Cheol Jun Cho

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EDUCATION

Seoul National University (SNU) **Seoul, Korea**
B.S. in Computer Science and Engineering *Aug 2020*

- Summa Cum Laude & the Valedictorian for the College of Engineering (GPA: 4.2/4.3)

RESEARCH EXPERIENCE

JeeLab, Center for Neuroscience, Brain Science Institute **KIST, Seoul, Korea**
Computational Neuroscience; Cognitive Neuroscience; System Neuroscience *Jul 2020 - Present*
Research Intern, Advisor: Dr. Jee Hyun Choi

- Incorporating machine learning algorithms to specify and predict mice behavior patterns correlated with transient gamma oscillation in the basolateral amygdala.
- Processed and analyzed data for the wireless real-time neuro-reporting platform (CBRAIN). Implemented a program to extract mouse-tracking data and neural report data from recorded videos of mouse experiments.

Computational Clinical Science Laboratory **SNU, Seoul, Korea**
Computational Psychiatry; Computational Neuroscience *Mar 2020 - Present*
Research Assistant, Advisor: Dr. Woo-Young Ahn

- Developing a Python package for fMRI multi-voxel pattern analysis (MVPA) combined with model-based fMRI analysis.
- Setting up the infrastructure for the human fMRI neurofeedback experiment.
- Designed computational models by integrating the prospect theory and the drift-diffusion model. Conducted hierarchical Bayesian analysis on risky choice task data. (choice, reaction time and eye-gaze)

KAIST Interaction Laboratory (KIXLab) **KAIST, Daejeon, Korea**
Human Computer Interaction; Natural Language Processing *Jun 2019 – Aug 2019*
Summer Research Intern, Advisor: Prof. Juho Kim

- Participated in the speech act based chatbot project. Designed/experimented deep learning models for the speech act classification using Bi-LSTM and word embedding models. Devised a pooling method using the attention mechanism to integrate word-wise vectors into sentence-wise vectors. Tested models on the Switchboard Dialog Act (SwDA) corpus and Verbal Response Mode dataset.

Computing and Memory Architecture Laboratory (CMALab) **SNU, Seoul, Korea**
Computer Vision *Dec 2018 – Jun 2019*
Research Intern, Advisor: Prof. Sungjoo Yoo

- Implemented an online-training framework adopting the teacher-student method to improve the computing efficiency of deep learning models. Tested the framework on the video object segmentation and the video object detection task.

PROJECTS

Bachelor's Thesis **SNU, Seoul, Korea**
Computer Vision; Natural Language Processing *Mar 2020 – Jun 2020*
Independent Research

- Title: Neural Symbolic Visual Question Answering System: application to real world data and limitation
- Implemented a neural symbolic system (question-to-symbols encoder, scene graph generator, and symbolic program executor). Tested the system on General Question Answering Dataset and analyzed the associated limitations of the application.

Brain-Mind-Behavior Independent Research Course **SNU, Seoul, Korea**
Natural Language Processing; Interpretable AI *Sep 2019 – Dec 2019*
Independent Research

- Title: Deep Neural Networks with Attention Pooling for Dialogue Act Recognition
- Conducted research as an extension of work in the summer internship at KIXLab. Devised a self-attentive pooling method and compared it with the baseline (average pooling). Interpreted model inference process by analyzing attention weights.
- Received best research award in 2019 Brain-Mind-Behavior Research Presentation.

SNU Creative Design Fair **SNU, Seoul, Korea**

Robotics; Human Robot Interaction (HRI); Computer Vision *Jun 2019 – Sep 2019*

Project: Interactive Robotic Vacuum

- Participated in SNU Creative Design Fair as a team of four.
- Built a unique pointed-shape body with omnidirectional wheels. Implemented the embedded AI with Arduino. Developed a smartphone app. featured by the embedded hand gesture detecting model. Devised a novel HRI platform where users interact with the robot using hand gestures.
- Won 2nd place at the SNU Creative Design Fair, and attained 1st place at the International Capstone Design Fair.

Creative Integrated Design Course **SNU, Seoul, Korea**

Computer Vision; Interpretable AI *Sep 2018 – Dec 2018*

Project: Plant Disease Detecting Web Service

- Developed a plant disease detection web service by utilizing deep learning as a team of three.
- Trained/evaluated image classification models for the plant disease detection. Visualized the inference process utilizing Guided GRAD-CAM. Implemented the back-end server for the application.

TECHNICAL SKILLS

Programming Languages: Python, R, Stan, C, C++, Arduino, Matlab

Software Packages: Deep Learning (Pytorch , Tensorflow), Computer Vision (opencv), Natural Language Processing (Gensim, NLTK), Data Analysis (Rstan, hBayesDM), fMRI analysis (SPM12), Web Programming (Django), Machine Learning (Scikit learn), Other (Mediapipe)

AWARDS AND HONORS

President's Award for 1st ranked graduation in SNU College of Engineering	Aug 2020
Best research award from 2019 Brain-Mind-Behavior Research Presentation at SNU	Sep 2019
1st place of International Capstone Design Fair 2019 (Korea, China)	Nov 2019
2nd place of SNU Creative Design Fair of SNU College of Engineering	Sep 2019
SNU's Tomorrow's Engineers Membership (honor society of college of engineering)	May 2016
Korea National Scholarship (fully funded)	2016 Spring, 2018 Fall-2019 Fall
Army Commendation Medal (ARCOM)	Jun 2018
Certificate of Appreciation (CA) from US 8th Army	Jun 2018
SNU Merit Scholarship (fully funded)	2015 Spring,Fall
SNU Merit Scholarship (half funded)	2014 Fall

OTHER SERVICES AND ACTIVITIES

STEM Mini Vision Mentoring **2016, 2019**

- Visited middle and high schools as mentor.
- Introduced Engineering School, especially about Computer Science,
- Shared my own learning strategies and experiences.

Korean Augmentation to the United States Army (KATUSA) **Sep 2016 - Jun 2018**

- Served in 8th Army HHB IS G4 Information Management Office.
- Supported electrical automation and equipment maintenance for operations.

S20 project contest by Shinhan Bank **Mar 2016 - Jun 2016**

- Won 1st place as SNU's Tomorrow's Engineers Membership team.
- Presented idea for smart banking with AI technologies.