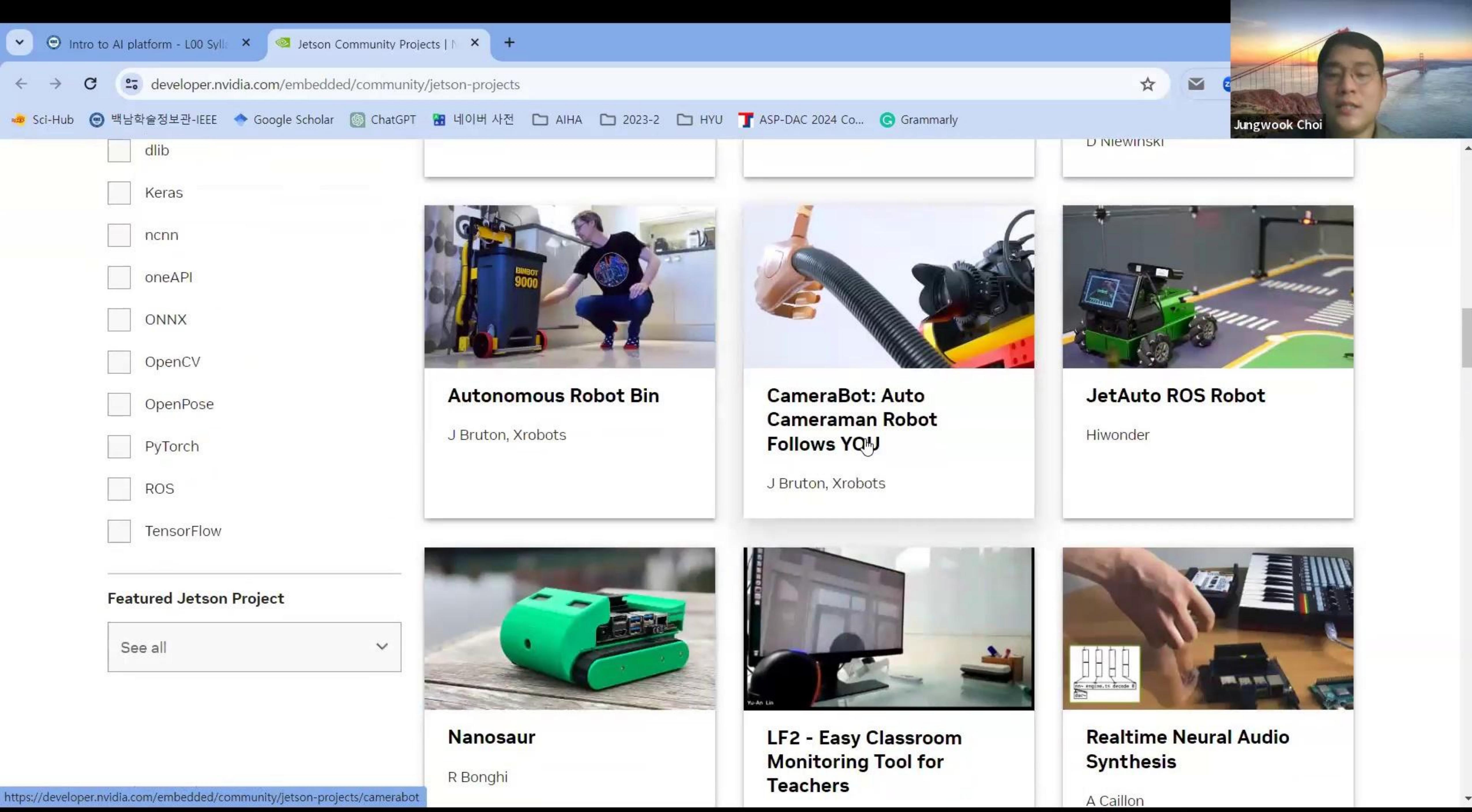
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A Caillon



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OpenCV
 OpenPose
 PyTorch
 ROS
 TensorFlow

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PyTorch

ROS

TensorFlow

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D Lin

Realtime Neural Audio Synthesis
A Caillon

Shanten Calculator

Project of the Month February 2022

Table:

bus_number	Column A	Column B
bus_1	9:08:12	9:08:27
bus_2	9:19:33	9:21:01
bus_3	9:32:39	9:36:57
bus_4	9:45:17	9:48:27
bus_5	9:59:22	10:01:23
bus_6	10:12:53	10:13:47
bus_7	10:25:57	10:27:03
bus_8	10:39:28	10:38:33
bus_9	10:52:51	10:52:45
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bus_11	11:16:32	11:27:45
bus_12	11:30:29	11:42:32

Project of the Month May 2022

Shanten Calculator

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Jetbot

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JetRacer

Real-time Human Pose Estimation

Filters

Works with...

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- Jetson AGX Xavier
- Jetson Nano
- Jetson Nano 2GB
- Jetson Orin NX
- Jetson TX2

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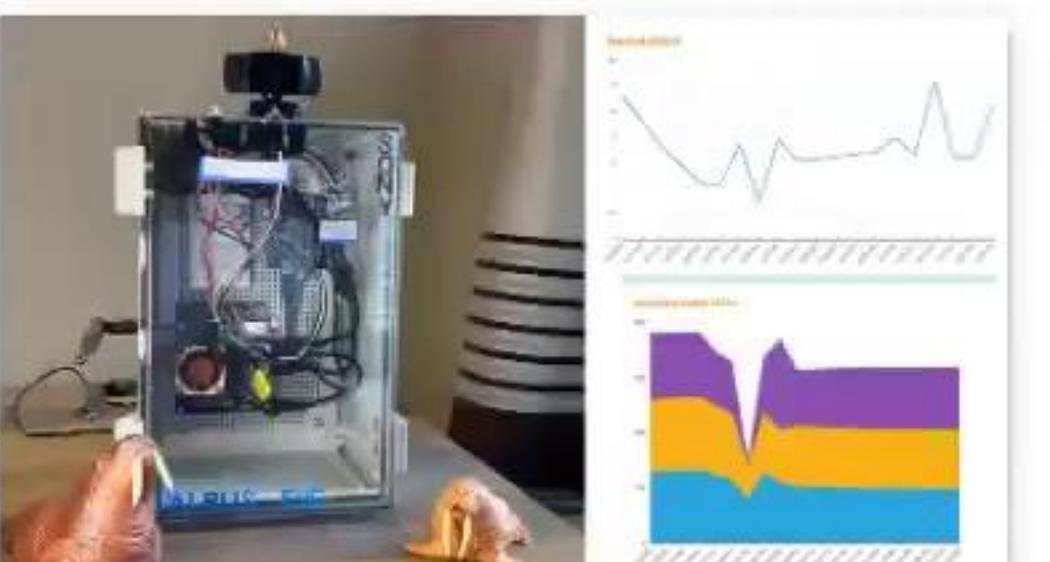
SSL-Detector

