

# Information

Citizenship: Korea, Republic of  
E-mail: [yong.kweon@mail.mcgill.ca](mailto:yong.kweon@mail.mcgill.ca)  
Mailing address: Seoul, S. Kor  
Phone number: +82) 10-4995-2721

# Education

## **MSc Thesis in Experimental Medicine (Jan, 2023 ~ )**

McGill University, Montreal, Quebec, Canada  
Supervisor: Jun Ding, PhD  
Academic advisor: Janusz Rak, MD, PhD

## **PhD Candidate in Quantitative Life Science Withdrawn (Sep, 2018 ~ Dec, 2021)**

McGill University, Montreal, Quebec, Canada  
\*Leave of absence for the military service – Jun, 2019 ~ May, 2021

## **BA in Statistics (Cluster: Mathematics/Economics) in May, 2018**

University of California, Berkeley, California, U.S.

## **AS-T in Mathematics and Business Administration & AA-T in Economics in May, 2016**

Diablo Valley College, Pleasant Hill, California, U.S.

# Research

## **Cell type deconvolution Research under Professor Jun Ding**

**Jan 2023 -**

*McGill University*

## **AI Drug Design Research under Professor Jun Ding**

**Sep 2021 – Nov 2021**

*McGill University*

- Find the common modified VQ-VAE structure for both Control and Arac that is consistently representing already-defined (Leiden UMAP initialized by PAGA) full space clusters well.
- Apply Leiden clusters on UMAP initialized by Partition-based Graph Abstraction (PAGA) on control and cytarabine drug (AraC) for Acute Myeloid Leukemia (AML) single cell RNAseq.
- Annotate clusters' cell types based on marker genes from Wilcoxon test.
- Build mapping networks between control clusters and AraC clusters: 1. VAE with Zero-Inflated Negative Binomial distribution approximation and 2. Contrastive learning
- Analyze expanded Connectivity Map LINCS 2020 transcriptional datasets level 5 using cmapPy module. (aim to perform AML drug design analysis)

## **Statistical Bioinformatics Research under Professor Jeff Xia**

**Jan 2019 – May 2019**

*McGill University*

- Benchmark DIABLO, mixOmics, and OmicsPLS, and extend multi-omics integration.
- Assess the quality of Two-way Orthogonal Partial Least Square (O2PLS) and OnPLS.
- Develop and functionalize useful outputs of O2PLS and their interpretations on different types of omics such as proteomics, metabolomics, genomics, transcriptomics, etc.
- Develop user-interactive website for multi-omics integration analysis outputs. (O2PLS, Procrustes analysis, Multi-block partial least squares, Multi-block principal component analysis)

## **Neuroimaging Research under Professor Sylvain Baillet**

**Sep 2018 – Dec 2018**

*Montreal Neurological Institute and Hospital, McGill University  
(Direct Supervisor: Philippe Albouy)*

- Data analysis for multimodal electrophysiology and imaging such as MEG and EEG combined with MRI.
- Develop automatic work-flow pipeline for analysis on Brainstorm software (running on Matlab). (i.e. what artifacts, noise, or filters to remove or use. What kinds of statistical tools such as entropy and power spectrum to apply for)
- Analysis on longitudinal study of the “short-term” effects of brain stimulation with steady state visual stimulation on auditory working memory performances in healthy volunteers.
- Conduct new experiment on “long term” effects of brain stimulation with Transcranial Magnetic Stimulation (TMS) on auditory working memory performances in healthy volunteers. (focused on measuring with Electroencephalography [EEG])

### **Research Intern under Professor Heather Haveman**

**Feb 2017 – Dec 2017**

*University of California, Berkeley*

*(Direct Supervisor: Jaren Haber)*

- Work for Charter Schools and the Business Age: Manual and CS Coding of Websites for Text Analysis, to answer the question: “Which charters survive and thrive in this political climate—those that stress discipline and college-readiness, or those that prioritize independent thinking and socio-emotional development?”
- Work with the Python/R coder teams to web-scrape and analyze the websites of every U.S. charter school open today with seasonal time series and machine learning techniques such as PCA and decision tree.
- Clean the large data sets of dat, csv, and txt files, into the public readable data

### **Research Intern under Professor Daniel Kammen**

**Sep 2016 – Dec 2016**

*Renewable and Appropriate Energy Laboratory at University of California, Berkeley*

*(Direct Supervisor: Sergio Castellanos Rodriguez)*

- Work for National Renewable Energy Deployment Research on SWITCH project on Mexico region.
- Web scrapping, data munging, and data visualization (using relational database PostgreSQL, Python, Pandas, QGIS) on 2006-2015 hydropower data and gaining exposure to national energy policy.
- Clean large datasets from various sources and format appropriately using non-parametric testing.
- Build up different statistical analyses (hypothesis testing) and analytical predictions (time series) for the appropriate future modeling of hydro-plant power generations in Mexico.
- Wrote a scientific research paper on methods of forecasting future hydro-power generations.

