

# Jin Kweon

437-240-1343 | [yjkweon24@berkeley.edu](mailto:yjkweon24@berkeley.edu) | <https://www.linkedin.com/in/jin-kweon-5b687a103>

## EDUCATION

### McGill University

MSc, Experimental Medicine

Montreal, QC

Jan 2023 – Present

### McGill University (Military service: 2019 – 2021)

PhD Candidate, Quantitative Life Science Withdrawn

Montreal, QC

Aug 2018 – Dec 2021

### University of California, Berkeley

Bachelor of Arts, Statistics (Focus: Mathematics / Economics) – Major GPA:4.00

Berkeley, CA

Aug 2016 – May 2018

- **Relevant Coursework:** Applied Machine Learning, Genomics for drug discovery and development, Statistical Bioinformatics, Linear Modeling, Multivariate Statistics, Linear Algebra, Structure and Interpretation of Computer Programs

## WORK & LEADERSHIP EXPERIENCE

### Cell type deconvolution research

Research MSc (single cell project)

Montreal, QC

Jan 2023 – Present

- Decomposed spatial transcriptomics (ST) at cell-type resolutions to gain comprehensive insights into spatial organization and uncover hidden biological information, such as cell functions and intricate interactions.
- Developed a method that uses deep neural network training on scRNA-seq and ST data, incorporating transfer learning from scRNA-seq reference data to ST data, and conducting iterative matrix factorizations.
- Implemented a software that demonstrated higher accuracy, resolution, robustness, efficacy, and scalability on two simulated datasets and three real datasets, outperforming eight other popular and commonly used deconvolution methods.

### AI drug design research

Research PhD (single cell project)

Montreal, QC

Sep 2021 – Nov 2023

- Introduced scBeacon, an innovative framework built upon a VQ-VAE framework, deep contrastive siamese network, and a greedy iterative strategy, to effectively pinpoint differential genes and identify the same cell population across different biological conditions forming cluster pairs.
- Identified the common modified VQ-VAE structure for both Control and cytarabine drug (AraC) that consistently represents already-defined (Leiden UMAP initialized by PAGA) full-space clusters effectively.
- Developed mapping networks between control clusters and AraC clusters using: 1) VAE with Zero-Inflated Negative Binomial distribution approximation, and 2) Contrastive learning.

### Adecco Personnel Pte Ltd

Apple Map Data Analyst (quality check research project)

Singapore

Jan 2022 – Dec 2022

- Our team evaluated data quality for pedestrian search results, driving routing results, map search results, and auto-complete results in Apple Maps on iOS and Mac, following specific rating guidelines, with a primary focus on map search accuracy in Korea.
- To enhance the user experience in Apple Maps, our team collected, analyzed, and debugged various map datasets and identified and resolved map bugs.
- Our team developed comprehensive map datasets that ensured higher relevance, name accuracy, address accuracy, and pin accuracy for each map query.

### Onbi, a smartphone application development company

Co-founder & CFO (smartphone application project)

Seoul, South Korea

Nov 2012 – June 2017

- Successfully led the "School Mom" project, resulting in our application being adopted by nearly 12,000 schools and gaining 50,000 users in Korea by conducting extensive surveys and researching trends and needs over several years.
- Organized an application that earned 2nd place in a South Korean National Founding Contest, with "School Mom" being recognized as influential in many schools nationwide.
- Managed diplomatic negotiations with major investors, securing a \$100,000 contract through effective cold-calling.
- Achieved a net profit of over \$10,000 within six months through meticulous budget management and consulting.

## SKILLS & LINKEDIN

- Proficient in R. Familiar with Python [pytorch, tensorflow, scanpy]. Basic knowledge of Java, SQL, CSS, HTML, MATLAB, Linux, C++

## PUBLICATIONS & ACKNOWLEDGEMENTS

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- Chenyu Liu, **Yong Jin Kweon**, Jun Ding (2023). scBeacon: single-cell biomarker extraction via identifying paired cell clusters across biological conditions with contrastive siamese networks. <https://arxiv.org/abs/2311.02594>
- Haber, J.R. (2020). Sorting Schools: A Computational Analysis of Charter School Identities and Stratification. Sociology of Education. <https://doi.org/10.1177/0038040720953218>