Lan Huong **Nguyen**

PhD Candidate · ICME, Stanford University

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Education

Stanford University — *Stanford, CA*

PhD in Computational and Mathematical Engineering (GPA 3.9) — *Sep. 2013 - Exp. Jun. 2019*

- Advised by Prof. of Statistics, Susan Holmes, susan@stat.stanford.edu

California Institute of Technology — *Pasadena, CA*

B.S. in Applied Mathematics and Economics (GPA 3.8) — *Sep. 2009 - Jun. 2013*

- Graduated with honors from the Department of Computing & Mathematical Sciences.

Experience

Graduate Research in Institute for Computational and Mathematical Engineering — *Stanford, CA*

Researcher in Holmes Lab — *Sep. 2014 - PRESENT*

- Design methods to infer latent structures in high-dimensional data, including techniques for dimensionality reduction and manifold learning, with a focus on their robustness and uncertainty quantification.
- Build statistical models for genomics data, in particular microbiome and single cell expression data.
- Apply techniques to study microbial community ecology using 16S amplicon, metagenomic, and metatranscriptomics data, and to determine a pseudo-temporal ordering of cells using scRNA-seq data.
- Develop `R` and `Shiny` software packages implementing the data analysis and visualization techniques.

Stanford University — *Stanford, CA*

CME/STATS 195 Course Instructor — *Fall '16, '17, '18*

- Designed an *Introduction to R* class, with more than 60 students, focusing on R application to data science.
- Taught material covering topics including: data processing, exploration, visualization and modeling.
- Created a class website: `http://cme195.github.io`.

Genentech — *South San Francisco, CA*

Intern in Department of Bioinformatics — *Jun. 2017 - Oct. 2017*

- Studied the role of COP1 in activation and repression kinetics of LPS induced genes.
- Developed a Bioconductor package for analyzing and visualizing short time-course RNA-seq data.

AOL Advertising — *Palo Alto, CA*

Intern in Large-Scale Analytics Team — *Jun. 2014 - Oct. 2014*

- Analyzed data on bids submitted to DoubleClick ad exchange auction consisting of ∼4-5 million entries per day.
- Identified factors affecting bids' winning rates and developed classification models for predicting successful bidding.
- Estimated market trends and winning price distribution. Designed Real Time Bidding algorithms.

Talentoday (Startup Company) — *Palo Alto, CA*

Consultanting Project — *Sep. 2012 - Feb. 2013*

- Investigated a possibility of shortening a questionnaire for a psychometric test consisting of 128 binary-choice questions.
- Worked with 30k+ user data to find the most predictive questions using QR factorization with column pivoting, and sparse CCA.
- Developed an answer-imputation technique using binomial matrix factorization.
- Reduced the number of questions by 30% while retaining high test accuracy.

Skills

Programming (Working knowledge): Python, R, Matlab; (Basic knowledge): C/C++, Spark, Scala, SQL

Languages English, Polish, Vietnamese

Honors & Awards

ICME Stanford University *Stanford, CA*

Senior Teaching Fellow *2017-2018*

Institute of Computational and Mathematical Engineering award for experienced teaching.

University of Chicago Midwest Trading Competition *Chicago, IL*

First Place *Apr. 2013*

The UChicago Midwest Trading Competition is the nation's premier algorithmic trading competition. Participants are asked to develop algorithms to make automated trading decisions. The competition tests technical programming skills, financial acumen, and ability to adjust based on algorithm performance.

Publications

L.H. Nguyen, S. Holmes. Diffusion t-SNE for manifold learning. *In preparation*, Fall 2018,

J.A. Grembi, L.H. Nguyen, T.D. Haggerty, C.D. Gardner, S.P. Holmes and J. Parsonnet. Gut microbiota plasticity correlated with sustained weight loss after a low-carb or low-fat dietary intervention. *In preparation*, Fall 2018,

L.H. Nguyen, S. Kummerfeld. 'TimeSeriesExperiment' package for analysis and visualization of short time course data. *Submitted to Bioconductor*, Fall 2018,

L.H. Nguyen, S. Holmes. Nine quick tips for effective dimensionality reduction. *Submitted to PLOS Computationa Biology*, October 2018,

L.H. Nguyen., S. Holmes. Bayesian Unidimensional Scaling for visualizing uncertainty in high dimensional datasets with latent ordering of observations. *BMC Bioinformatics*, September 2017, `https://doi.org/10.1186/s12859-017-1790-x`

P.H.T. Kamga, B. Li, M. McKerns, L.H. Nguyen, M. Ortiz, H. Owhadi, and T.J. Sullivan. Optimal uncertainty quantification with model uncertainty and legacy data. *Journal of the Mechanics and Physics of Solids, 72*, December 2014, `http://dx.doi.org/10.1016/j.jmps.2014.07.007`

Extracurricular Activities

Stanford Women in Mathematics, Statistics and Computational Engineering *Stanford, CA*

Financial officer *Mar. 2018 - Present*

- One of the founding members.
- Manage association's finances including budget planning and funding applications.
- Plan social, networking and career development events.

Stanford Polish Student Association *Stanford, CA*

Co-president, financial officer *Oct. 2016 - Jun. 2018*

- Planned the organization's growth and coordinated events, including hosting invited meetings with the former Polish President.
- Shared and promoted awareness about Polish social, cultural, and political events happening around the Bay Area.
- Managed association's finances including budget planning and funding applications.

Asian American Graduate Students Association *Stanford, CA*

Core Member *Jun. 2015 - Jun. 2016*

- Organized social, cultural and networking events for members.