

YONGHYEON KWEON

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AREAS OF INTEREST

Machine learning, deep learning, security, federated learning, adversarial learning, healthcare informatics, bio informatics, decentralized machine learning

EDUCATION

UNIVERSITY OF VIRGINIA, Charlottesville, VA, USA

07/2019-05/2020

Master of Science in Data Science

School of Data Science

Relevant Courses: Machine learning, Bayesian Machine Learning, Data Mining, Text Analytics, Programming and Systems for Data Science

UNIVERSITY OF VIRGINIA, Charlottesville, VA, USA

08/2016-05/2019

Bachelor of Arts in Statistics

Department of Statistics, College of Arts and Science

Relevant Courses: Linear Algebra, Mathematical Statistics, Regression Analysis, Biostatistics, Data Mining

RESEARCH EXPERIENCE

School of Engineering, University of Virginia, Charlottesville, VA, USA

05/2020-Present

Research Assistant, Link Lab

Project Title: "Route Guidance Recommendation System"

- Participated in Prof. Brian. B. Park's Route Choice Guidance research project
- Designed Federated Learning model with TensorFlow Federated (TFF) and proved the robustness of the model
- Implemented clustering methods based on individual's SVM model to apply federated learning framework

McIntire School of Commerce, University of Virginia, Charlottesville, VA, USA

05/2020-Present

Research Assistant

Project Title: "Dynamics in Movie Review"

- Participated in Prof. Natasha Foutz's movie data analysis research project
- Scrapped movie data from multiple websites using BeautifulSoup and Selenium
- Conducted the cleaning/engineering process to investigate the dynamics of movie review.

School of Data Science, University of Virginia, Charlottesville, VA, USA

08/2019-05/2020

Researcher

Project Title: "Deep Learning for Protein Structural Class"

- Capstone project supervised by Professor Cameron Mura and Professor Philp Bourne
- Trained Autoencoder model for protein classification using 3D representation of protein structure
- Leveraged sparse 3D convolutions to take advantage of data sparsity to make the problem tractable and resource-efficient
- Produced loss function as a similarity metric between different protein classes (superfamily). It has applications in novel protein classification

RELEVANT COURSE PROJECTS

Project Title: “Real-Time Face Detection of Gender, Age and Emotion”

01/2020-05/2020

- Machine Learning, Supervisor: Dr. Jonathan Hughes
- Implemented different architectures and pipelines to classify age, gender and emotion of human faces in real time
- Measured the performance of the result in terms of accuracy and time efficiency
- *Technical skills:* Python, UVA cloud computing (Rivana), keras, openCV

Project Title: “News Contents Analysis with Natural Language Processing”

01/2020-05/2020

- Text Analytics, Supervisor: Professor Rafael Alvarado
- Analyzed News contents from two different data sources using NLP to compare
- Conducted Sentiment Analysis and Word Embedding to compare different political orientation between sources and visualized the result with t-SNE
- *Technical skills:* Python, NLTK, Gensim, seaborn, plotly_express, scipy, word2vec

Project Title: “Prediction Model of Graduate School Admission with Bayesian Inference”

08/2019-12/2019

- Bayesian Machine Learning, Supervisor: Professor Donald E. Brown
- Modeled Bayesian linear regression to predict the certainty of the chance of the graduate school admission.
- Utilized hierarchical/Multilevel modeling for candidates’ undergraduate school level
- *Technical skills:* Python, UVA cloud computing (Rivana), pymc3, scikit-learn, seaborn, matplotlib

Project Title: “Data Mining for Banknote Authentication”

01/2019-05/2019

- Data Mining, Supervisor: Professor Xiwei Tang
- Used supervised learning models to detect counterfeit banknotes using the data from UCI ML Repository
- Examined models’ performances-based AUC score
- Six classifiers - LDA, logistic regression, random forests, SVM, Adaboosting - were used in the projects
- *Technical skills:* R

PUBLICATION

Jaiswal, M., Saleem, S., **Kweon, Y.**, Draizen, E. J., Veretnik, S., Mura, C., and Bourne, P. (2020). Deep Learning of Protein Structural Class: Any Evidence for ‘Unfold’?. *2020 Systems and Information Engineering Design Symposium (SIEDS)*.

Kweon, Y., Sun, B., Park, B. Modeling Route Choice Behavior: A Federated Learning Approach, *2021 Transportation Research Board*. [Under Review].

Additional Information for Publication

Proposal accepted for 2020 TomTom Applied Machine Learning Conference

Research abstract accepted for ISMB2020 (Intelligent Systems for Molecular Biology) Abstract

WORK EXPERIENCE

Extreme Network, Seoul, Korea

05/2014-07/2014

Intern

- Acted as a liaison to business/engineering team and assisted conferences/meetings preparation
- Strengthened communication skills through formal training and on-site mentoring by partners, directors and associates

HONORS & AWARDS

Dean’s List

Spring 2019

SKILLS

COMPUTER

Deep learning libraries: PyTorch, TensorFlow

Programming Language: Python, R, C/C++, SAS

LANGUAGES

Korean (Native), English (Fluently)