## **Acknowledgments**

Haber, J.R. (2020). Sorting Schools: A Computational Analysis of Charter School Identities and Stratification. *Sociology of Education*. <https://doi.org/10.1177/0038040720953218>

## **Presentations and Posters**

Albouy, P., Martinez-Moreno Z., **Kweon, Y.J.**, Zatorre, R.J., Baillet, S. (2018). Driving working memory with visual rhythmic stimulations. IDRC workshop. Montreal, Canada, Oct. 22 2018.

Albouy, P., **Kweon, Y.J.**, Whittaker, H., Baillet, S., Zatorre, R.J. (2018). Enhancing learning-related plasticity with information based neuromodulation. Auditory learning and plasticity symposium. Montreal, Canada, Oct. 23 2018.

## **Grants and Scholarships**

- Korean Canadian Scholarship Foundation (KCSF) Galleria Supermarket Scholarship, \$2,500 (Mar 2019; awarded in May 2019)

- McGill Quantitative Life Science Department Stipend, \$20,000 CAD (Sept 2018 – Aug 2019)
- Berkeley International Office Grant/Scholarship, \$3,283 USD (Spring 2018).
- Statistics Department Award/Grant, \$6,315 USD (Spring 2018).
- DVC Retiree's Association Transfer Scholarship, \$1,000 USD (Spring 2016).
- DVC Math Department AMATYC contest winner scholarship, \$150 USD (Spring 2016).

## Teaching and Advising

### **Stat 133 TA/UGSI (Gaston Sanchez)**

**Jan 2018 – May 2018**

*Statistics Department at University of California, Berkeley*

- Lead 2-hour lab sections twice a week. (Taught 2 labs; thus, 4 hours in total)
- Hold 4-hour of office hours a week.
- Proctor, made, grade midterm and final exams.
- Topics taught including statistical visualizations, analysis, web browser user interface Shiny app, regular expressions, reproducible R package development, Linux, Unix, Git, etc.

### **Stat 135 Reader (Adam Lucas)**

**Aug 2017 – Dec 2017**

*Statistics Department at University of California, Berkeley*

- Opportunity to connect with faculty and GSIs.
- Help grade quizzes, exams, and weekly homework.
- Have regular meeting with GSIs and a professor.

### **Stat 133 Lab Assistant (Adam Lucas, Gaston Sanchez)**

**Jan – May, Aug – Dec 2017**

*Statistics Department at University of California, Berkeley*

- Opportunity to connect with faculty and GSIs.
- Help students do homework and lab assignments in lab hours.
- Tutor R language.
- Experience in helping to educate students on a fundamental statistics topic.
- Enhanced critical thinking, communication, working in teams.
- Grade R lab assignments according to the professors' rubric.

### **Math Lab Tutor**

**May 2015 – Jul 2016**

*Math Lab at Diablo Valley College*

- Training students dropping in 1:1 or in groups for statistics, algebra, trigonometry, and calculus, 5 – 7 hours every week.
- Build great relationships with 200+ students, trying to encourage positive changes in them, in terms of math skills and habits.
- Help keep the math lab tidy and clean for students using the services there.

## Honors and Awards

- High Distinction in general scholarship level at graduation, May 2018.
- Honors to date and Dean's Honors list for Fall 2017.
- Honors to date for Spring 2017.
- Academic Honors for Fall 2014 – Spring 2016.
- Diablo Valley College Alpha Gamma Sigma Honor Society Permanent Member, in Spring 2016.
- Associate Student at Diablo Valley College (ASDVC) Perfect Attendance Trophy, in Spring 2016.
- Earned the 1st place at Diablo Valley College for the contest of AMATYC, in Spring 2016.
- Award of Excellence: Diversity Committee (ASDVC), in Fall 2015.
- National Founding Contest 2nd Place for Onbi project, in Dec, 2014.
- Placed in the top 7.3% in the Euclid contest, run by Waterloo University, in 2014.

- Placed in the top 15 candidates in my district, qualifying to go to Penn State for a national math contest, in 2014.

## **Skills and Languages**

- Proficient in R.
- Intermediate in Python, SQL, and Latex.
- Familiar with MATLAB, Java, CSS, HTML, C++, Linux, Git, and Mathematica.