

Woo Seok Jung

☎ (562) 760-8825 | ✉ wooseokjung0826@gmail.com | 🏠 jungwooseok.com

Education

Washington University in St. Louis

PHD CANDIDATE, COMPUTER SCIENCE

Advisor: Dr. Michael R. Brent

St. Louis, MO

Sept. 2020 - present

University of Puget Sound

B.S. IN MATHEMATICS AND COMPUTER SCIENCE, GPA: 3.80

Tacoma, WA

Aug. 2016 - May 2020

DIS (study abroad)

ARTIFICIAL NEURAL NETWORKS AND DEEP LEARNING

- Artificial Neural Networks and Deep Learning
- Artificial Intelligence
- Computational Analysis of Big Data

Copenhagen, Denmark

Aug. 2019 - Dec. 2020

Publications

Vaha Akbary Moghaddam, Sandeep Acharya, Michaela Schwaiger-Haber, and Shu Liao, **Wooseok J Jung**, et al., Construction of Multi-Modal Transcriptome-Small Molecule Interaction Networks from High-Throughput Measurements to Study Human Complex Traits, bioRxiv, DOI: 10.1101/2025.01.22.634403

Sandeep Acharya, Vaha Akbary Moghaddam, **Wooseok J Jung** et. al., FISHNET: A Network-based Tool for Analyzing Gene-level P-values to Identify Significant Genes Missed by Standard Methods, bioRxiv, DOI: 10.1101/2025.01.29.635546

Sandeep Acharya, Shu Liao, **Wooseok J Jung**, et. al., A methodology for gene level omics-WAS integration identifies genes influencing traits associated with cardiovascular risks: the Long Life Family Study, Human Genetics, DOI: 10.1007/s00439-024-02701-1

Yiming Kang, **Wooseok J Jung**, Michael R Brent, Predicting which genes will respond to transcription factor perturbations, G3 Genes|Genomes|Genetics, Volume 12, Issue 8, August 2022, jkac144, DOI: 10.1093/g3journal/jkac144

Softwares

FISHNET, This software pipelines the Nextflow, R, and python code for FISHNET, available for HPC systems using Docker or Singularity containers.
<https://brentlab.github.io/fishnet/>

nf-core/omicsgenetrainassociation: A nextflow pipeline which integrates multiple omic data streams and performs coordinated analysis.
<https://nf-co.re/omicsgenetrainassociation>

corrmeta: R implementation of correlated meta-analysis.
<https://CRAN.R-project.org/package=corrmeta>

Research Experience

Brent Lab

St. Louis, MO

DOCTORAL RESEARCH ASSISTANT

Jan 2021 - Present

- Doctoral research under the guidance of Dr. Michael R. Brent.
- Contributed to 4 publications.
- Contributed to 3 open-source software development and maintenance.

Long Life Family Study (LLFS)

St. Louis, MO

FULL TIME DOCTORAL INVESTIGATOR

Nov. 2020 - Present

- Analyzed multi-omic factors that contribute to exceptional longevity and healthy aging traits.

ChirpGAN: A Generative Adversarial Network for Synthesizing Artificial Bird Calls

Tacoma, WA

SENIOR CAPSTONE PROJECT, SCRUM LEADER

Jan. 2020 - May 2020

- Created a data pipeline for processing 30GB+ bird vocalization audio data to GAN-ready image dataset using a wavelet transform, flood-fill algorithm, and downscaling operations.
- Implemented a GUI using PySimpleGUI to simplify user-interaction from data processing to GAN training.
- Produced promising results for three different image resolutions (32×75 , 64×150 , and 128×300 pixels).

McCormick Summer Research Scholar

Tacoma, WA

STUDENT RESEARCHER

May 2019 - Aug. 2019

- Applied a complex Morlet wavelet transform to raw mouse vocalization and produced visual scalogram representations.
- Implemented generative adversarial network model using progressive growing of GANs methodology.
- Produced promising results for 16×32 and 32×64 pixel scalogram images.

Additional Experience

CJ OliveNetworks

Seoul, South Korea

DT INTERN

May 2020 - Aug. 2020

- Aid the DT team with researching and translating machine learning papers on GANs, time series forecasting, and video summarization techniques.
- Analyze viability of methods via small-batch model implementation and minimum viable product testing
- Implemented TFT architecture which saw a 12% jump in 14-day and 21-day forecasting accuracy.

University of Puget Sound, Math/CS Department

Tacoma, WA

DEPARTMENT ASSISTANT

Jan. 2017 - May 2020

- Assisted Computer Science professors as lab TA and afternoon tutor for Introductory, Data Structures, Architectures, and Operating Systems courses.
- Assisted Math professors as grader and afternoon tutor for all-level Statistics, Calculus I & II, Multivariate Calculus, and Linear Algebra courses.

NOVAtime Technology Inc.

Diamond Bar, CA

RESEARCH AND DEVELOPMENT INTERN

May 2015 - July 2015

- Developed a JavaScript visualization of a time clock featuring a simpler hierarchical overview of employees.
- Researched and developed Korean language localization for the time clock interface.
- Presented the projects before the company's board of directors and executives.

Honors & Awards

2022-2025 **Genome Analysis Training Program (GATP)**, NHGRI grant T32 HG000045

May 2020 **Goman Book Award**,

May 2019 **McCormick Scholar Award**,

Dec. 2019 **Thomas and Hilda Jack Department Scholarship**,

2018-2019 **McGill Family Department Scholarship**,

Dean's List Award, Fall 2017, Fall 2018, Spring 2019, Spring 2020

Extracurricular University Service

| | |
|---------------------|----------------------------------|
| Chair | <i>University of Puget Sound</i> |
| ACM STUDENT CHAPTER | <i>2017 - 2019</i> |
| Secretary | <i>University of Puget Sound</i> |
| MATHEMATICS CLUB | <i>2017 - 2018</i> |
| Webmaster | <i>University of Puget Sound</i> |
| ACM STUDENT CHAPTER | <i>2016 - 2017</i> |

Skills

Programming Languages: Java, Python, R, C, Matlab, JavaScript, PHP

Libraries and tools: Nextflow, TensorFlow, Keras, PyTorch, Git, SSH, Flask, Laravel, MySQL, SQLite, Slack

Foreign Languages: Korean (professional working proficiency)

References

Available on request