Boying Gong

boyinggong@berkeley.edu ◇ (510) 708-9381

EDUCATION

University of California, Berkeley *Ph.D. in Biostatistics*; GPA: 4.0/4.0 — Expected Aug. 2021
University of California, Berkeley *M.A. in Statistics*; GPA: 3.96/4.0 — 2017
Zhejiang University *B.S. in Statistics, Minor in Finance*; GPA: 3.92/4.0 — 2015

EXPERIENCE

Barclays Capital, New York
Statistical Modeling and Development Intern — June – Aug. 2019

- Evaluated the efficiency of the pricing and reward system in equity financing. Investigated models on optimizing funding efficiency.

Department of Statistics, UC Berkeley
Graduate Student Researcher. Advisor: Elizabeth Purdom — 2017 – Present

- Developed statistical methods and software for the analysis of high-dimensional genomic data. Focused on multimodal machine learning for integrating sequencing datasets and region identification from spatio-temporal epigenetic data.

Administrative Researcher — 2016 – 2017

- Co-developed the curriculum for a new course, Statistical Methods for Data Science, in Fall 2016 and taught the course in Spring 2017.

PUBLICATIONS

◇ *Methodology*

[1] **Boying Gong**, Yun Zhou, Elizabeth Purdom. "Cobolt: Joint analysis of multimodal single-cell sequencing data." *Preprint*, 2021.

- **Keywords**: multimodal machine learning, variational autoencoder

[2] Yun Zhou, **Boying Gong**, Tao Jiang, Ting Xu, Haiyan Huang. "Remote homologue representation in random heteropolymer with stochastic variational methods." *Submitted to Journal of American Statistical Association*, 2021.

- **Keywords**: variational inference, sequential data, expectation–maximization

[3] **Boying Gong**, Elizabeth Purdom. "MethCP: Differentially methylated region detection with change point models." *Journal of Computational Biology*, 2019.

- **Top 5%** paper RECOMB 2019
- **Keywords**: change point detection, time-course data, differential analysis

◇ *Application*

[4] **Boying Gong**, et al. "Single-cell RNA-seq reveals age-associated changes in olfactory stem cell regeneration." *Prepare for submission*, 2021.

[5] Brann, David H., · · · , **Boying Gong** et al. "Non-neuronal expression of SARS-CoV-2 entry genes in the olfactory system suggests mechanisms underlying COVID-19-associated anosmia." *Science Advances*, 2020.

- Uncovered the target cells for the loss of smell caused by Covid-19. Covered by NY Times, WSJ, and other news outlets.

[6] Lim, Marc, Vishnu Dharmaraj, **Boying Gong**, et al. "Estimating tumor vascular permeability of nanoparticles using an accessible diffusive flux model." *ACS Biomaterials Science and Engineering*, 2020.

SOFTWARE PACKAGES

MethCP: An R package for differentially methylated region detection (GitHub)
Cobolt: A Python package for jointly analyzing multimodal single-cell datasets (Github)

SELECTED HONORS

Block Grant Fellowship — UC Berkeley, 2018
Elizabeth Scott Memorial Award — UC Berkeley, 2017
Awarded annually to one M.A. student showing the greatest promise in statistical research.

SKILLS

Programming Proficient in R. Intermediate experience with Python and Git.
Languages Native speaker of Mandarin. Fluent in English. Beginner in French.