Sang Keun Choe

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Education

Carnegie Mellon University, Pittsburgh, PA, United States — Aug 2020
M.S. in Computer Science (Language Technologies) — CGPA: 4.07/4.33
Advisor: Jaime Carbonell

Seoul National University, Seoul, South Korea — Feb 2018
B.S. in Electrical Engineering & Mathematics, *Summa Cum Laude* — CGPA: 4.07/4.30

Publications

On Orthogonal Jacobian Regularization in Deep Neural Networks
Sang Keun Choe*, Hosan Jeong*, and Jaime Carbonell
In Workshop on Science meets Engineering of Deep Learning at NeurIPS, 2019

On Leveraging Visual Modality for Neural Machine Translation
Vikas Raunak*, Sang Keun Choe*, Yi Xu*, Quanyang Lu*, and Florian Metze
In INLG, 2019 (Short ver.: *Workshop on New Tasks for Vision and Language at ICML*, 2019)

On Leveraging Visual Modality for ASR Error Correction
Sang Keun Choe*, Vikas Raunak*, Quanyang Lu*, Yi Xu*, and Florian Metze
In Workshop on New Tasks for Vision and Language at ICML, 2019

Coversong Identification using Song-to-song Cross-similarity Matrix with CNNs
Juheon Lee, Sungkyun Chang, Sang Keun Choe, and Kyogu Lee
In ICASSP, 2018 (Short ver.: *Workshop on ML4Audio at NIPS*, 2017)

Research & Work Experience

Carnegie Mellon University, Research Assistant — Sep 2018 - Present
- Studying regularization for neural networks based on information theory and operator theory
- Studying the connection between catastrophic forgetting and generalization in neural networks

HodooAI, Research Engineer — Apr 2018 - Jul 2018
- Developed neural networks identifying fake images using GANs and Bayesian learning
- Implemented image style transfer algorithms and applied it to the make-up transfer application

Seoul National University, Research Assistant — Jun 2017 - Dec 2017
Music and Audio Research Group — Advisor: Kyogu Lee
- Developed a cover-song identification algorithm using convolutional neural networks
- Developed a content-based image retrieval model by learning multi-level representations of images

Projects

Music Instrument Conversion via Disentangled Hierarchical VAE — Fall 2018
- Developed a VAE-based model successfully converting instruments of single-instrument music pieces
- Significantly improved state-of-the-art variational lower bound of VAE (by 20.1%) with a hierarchical CNN-RNN VAE architecture, scheduled annealing, and controllable capacity

Applying Capsule Networks to Dialogue Systems — Fall 2018
- Developed stacked capsule sequence-to-sequence networks achieving state-of-the-art BLEU score (18.9 → 20.0) on the MultiWoz multi-domain dialogue dataset

On Catastrophic Forgetting and Generalization in Deep Neural Networks — Ongoing
- Proposing and empirically verifying the hypothesis that the strong generalization capacity of deep neural networks stems from catastrophic interference through diverse experiments

Honors & Awards

Kwanjeong Scholarship for Graduate Study ($30,000/yr) — 2018 - 2020
Best Undergraduate Engineering Student Award, Seoul National University — 2018
Presidential Scholarship for Science and Engineering Study, Korea — 2011 - 2017
Gold Award (Top 7), Korea Collegiate Mathematical Competition — 2011
Silver Award, Korea Mathematical Olympiad — 2010

Coursework

Introduction to Deep Learning, Deep Reinforcement Learning, Graduate AI, Large-scale Multimedia Analysis, Machine Translation and Sequence-to-sequence Models, Algorithms for NLP, Information Theory (SNU), Convex Optimization (SNU)

Activities

2019 NeurIPS External Reviewer

Skills

Python, Java, MATLAB, C/C++, HTML, PyTorch, TensorFlow, Linux