Jin Kweon, MSc

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SUMMARY

Analytical and results-driven data scientist with a strong foundation in data analysis and computational biology gained through a Master's in Experimental Medicine at McGill University and hands-on research experience. Skilled in developing scalable algorithms and statistical models to uncover biological insights. Seeking opportunities in data analytics, computational biology, or bioinformatics to apply expertise in Python, R, and machine learning to solve complex problems.

EDUCATION

McGill University Montreal, QC
MSc, Experimental Medicine – GPA:4.00 Jan 2023 – Dec 2024
Thesis: "DTractor: Advancing cell type deconvolution of spatial transcriptomics with deep neural network, transfer learning and matrix factorization"

McGill University (Military service: 2019 – 2021) Montreal, QC
PhD Candidate, Quantitative Life Science Withdrawn Aug 2018 – Dec 2021

University of California, Berkeley Berkeley, CA
Bachelor of Arts, Statistics (Focus: Mathematics / Economics) – Major GPA:4.00 Aug 2016 – May 2018

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

WORK & PROJECT & LEADERSHIP EXPERIENCE

Research on developing cell type deconvolution algorithms Montreal, QC
Computational Biologist (Research MSc – spatial project) Jan 2023 – Dec 2024

- Implemented the *DTractor* 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.
- Developed a method that uses deep neural network training on sc/snRNA-seq and spatial transcriptomics (ST) data, incorporating transfer learning from scRNA-seq reference data to ST data, and conducting iterative matrix factorizations.
- Decomposed ST at cell-type resolutions to gain comprehensive insights into spatial organization and uncover hidden biological information, such as cell functions and intricate interactions.

Research on developing AI drug design-related algorithms Montreal, QC
Research Analyst (single cell project) 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 pinpoints 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 Singapore
Apple Map Data Analyst (quality check research project) Jan 2022 – Dec 2022

- Contributed to 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.
- Enhanced the user experience in Apple Maps by playing a key role in collecting, analyzing, and debugging map datasets, as well as identifying and resolving map bugs.
- Collaborated to develop comprehensive map datasets that ensured higher relevance, name accuracy, address accuracy, and pin accuracy for each map query.

Onbi, a smartphone application development company Seoul, South Korea
Co-founder & CFO (smartphone application project) Nov 2012 – June 2017

- Successfully led the “School Mom” project, an app designed to provide news and services to parents, resulting in our application being adopted by nearly 12,000 schools and attracting 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

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

PUBLICATIONS & ACKNOWLEDGEMENTS

- **Yong Jin Kweon**, Chenyu Liu, Gregory Fonseca, Jun Ding (2025). DTractor: Enhancing Cell Type Deconvolution in Spatial Transcriptomics by Integrating Deep Neural Networks and Matrix Factorization [https://github.com/mcgilldinglab/DTractor]

- 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 [https://github.com/mcgilldinglab/scBeacon]

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