TIMOTHY JOSHUA DY CHUA

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Skills

- Programming Languages: Python, C++, Assembly Language, Verilog
- Frameworks and Tools: PyTorch, Github, Docker, Xilinx, Jupyter
- Languages: English (Native), Japanese (N4)

Work Experience

Edgecortix – Machine Learning Software Engineer Tokyo, JP
TECH STACK: Python, Jupyter, PyTorch, MERA *May 2023 – Present*
- Participated in the company booth at the AI Expo in Tokyo Big Sight.

Edgecortix – Machine Learning Software Engineer Intern Tokyo, JP
TECH STACK: Python, Jupyter, PyTorch, Docker *Aug 2022 – Oct 2022*
- Trained an object detection model, quantized and compiled it using the MERA compiler, and deployed it to Dynamic Neural Accelerator FPGA.

Rakuten - Computer Vision Research Intern Tokyo, JP
TECH STACK: Python, Jupyter, PyTorch, Docker *Feb 2022 – May 2022*
- Collaborated on a research project for object classification using deep metric learning
- Contributed to a team of 10 in the Vision Program under the Department of Rakuten Institute of Technology
- Created a step-by-step guide for model training using the cloud

Anritsu - FPGA Software Engineer Manila, PH
TECH STACK: Verilog, ModelSim, QuestaSim, Vivado, Python *Aug 2018 – Dec 2020*
- Designed modules in development of 400G Ethernet and USB 3.2 Protocol
- Worked in a team of three to implement Verilog modules
- Collaborated with other teams in Anritsu Japan in designing, developing, and testing modules
- Participated in month long business trips to Japan to integrate modules into Anritsu's measurement devices such as the Signal Quality Analyzer and Network Master

UP EEEI - Computing Laboratory Student Assistant Manila, PH
TECH STACK: Software and Hardware Debugging *Aug 2017 – May 2018*
- Set up and prepared computers for laboratory use

UP EEEI - Laboratory Class Student Assistant Manila, PH
TECH STACK: Trello *Jan 2018 – May 2018*
- Assisted Professor Nestor Tiglao in the handling of 20 students
- Prepared activities, reports, and presentations of the students

Sparklab Innovation Center - Engineering Intern Manila, PH
TECH STACK: Circuit Soldering, C, Circuit Design *June 2017 – July 2017*
- Constructed a system of speakers that use motion sensing circuits
- Collaborated in a team of 7
- Vocalisations: A soundscape in Greenbelt Park by Teresa Barrozo

Education

The University of Tokyo Tokyo, JP
M.S. Information Science and Technology *April 2021 – March 2023*
- Monbukagakusho MEXT Scholarship Awardee
- Specialized in Machine Learning, Computer Vision

• Department of Creative Informatics, Graduate School of Information Science and Technology

University of the Philippines Diliman, CUM LAUDE Manila, PH

B.S. Computer Engineering *June 2013 – June 2018*

• National university of the Philippines, 17% acceptance rate

• Relevant Coursework: Artificial Intelligence, Software Engineering, Embedded Systems, Computer Networks, Operating Systems, C Programming, Python Programming

Projects

Exploration of Deformable Vision Transformers as Feature Extractors in Multiple Object Tracking

TECH STACK: Python, Jupyter, PyTorch

• Master's Thesis under Professor Hideki Nakayama in the University of Tokyo

• Developed a modification for the D-DETR transformer encoder to incorporate previous frame information.

• Developed a method for visualization of attention for D-DETR based computer vision systems.

• Improved on the ViTT MOT network by replacing the ViT with the ViTDet transformer which produced an overall 13% increase in performance.

• Implemented the deformable variant of the ViTDet transformer architecture.

Building Segmentation Using UNet

TECH STACK: Python, Jupyter, PyTorch

• Used a UNet Neural Network architecture to segment buildings from background

• Capstone project for "Remote Sensing Image Analysis" class in the University of Tokyo

• Trained the model using pretrained weights of VGG16

• Used provided dataset as well as different datasets from Kaggle and iSAID to train the model

• Class rank of 31/80 in terms of model accuracy

SRGAN GF: Super Resolution GAN Analysis Project

TECH STACK: Python, Jupyter, PyTorch

• Analysis and application of the SRGAN network in super resolution

• Ported an existing implementation of SRGAN into a Jupyter notebook with added comments and explanations

• Uploaded in Github. Please request for access

Polyjuice: A Faceswap Application

TECH STACK: Python, Keras, Numpy, Matplotlib

• Used autoencoders to swap my face with Daniel Radcliffe's in a video

• medium.com/dev-genius/polyjuice-my-first-ml-project-76a72783a261

• Uploaded in Github. Please request for access

Hardware Accelerated Vehicle Detection Using Computer Vision for a Dynamic Traffic System

TECH STACK: Python, C++, C#, TCP, Vivado HLS, Raspberry PI, Zynq 7000 FPGA

• Simulated two traffic intersections with using SuMO and Unity

• Developed the algorithm for sliding window generation per vehicle lane

• Implemented Computer Vision on Raspberry Pi using OpenCV to benchmark against the FPGA

• Used SVM and Histogram of Oriented Gradients Feature Extraction in vehicle detection to dynamically adjust traffic green light

• Team Leader in a group of three

Affiliations

Machine Perception Group - Nakayama Laboratory, University of Tokyo Tokyo, JP

• Conducted master's thesis under Professor Hideki Nakayama

Ubiquitous Computing Laboratory, UP EEEI Manila, PH

• Conducted undergraduate thesis under Professor Nestor Tiglao and Professor Jethro Limjoco

IEEE Student Branch, UP Diliman Manila, PH

• Attended workshops as an introduction to Object Oriented Programming and C++

Logistics Division, UP Circuit Manila, PH
• In charge of securing venues for events
• Event preparation and handling

Seminars

National University of Singapore AI Summer School 2019
TECH STACK: Deep Learning, NLP, CV, Reinforcement Learning
• Learned about state of the art techniques and current problems of deep learning over a week
• Participated in a workshop, "Ocean Protocol & Connected Life"
• https://medium.com/p/afcc08a96376/edit

Google I/O Extended Manila 2017
TECH STACK: Tensorflow, Google Cloud Platform, Polymer, Firebase
• Learned about applications developed or being developed by Google
• Participated in a breakout session about Tensorflow

Technology Impact Summit 2017
TECH STACK: Artificial Intelligence, Virtual Reality, IoT, Application Development
• Listened to speakers such as Dado Banatao, Ed Samonte, and etc
• Participated in a breakout session about Internet of Things

Extracurriculars

AlgoExpert Programming Course
TECH STACK: Python, Algorithms
• Completed all of the 160 programming problems of the course
• Solved problems involving heaps, linked lists, trees, and other data structures

Google Code Jam 2022
TECH STACK: Python, Algorithms
• Participated in an algorithm competition held annually by Google
• Reached round 1 of the competition
• Top 31% of 6,450 participants

Google Code Jam 2021
TECH STACK: Python, Algorithms
• Participated in an algorithm competition held annually by Google
• Reached round 1 of the competition
• Top 35% of 10,050 participants

Hacktoberfest 2020
TECH STACK: Python, Algorithms
• Participated in an online open source contribution event held annually by DigitalOcean
• Received a Hacktoberfest Tshirt for completing the event
• https://medium.com/@timothy.d.chua/my-hacktoberfest-2020-be4aeb5bdf59

Google Code Jam 2019
TECH STACK: Python, Algorithms
• Participated in an algorithm competition held annually by Google
• Reached round 1 of the competition
• Top 53% of 8,450 participants

GCCP DVBS Program Faculty Member 2017 - 2019
SOFT SKILLS: Public Speaking, Able to handle children
• Managed and taught a class of 40 elementary students
• Collaborated with a group of 5 co-teachers

Logistics Head, UP Circuit "Backt-bakan" 2014

SOFT SKILLS: Leadership, Scheduling, Event Planning

- Led the UP Circuit Logistics Division apprentices in execution of the organization's annual sports event
- In charge of securing a venue, procuring sport supplies, and creating the event program

GCCP Journey Executive Committee 2017 - 2018

SOFT SKILLS: Leadership, Scheduling, Planning

- Organized the booth for the annual Grace Christian Community Fair
- Handled a group of 35-40 attendees during Friday Fellowship nights