João G. Melo



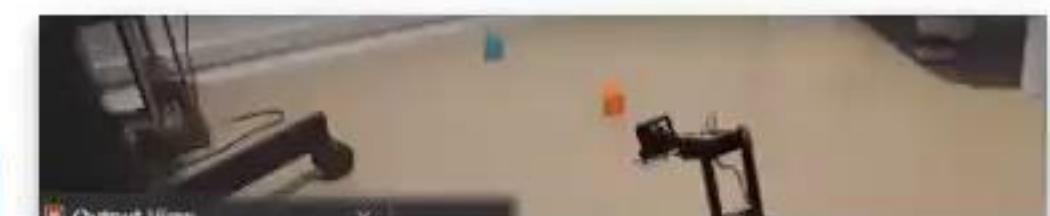
Nvidia HPC Autopilot

E Neto



WalrusEye

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Qualitative Heatmap Study



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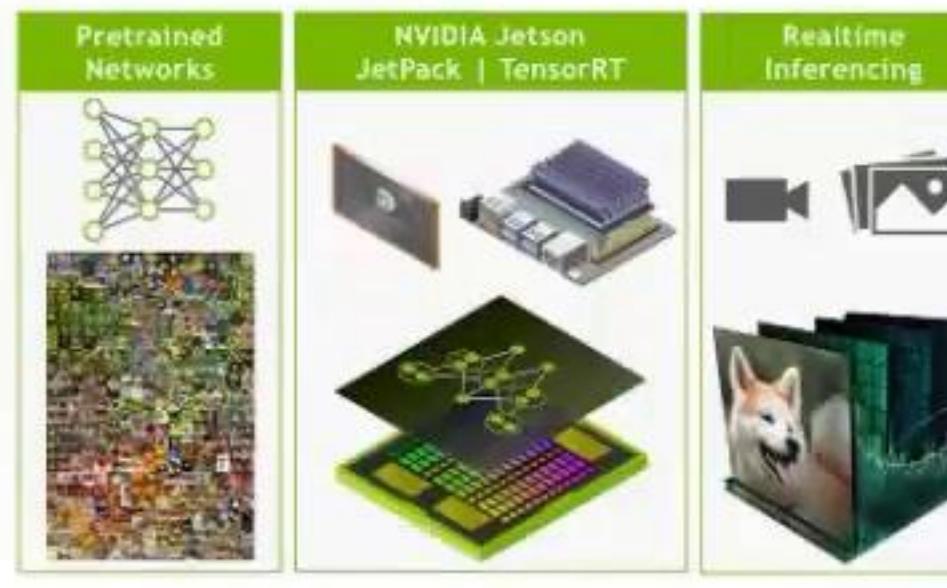
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Jetbot



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JetRacer



Real-time Human Pose Estimation

Filters

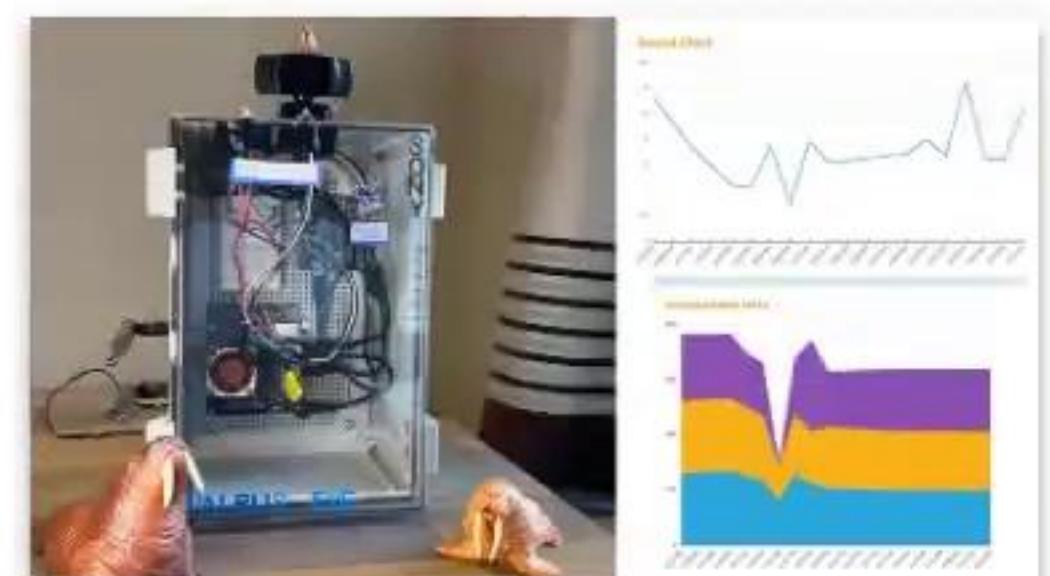
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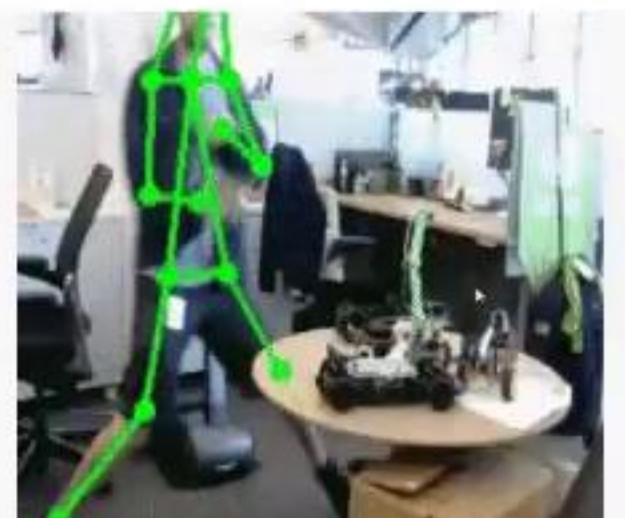
Jetson AGX Orin



Nvidia HPC Autopilot



WalrusEye



Real-time Human Pose Estimation

This project features multi-instance pose estimation accelerated by [NVIDIA TensorRT](#). It is ideal for applications where low latency is necessary. It includes:

- Training scripts to train on any keypoint task data in MSCOCO format
- A collection of models that may be easily optimized with TensorRT using torch2trt



This project can be used easily for the task of human pose estimation, or extended for something new.

Authors

NVIDIA

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Works with...

Jetson Nano

Jetson AGX Xavier

Jetson TX2

Jetson Xavier NX

Jetson Nano 2GB

Jetson Orin NX

Jetson AGX Orin

Resources

› [View project repository](#)



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Works with...

Jetson Nano

Jetson AGX Xavier

Jetson TX2

Jetson Xavier NX

Jetson Nano 2GB

Jetson Orin NX

Jetson AGX Orin

Resources

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Real-time Human Pose Estimation

Filters

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- Jetson Xavier NX

NVIDIA Frameworks

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Project of the Month July 2022

SSL-Detector
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Nvidia HPC Autopilot
E Neto

WalrusEye
R Singh

JetClean
C Bendig Mundbjerg-Sunne

YOLO-ReT: Towards High Accuracy Real-time Object Detection on Edge GPUs
P Ganesh

NYC Land Cover Pseudo-segmentation and Analysis
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3D Recognizer

Autonomous Off-Road Land Rover

ROBOT ARM that can Detect and Avoid Obstacles

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NVIDIA Frameworks

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- DeepStream SDK
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Project of the Month July 2022

SSL-Detector
João G. Melo

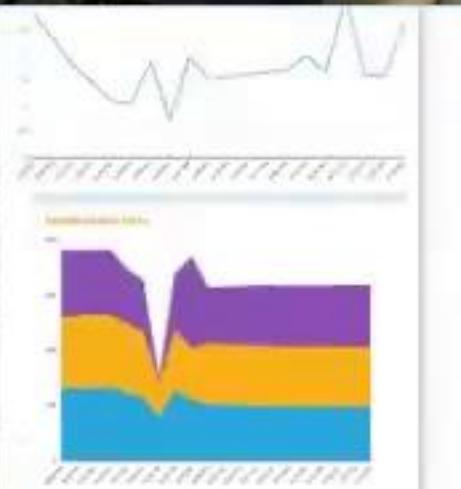

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R Bonghi



LF2 - Easy Classroom Monitoring Tool for Teachers
D Lin



Realtime Neural Audio Synthesis
A Caillon



Project of the Month February 2022

Bus Prediction
E Gomtsyan



bus_number	Column A	Column B
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Project of the Month May 2022

Bird@Edge
J Höchst, H Bellafkir, P Lampe, M Vogelbacher, M Mühling, D



Shanten Calculator
Toshiki H



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Nanosaur
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LF2 - Easy Classroom Monitoring Tool for Teachers
D Lin



