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*
- Research in statistics and data analysis. Advised by Prof. 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

High-dimensional Data Statistics Graduate Research *Stanford, CA*
Researcher in Holmes Lab *Sep. 2014 - PRESENT*
- Design robust dimensionality reduction and manifold learning methods for inferring latent structures and associated uncertainties in high-dimensional data.
- Build statistical models for single cell RNA-seq and microbiome (16S, metagenomics, and metatranscriptomics) data.
- