Irene C. Lee

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EDUCATION

Georgia Institute of Technology Atlanta, GA
Bachelor of Science, Computer Science (GPA: 4/4) with specialization in Intelligence and Theory Aug '19 - May '23
Honors Program, Minor in Economics
• **Selected Coursework:** Deep Learning, High Performance Computer Architecture, Operating Systems, Advanced Algorithms,Robotics and Perception
• **Teaching Experience:** Computer Organization and Programming(digital circuits, machine language instructions, and C programming); Data Structures and Algorithms (queue, stack, tree, heap, graph algorithms, dynamic programming,etc)

EXPERIENCE

Amazon Alexa Organization Irvine, CA
Software Development Engineer Intern May '21 - Jul '21
• Developed a **multimodal Alexa skill** that provides an optimized interactive user experience via utilization of implicit contextual information.
• Established a scalable **webapp infrastrcuture** incorporating **AWS services**: **Lambda**, **DynamoDB**, **S3**, **CloudFront**, etc.
• Leveraged **AWS Rekognition** to utilize **computer vision** techniques in identifying the contextual data .

Seoul National University Software Platform Lab Seoul, Korea
Research Intern Aug '20 - Jan '21
• Developed **data refurbishing**, a new approach in **data augmentation** to make **Deep Learning** model training faster.
• Implemented **Revamper**, a data loading system realizing data refurbishing on top of **PyTorch** library with **2K+** lines of code.
• Accelerated the training of **computer vision models**(**VGG16, ResNet-18, MobileNet-V1, EfficientNet-B0**) by **1.03× – 2.04×** while maintaining comparable accuracy.

RESEARCH

Systems for Artificial Intelligence Lab (SAIL) Research Atlanta, GA
Undergraduate Researcher Jul '21 - Present
• Design **supernets** for **natural language processing** models such as **BERT** for efficient model training and deployment in **hardware-constrained settings**.
• Develop a new training and inference system by building on top of **Hugging Face** library in **PyTorch**.

Social and Language Technologies (SALT) Lab Atlanta, GA
Undergraduate Researcher Jul '20 - Present
• Developed humor detection and generation models utilizing various **natural language processing** models, including **BERT, BART,** and **GPT2**, via frameworks such as **Hugging Face**.
• Designed methods to evaluate machine generated humor both quantitatively and qualitatively.

PUBLICATIONS

Gyewon Lee, **Irene Lee**, Hyeonmin Ha, Kyunggeun Lee, Hwarim Hyun, Ahnjae Shin Byung-Gon Chun. (**2021, July**). **Refurbish Your Training Data: Reusing Partially Augmented Samples for Faster Deep Neural Network Training**. In Proceedings of the 2021 USENIX Annual Technical Conference **(USENIX ATC)**: (pp. 537-550) [**Paper**]

AWARDS

Analysis of Input Pipeline Overhead for Training Image Classifiers with Data Augmentation Nov '20
• **Grand Prize** at Korea Software Conference(KSC) 2020
• Identified how the model being trained, the **CPU-GPU ratio**, and the amount of **augmentation** affect the **input pipeline** overhead in the context of **computer vision** tasks and its implications in the real world.

PROJECT HIGHLIGHTS

Im2Vec : A Language Model Approach to Understanding Image Classification Sep '20 - Dec '20
• Developed a new way to understanding images in **image classification** task via image embeddings and visualized with **PCA**.
• Encoded relationship among different classes in **CIFAR-10** dataset utilizing **Word2Vec** approach in word embedding.

Farm Fever [Demo] May '20 - Jul '20
• Developed an **interactive** game that simulates a farm using **Java/Java FX** as a group.
• Incorporated time progression and randomized event to portray realistic farm simulation.
• Primarily focused on **backend** design and led the **agile software development process**.

SKILLS

• **Programming:** Python, Java, C, C++, LaTex, TypeScript,JavaScript, HTML, CSS, MATLAB
• **Other Technologies:** PyTorch, AWS, Hugging Face, ONNX, Scikit-learn, GIT, Android Studio, JUnit, GDB , shell