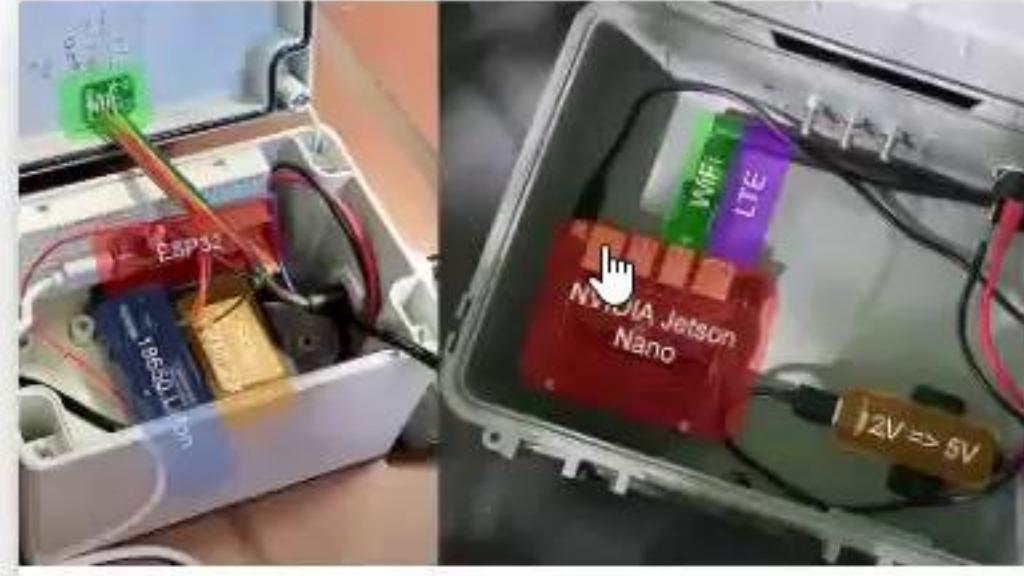
Realtime Neural Audio Synthesis
A Caillon



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Project of the Month February 2022

Bus Prediction
E Gomtsyan



Project of the Month May 2022

Bird@Edge

J Höchst, H Bellafkir, P Lampe, M Vogelbacher, M Mühlung, D Schneider, K Lindner, S Rösner, D Schabo, N Farwig, B Freisleben



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Toshiki H

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bus	start	end
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Project of the Month February 2022

Bus Prediction

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Project of the Month May 2022

Bird@Edge

J Höchst, H Bellafkir, P Lampe, M Vogelbacher, M Mühling, D Schneider, K Lindner, S Rösner, D Schabo, N Farwig, B Freisleben

Shanten Calculator

Toshiki H



Prevent Injuries During Saw Operation with Jetson Nano

Hongyi ZHU



Banknote Counter

Steinheilig

Guitar chord detection

R Waltzer

Intro to AI platform - L00 Syllabus Jetson Community Projects | 1

developer.nvidia.com/embedded/community/jetson-projects

Sci-Hub 백남학술정보관-IEEE Google Scholar ChatGPT 네이버 사전 AIHA 2023-2 HYU ASP-DAC 2024 Co... Grammarly

Jungwook Choi

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bus_number	Column A	Column B
bus_1	9:06:12	9:08:27
bus_2	9:19:33	9:21:01
bus_3	9:32:39	9:36:57
bus_4	9:45:17	9:48:27
bus_5	9:59:22	10:01:23
bus_6	10:12:53	10:13:47
bus_7	10:25:57	10:27:03
bus_8	10:39:28	10:38:33
bus_9	10:52:51	10:52:45
bus_10	11:04:45	11:08:51
bus_11	11:16:32	11:27:45
bus_12	11:30:29	11:42:32

Authors

[E Gomtsyan](#)

Share

Bus Prediction

Predict bus arrival times with Jetson Nano. You can detect bus arrivals by locally processing a video stream from a simple camera connected via RTSP. Starting from a pretrained ImageNet model, capture images of passing buses and use them to refine the model so it can distinguish between scheduled and unscheduled buses in several weather conditions. Detected bus arrival times are logged and a predictive schedule is generated with GCP and BigQuery using Vertex AI. The arriving bus schedule can be communicated using Google IoT and home IoT devices such as Alexa.

Works with...

Jetson Nano

Resources

[View project repository](#)

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Jetson Community Projects | 1

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Prevent Injuries During Saw Operation with Jetson Nano
Hongyi ZHU

Banknote Counter
Steinheilig

Guitar chord detection
R Waltzer

Fruit Quality Control with Jetson Nano
Aprende e Ingenia

Pytorch Driving Guardian
L Arevalo Oliver

Project of the Month January 2022
Mariola
T Tomanek

People Flow Analysis System
Ryoyo

Project of the Month March 2022
ROS, RTABMAP & Detectron2 Racecar
S Saha

Handwriting Classifier with Docker, Jetson Nano and Flask
I El Hanafi

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Banknote Counter

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Guitar chord detection

R Waltzer

CONTROL DE CALIDAD DE FRUTAS EN TIEMPO REAL | Jetson Nano

PROYECTOS #5

Fruit Quality Control with Jetson Nano

Aprende e Ingenia

Pytorch Driving Guardian

L Arevalo Oliver

Mariola

T Tomanek

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Aprende e Ingenia

Pytorch Driving Guardian

L Arevalo Oliver

Mariola

T Tomanek

https://developer.nvidia.com/embedded/community/jetson-projects/banknote_counter

R1mini ROS2 SLAM Mapping and Navigation
OMOROBOT (Open Mobile Robot)

BirdCam
P Lertvilai

Ellee: A Talking Teddybear Powered by GPT-3 & Computer Vision
A Nalwan

Green Iguana Detection and Surveillance
R Hsu, MetAI

Weed Killing Robot
D Niewinski

Go Motion
N Bild

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Jungwook Choi

The screenshot displays a grid of nine project cards from the Jetson Community Projects website. Each card includes a thumbnail image, the project title, the author's name, and a brief description.

- R1mini ROS2 SLAM Mapping and Navigation** by OMOROBOT (Open Mobile Robot): A screenshot of a mobile robot navigating through a complex, colorful environment, overlaid with a map showing its path.
- BirdCam** by P Lertvilai: An image of a camera setup mounted on a tripod, with three small purple video frames showing bird identification results.
- Ellee: A Talking Teddybear Powered by GPT-3 & Computer Vision** by A Nalwan: A video frame showing a person interacting with a teddy bear, with a speech bubble saying "Really? I also love dogs too".
- Green Iguana Detection and Surveillance** by R Hsu, MetAI: A screenshot of a dashboard showing a live video feed of iguanas and a line graph of detection data over time.
- Weed Killing Robot** by D Niewinski: A photograph of a black and orange tracked robot equipped with a white cylindrical sprayer arm, positioned in a grassy field.
- Go Motion** by N Bild: A photograph of a robotic arm with a gripper holding a small green object, with a hand visible in the background.
- REALTIME SLAM Navigation** by OMOROBOT (Open Mobile Robot): A screenshot of a mobile robot navigating through a complex, colorful environment, overlaid with a map showing its path.
- Ellee: A Talking Teddybear Powered by GPT-3 & Computer Vision** by A Nalwan: A video frame showing a person interacting with a teddy bear, with a speech bubble saying "Really? I also love dogs too".
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Self-Driving-ish Computer Vision System
iwatake

JetMax
Hiwonder

BabyWatcher
S Nakano

Cat Laser Turret Robot
D Niewinski

LabSentinel
N Maas

Project of the Month December 2021
Neurorack: A Deep AI-based Eurorack Synth
N Devis

<https://developer.nvidia.com/embedded/community/jetson-projects/neurorack>

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developer.nvidia.com/embedded/community/jetson-projects

Sci-Hub 백남학술정보관-IEEE Google Scholar ChatGPT 네이버 사전 AIHA 2023-2 HYU ASP-DAC 2024 Co... Grammarly

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R Hsu, MetAI

The screenshot shows a grid of six project cards on the Jetson Community Projects website:

- Self-Driving-ish Computer Vision System** by iwatake: A car dashboard view with a heads-up display showing sensor data.
- JetMax** by Hiwonder: A robotic arm with a camera mounted on it, positioned next to a red cup and a small tree model.
- BabyWatcher** by S Nakano: A camera view of a baby in a crib, overlaid with a grid of small video frames showing different angles of the baby.
- Cat Laser Turret Robot** by D Niewinski: A cat walking towards a robotic laser turret mounted on a desk.
- LabSentinel** by N Maas: A schematic diagram of a power monitoring circuit connected to a BeagleBoard.
- Neurorack: A Deep AI-based Eurorack Synth** by Project of the Month December 2021: A photograph of a custom Eurorack module with many knobs and cables.

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Green Guard Detection and Surveillance
R Hsu, MetAI

Self-Driving-ish Computer Vision System
iwatake

Cat Laser Turret Robot

<https://developer.nvidia.com/embedded/community/jetson-projects/babywatcher>

weed killing robot
D Niewinski

JetMax
Hiwonder

LabSentinel

BabyWatcher
S Nakano

Neurorack: A Deep AI-

Project of the Month December 2021

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developer.nvidia.com/embedded/community/jetson-projects

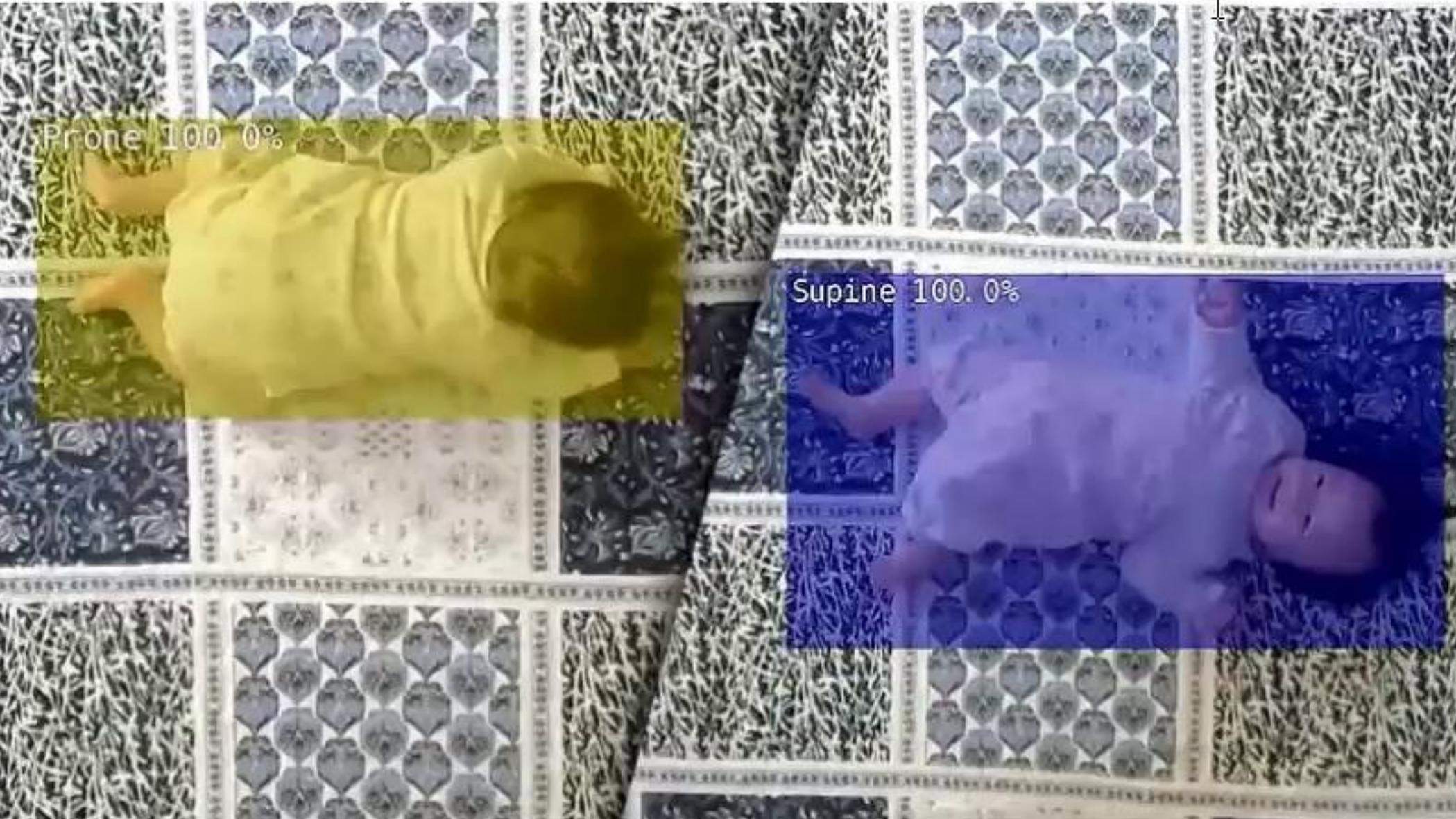
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BabyWatcher

For newborn babies, turning over and lying on their stomachs can be risk suffocation, so it is key to make sure they can sleep or stay in prone position. For their well-being, BabyWatcher monitors your newborn's position and detects if they are in prone or supine position. To create the transfer learning model, based on SSD-Mobilenet, training material was annotated with CVAT, exported into Pascal VOC format, merged into a single dataset, and automatically split into training/validation. The final transfer learning model is then converted into ONNX format.

Works with...

Jetson Nano

Authors

S Nakano

Resources

> View project repository

Share



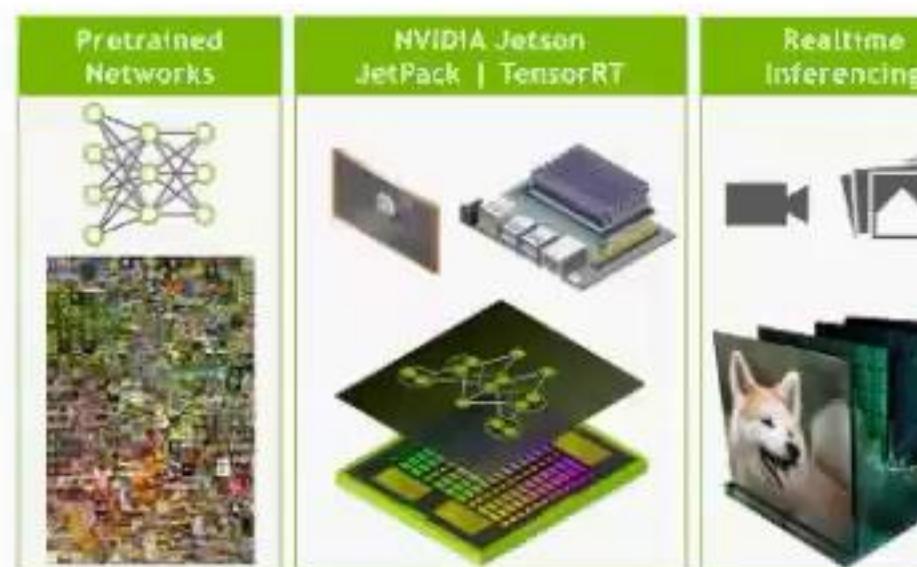
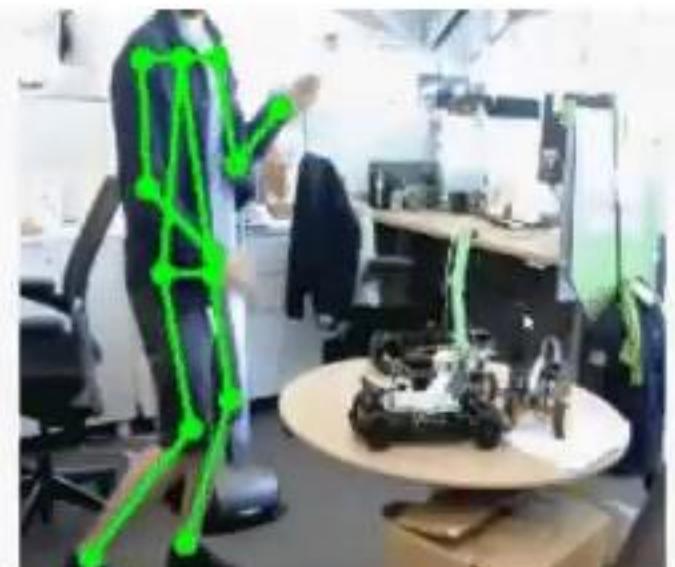
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Jetson Community Projects

Explore and learn from Jetson projects created by us and our community. These have been created with [Jetson developer kits](#). Scroll down to see projects with code, videos and more.

Get Started with these Projects

[Jetbot](#)[Hello AI World](#)[JetRacer](#)[Real-time Human Pose Estimation](#)[Filters](#)

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Every month, we'll award one JETSON AGX ORIN Developer Kit to a project that's cut above the rest for its application, inventiveness, and creativity.

Welcome to the Jetson Projects forum!

Visit Forum

vip-member Using Jetbot with Jetson Orin Nano dev kit

Stable Diffusion on Jetson AGX Orin and Xavier

opencv Electronically Assisted Astronomy with a Jetson Nano

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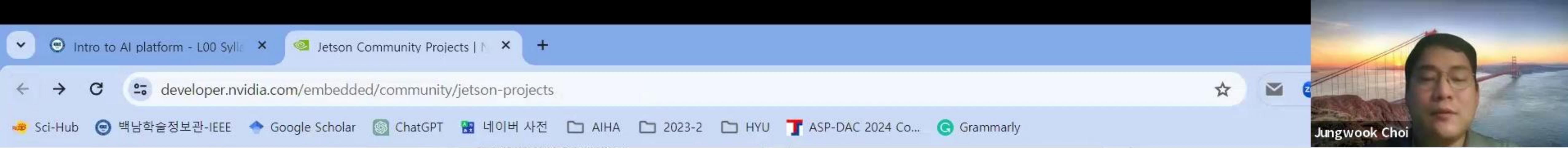
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<https://developer.nvidia.com/embedded/community/jetson-projects/jetracer>



ALL Jetson Nano Classifier



Project of the Month October 2021

Acute Lymphoblastic Leukemia Classification with Jetson Nano

A Milton-Barker



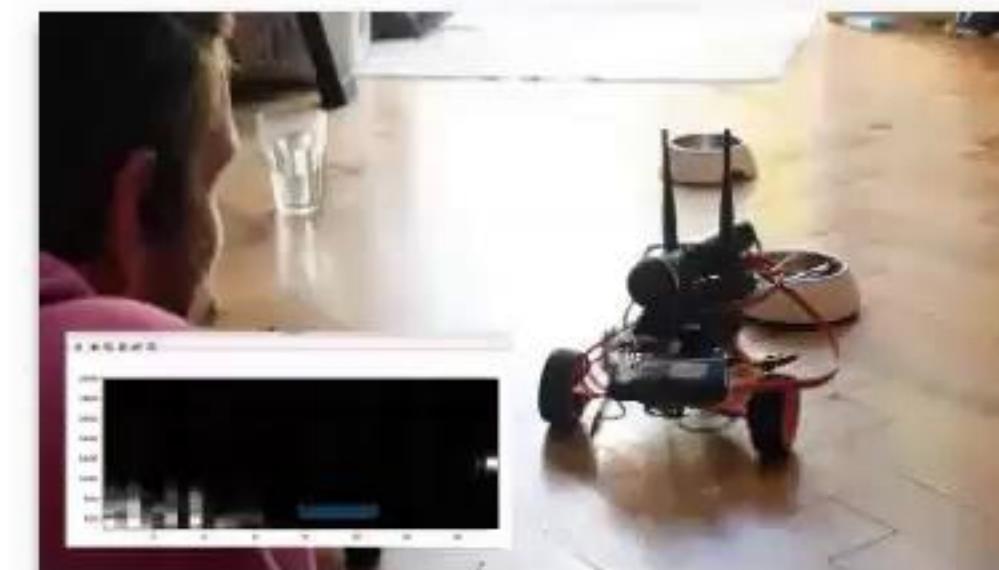
Robot Nano Hand

Silicon Highway



Jetson Multicamera Pipelines

T Lewicki



Sheepdog Whistle Neural Network

https://developer.nvidia.com/embedded/community/jetson-projects/robot_nano_hand



Beer Sherpa

D Niewinski



Dart Score Detector

K Kawasaki

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Jungwook Choi

Project of the Month November 2021

LiveChess2FEN: A Chess Piece Classifying Framework

D Mallasén Quintana

AI for Healthcare with Jetson Nano 2GB

A Bhandare

SensorBox

Dr. H Lange, AIWerkstatt

Project of the Month October 2021

ALL Jetson Nano Classifier

Acute Lymphoblastic Leukemia Classification with Jetson Nano

A Milton-Barker

Robot Nano Hand

Silicon Highway

Jetson Multicamera Pipelines

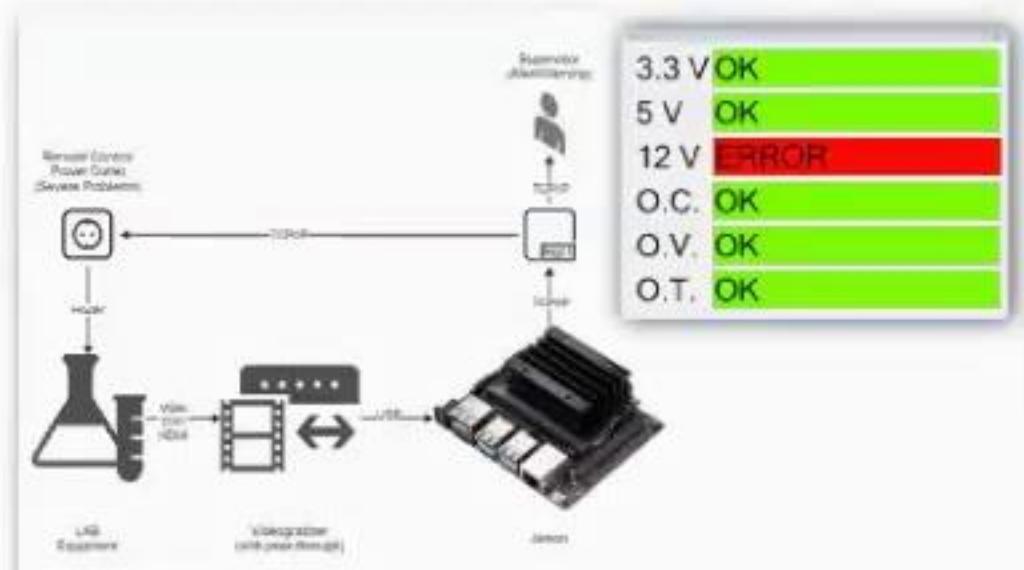
T Lewicki

https://developer.nvidia.com/embedded/community/jetson-projects/robot_nano_hand



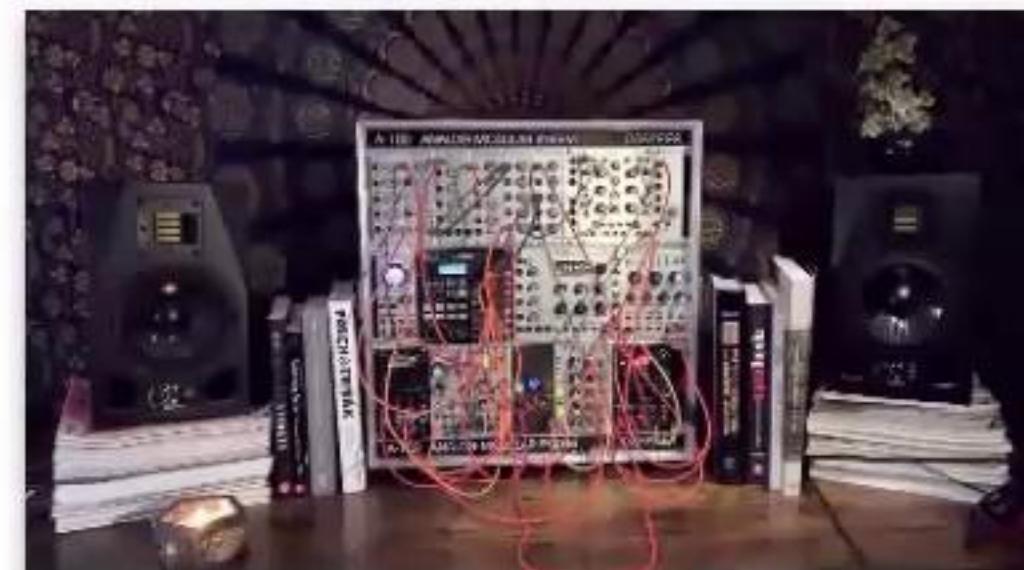
Cat Laser Turret Robot

D Niewinski



LabSentinel

N Maas



Project of the Month December 2021

Neurorack: A Deep AI-based Eurorack Synth

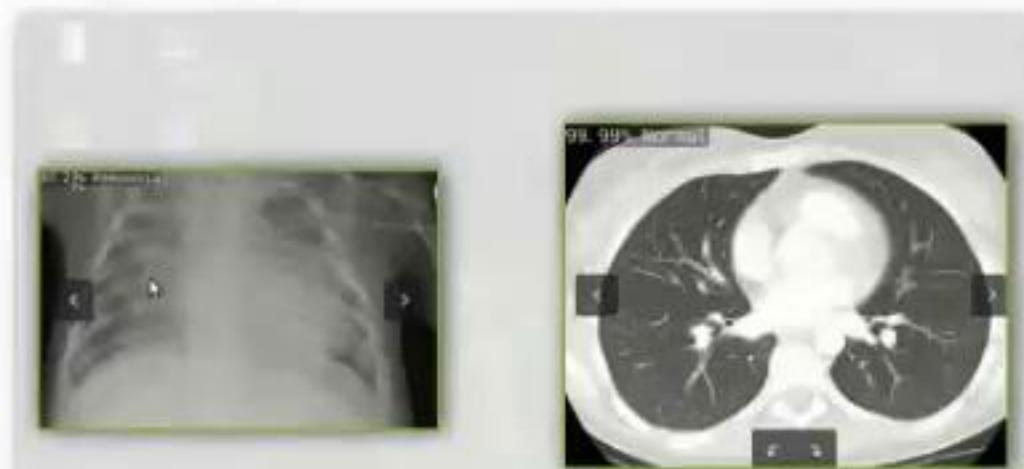
N Devis



Project of the Month November 2021

LiveChess2FEN: A Chess Piece Classifying Framework

D. Mallón Quintana



AI for Healthcare with Jetson Nano 2GB

A Bhandare



SensorBox

Dr. H Lange, AIWerkstatt

P 자동 저장 □ 끔 □ × □ □ □ 7ap_2024_Lec00_syll... □ PC에 저장됨 □ 검색 Jung

파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 쇼 녹음/녹화 검토 보기 도움말

■ 레이아웃 □ 새 슬라이드 □ 새 슬라이드 슬라이드 □ 다시 설정
■ 다시 사용 □ 구역 □ 클립보드

■ 글꼴 □ 가 가 간 S 커나 가나 기가 □ 단락 □ 도형 □ 정렬 □ 도형 채우기 □ 도형 윤곽선 □ 도형 효과 □ 찾기 □ 가나 바꾸기 □ 선택 □ 편집 □ 음성 □ 추가 기능
■ 그림 □ 빠른 스타일 □ 도형 효과 □ 받아쓰기 □ 추가 기능
■ 편집 □ 음성 □ 추가 기능

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9

Final Project Examples

- Jetson Community Projects

<https://developer.nvidia.com/embedded/community/jetson-projects> (Ex 1, Ex 2)

Community Gallery

Have a Jetson project to share? Post it on our [Forum](#) for a chance to be featured here too. Every month, we'll award one Jetson AGX Xavier Developer Kit to a project that's a cut above the rest for its application, inventiveness and creativity.

Furthermore, you can earn an AI Certification by submitting the Jetson project that you created. Learn more about [Jetson AI Certification Programs](#).

AI Hardware and Algorithm Lab

HANYANG UNIVERSITY

여기에 슬라이드 노트의 내용을 입력하십시오

슬라이드 7/11 한국어 ⚜ 접근성: 조사 필요

스메모 □ □ □ □ □ 75%

Final Project Examples



- Jetson Community Projects

<https://developer.nvidia.com/embedded/community/jetson-projects> (Ex 1, Ex 2)

The screenshot shows a Chrome browser window displaying the NVIDIA Developer website at <https://developer.nvidia.com/embedded/community/jetson-projects>. The page is titled "Community Gallery" and features several project thumbnails. The projects shown are:

- DESCRIPTIVE AI by D-KENDRI: A street scene with green text overlays.
- MONITORING WITH JETSON NANO by R LO: A screen showing a stick figure and a video feed.
- POSE ESTIMATION ON JETSON WITH OPENPIPPAF by GALLIDT: A street scene with people and a red circular overlay.
- ANIMATED 3D SCANNING by JASPER: A person being scanned with a 3D grid.
- FACE RECOGNITION by VIBERT: People walking in a hallway with a red "No Entry" sign.
- PERSON TRACKING by JASPER: A diagram showing a person being tracked across three frames.

At the bottom, there is a cookie consent banner from NVIDIA.

Final Project Examples

- Social distancing monitoring system (위대은, 최정훈, 김형민, 2



Detecting & Analyzing



Visualization



Violation, Density, Safety

Live Stream



다음(N)

이전(P)

마지막으로 본 상태(M)

모든 슬라이드 보기(A)

슬라이드 확대(M)

재구성한 쇼(W)

발표자 보기 표시(R)

화면(C)

포인터 옵션(O)

자막 시작(U)

자막 설정(B)

카메라(M)

슬라이드 및 업데이트 유지 (D)

슬라이드 업데이트(I)

도움말(H)

일시 중지(S)

쇼 마침(E)



Jungwook Choi

vice

레이저 포인터(L)

펜(P)

형광펜(H)

잉크 색(O)

지우개

슬라이드의 모든 잉크 삭제(E)

화살표 옵션(O)

Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Final Project Examples



- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)



Course Schedule



- 16-week course (IC-PBL, schedule can be changed...)
 - (Tentative) Invited Lecture* from an industry expert

W1	3/5 3/8	Syllabus Intro to Deep Learning		W9	4/30 5/3	Deep Learning Platform	Lab 8 (Linux)
W2	3/12 3/15	DL: Basic Concepts 1	Lab 1 (Neural Network)	W10	5/7 5/10	Implementing CNN	Lab 9 (Jetson)
W3	3/19 3/22	DL: Basic Concepts 2	Lab 2 (DL Apps)	W11	5/14 5/17	Accelerating CNN	Lab 10 (TensorRT)
W4	3/26 3/29	Deep Learning Framework	Lab 3 (Pytorch)	W12	5/21 5/24	Final project proposal	(Final project announcement)
W5	4/2 4/5	CNN: Basic Concepts	Lab 4 (CNN)	W13	5/28 5/31	(Final project)	<Office hour>
W6	4/9 4/12	CNN: History	Lab 5 (Image Classification)	W14	6/4 6/7	(Final project)	<Office hour>
W7	4/16 4/19	App1: Object detection	Lab 6 (Object Detection)	W15	6/11 6/14	Final project presentation	(Final project report)
W8	4/23 4/26	App2: Pose Estimation	Lab 7 (Pose Estimation)	W16	6/18 6/21	(Tentative) Invited Talk	

P 자동 저장 끔



iap_2024_Lec00_syll... • 이 PC에 저장됨

검색

Jun



파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 쇼 녹음/녹화 검토 보기 도움말

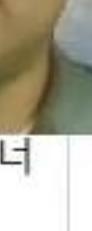
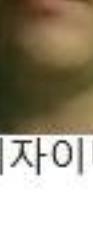
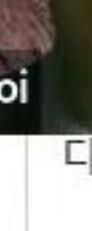
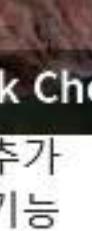
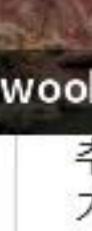
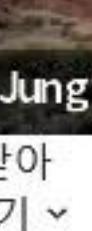
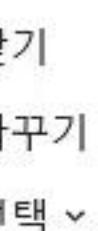
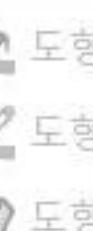
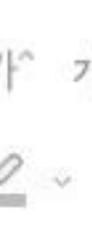
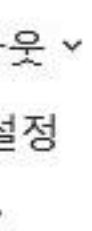
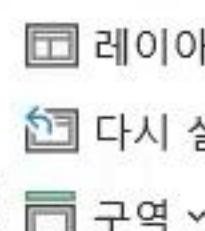
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Teams



클립보드

슬라이드



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글꼴

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그리기

편집

음성

추가 기능

Intro to AI Platform

Syllabus

Jungwook Choi
choij@hanyang.ac.kr
Hanyang University
2024 Spring

AI Hardware and Algorithm Lab

HANYANG UNIVERSITY

여기에 슬라이드 노트의 내용을 입력하십시오

Evaluation (Total 100 Points)



Jungwook Choi

- Attendance (10 points)
 - Random attendance check: -1 point for each unattended lecture ($>10 \rightarrow$ Grade F)
 - **Failure to return the board in good condition → Grade D**
- Labs (40 points)
 - 10 Labs – Submit a short report before the next class (format will be provided)
- Final Project (50 points)
 - Project details will be announced at around Week 12
- Extra points for active participation (up to 5 points)
 - +1 to total points if you provide a good answer for another student's question
- Absolute Grading

Lab 0: Team Building



Jungwook Choi

- Make a group of 2 students
- Select a team leader
- Each team leader send TAs an email with the team information including:
 - Team member name
 - Team member email (**should be XXX@hanyang.ac.kr**)
 - Cell-phone number (for emergency contact)
○
- Don't worry if you don't have a colleague to work with
 - Just send an email TAs with your info, then we will find one for you

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Jungwook Choi

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2024 Spring



P 자동 저장 (●) 끔 ⌂ ⌃ ⌄ 모 iap_2024_Lec00_syll... • 이 PC에 저장됨 ▾ 검색

Jun Teams Jungwook Choi

파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 쇼 녹음/녹화 검토 보기 도움말

레이아웃 ▾ 12 가^ 가^ 가^

새 슬라이드 슬라이드 쇼 ▾

클립보드

선택 편집 음성 추가 기능

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Final Project Goal

- [Skill] Use Jetson Nano to run “real” Deep Learning models
- [Knowledge] Apply knowledge you learn about deep learning (especially CNNs) to make your own application
- [Novelty] Invent an interesting AI application that can solve a real-world problem

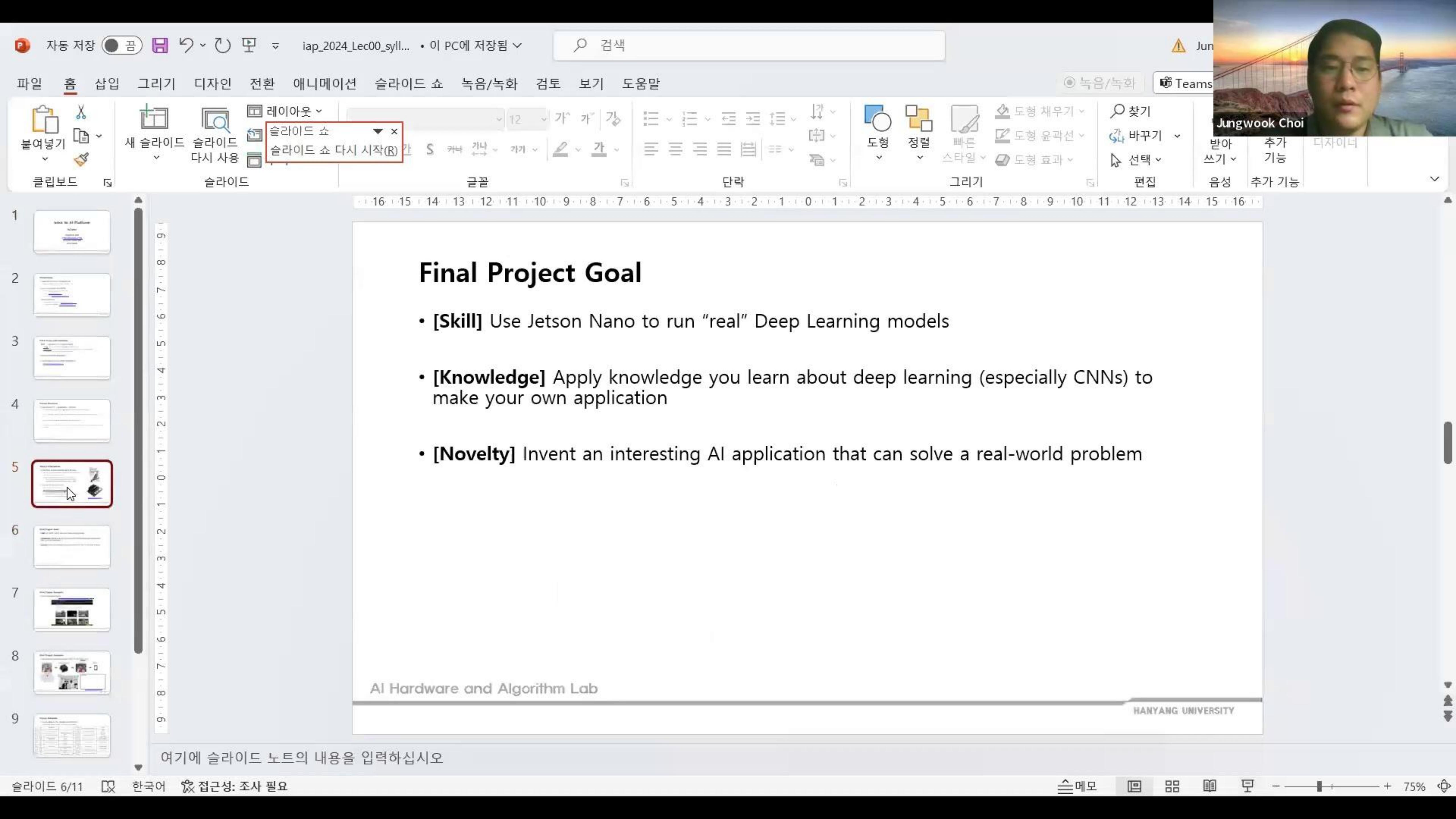
AI Hardware and Algorithm Lab

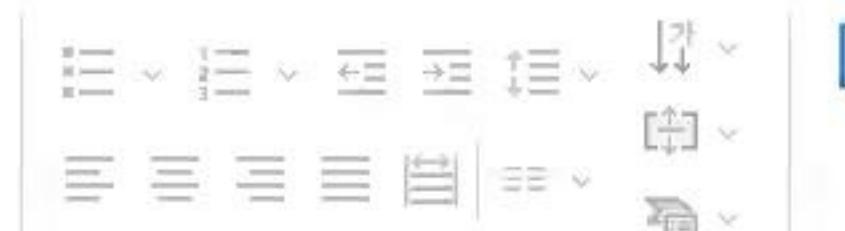
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슬라이드 6/11 한국어 접근성: 조사 필요

슬메모





Course Information

- No textbook. All study materials will be provided
 - Lecture notes (uploaded to LMS before each class starts)
 - Lab materials (uploaded to LMS)
 - Suggested reading for more info (not required)
 - Practical Deep Learning for Cloud, Mobile, and Edge (Anirudh Koul, Siddha Ganju, Meher Kasam; O'Reilly)
- Teamwork for Labs and Projects
 - Work in a team of 2 members
 - Email TA for your team preference**
 - Or we will make teams for you 😊
 - NVIDIA Jetson Nano board will be provided per team
 - Need to return the board at the end of semester!

AI Hardware and Algorithm Lab

[NVIDIA Jetson Nano board](#)

O'REILLY
Practical Deep Learning for Cloud, Mobile & Edge
Real-World AI & Computer-Vision Projects Using Python, Keras & TensorFlow
Anirudh Koul, Siddha Ganju & Meher Kasam

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자동 저장 끔 iap_2024_Lec00_syll... • 이 PC에 저장됨 검색

Jun Jungwook Choi

Teams

파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 쇼 녹음/녹화 검토 보기 도움말

레이아웃 새 슬라이드 슬라이드 다시 사용

클립보드

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Final Project Examples

- Social distancing monitoring system (위대은, 최정훈, 김형민, 2021)

Choose a Dense area.



Detecting & Analyzing



Visualization



Web Service



Violation, Density, Safety

AI Hardware and Algorithm Lab

제 13차 Capstone Design Fair 수상



Live Streaming

<https://blog.naver.com/hyucd/222589697461>

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슬라이드 8/11 한국어 접근성: 조사 필요

스메모

75%

금

Jun Jungwook Choi

Teams

받아쓰기 추가 기능

디자이너

선택 편집

음성 추가 기능

도형 채우기 도형 윤곽선 도형 효과

빠른 스타일

도형 정렬

도형 그리기

단락 글꼴

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한국어 접근성: 조사 필요

75%



Jungwook Choi

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파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 쇼 녹음/녹화 검토 보기 도움말 도형 서식

레이아웃 □ 블록 (제목) 12 가^ 가^ 가^ 가^ 글꼴 단락 그림 편집

도형 정렬 빠른 스타일 도형 채우기 도형 윤곽선 도형 효과

찾기 바꾸기 선택 편집

클립보드 새 슬라이드 슬라이드 다시 설정 구역

새 슬라이드 다시 사용 구역

슬라이드

10 9 8 7 6 5 4 3 2 1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Final Project Examples

- Jetson Community Projects

<https://developer.nvidia.com/embedded/community/jetson-projects> (Ex 1, Ex 2)

NVIDIA DEVELOPER HOME BLOG FORUMS DOCS DOWNLOADS TRAINING ACCOUNT

Community Gallery

Have a Jetson project to share? Post it on our [Forum](#) for a chance to be featured here too. Every month, we'll award one Jetson AGX Xavier Developer Kit to a project that's a cut above the rest for its application, inventiveness and creativity.

Furthermore, you can earn an AI Certification by submitting the Jetson project that you created. Learn more about [Jetson AI Certification Programs](#).

DESCRIPTIVE AI MONITORING WITH JETSON NANO POSE ESTIMATION ON JETSON WITH OPENPOSE

AI Hardware and Algorithm Lab

이 PC에 저장됨

Jungwook Choi

받아쓰기 추가 기능 디자이너

증정 추가 기능

여기에 슬라이드 노트의 내용을 입력하십시오

슬라이드 7/11

영어(미국) 접근성: 조사 필요

스메모

75%

The image shows a Microsoft PowerPoint presentation window. The title of the slide is "Final Project Examples". Below the title, there is a bullet point list: "• Jetson Community Projects". Underneath this list, there is a screenshot of a web browser displaying the "Community Gallery" page from the NVIDIA Developer website. The screenshot shows several thumbnail images of AI projects, such as a street scene with a car, a person in a green suit, and a city street with people. At the bottom of the screenshot, there is a cookie consent banner from NVIDIA. The overall interface of PowerPoint is visible, including the ribbon menu at the top and the slide navigation bar on the left.

P 자동 저장 끔 H ⌂ ⌂ iap_2024_Lec00_syll... • 이 PC에 저장됨 ▾ 검색

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Teams 녹음/녹화

새 슬라이드 슬라이드 다시 사용 슬라이드 쇼 다시 시작(R)

도형 정렬 도형 채우기 도형 윤곽선 도형 효과

찾기 바꾸기 선택 편집 음성 추가 기능

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DESCRITIVE AI MONITORING WITH JETSON NANO POSE ESTIMATION ON JETSON WITH OPENPOSE

AI Hardware and Algorithm Lab

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슬라이드 7/11 한국어 접근성: 조사 필요

메모

HANYANG UNIVERSITY

Jungwook Choi

자동 저장 (금) H ↻ ⌂ » iap_2024... 🔎 Jungwook Choi JC - ⌂ ×

파일 홈 삽입 그리기 디자인 전환 애니메이션 슬라이드 녹음/녹화 검토 보기 도움말

붙여넣기 슬라이드 글꼴 단락 그리기 편집 받아쓰기 추가 기능

클립보드

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슬라이드 1/11 한국어 접근성: 조사 필요 메모 회화 모드 - + 49%



Intro to AI Platform

Syllabus

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[\(choij@hanyang.ac.kr\)](mailto:choij@hanyang.ac.kr)

Hanyang University
2024 Spring

Class Hours and Locations



Jungwook Choi

- Theory + Lab class (IC-PBL: onsite, recorded)
 - **Theory**: Tue – 15:00~17:00 (Engineering Building 502)
 - **Theory/Lab**: Fri – 13:00~15:00 (Engineering Center 616, Workstation Room)
 - Flexible composition of theory & lab materials
- Office hour: By email appointment
- Course materials (Lectures, notes, discussion, etc.):
 - <https://learning.hanyang.ac.kr/>

Introduction



- Course title: Intro to AI Platform and Lab
 - Course number / Course code: ELE4103 / 10411
- Instructor: Jungwook Choi (최정욱)
 - Office: Engineering center annex 702-1
 - E-mail: choij@hanyang.ac.kr
 - Homepage: <https://jchoi-hyu.github.io>
- Teaching assistants
 - Chanhee Chung (정찬희): nia4905@hanyang.ac.kr
 - Sungwan Ryu (류승완): ssk05118@hanyang.ac.kr



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Course Overview



- AI algorithms (CNN) + Applications + Platforms
 - Understand key concepts of deep learning theories and AI applications
 - Understand the overall architecture of deep learning hardware platforms and learn how to use it
 - Learn skills to accelerate the execution of AI applications
 - Implement a creative AI system based on the techniques learned about applications and the platforms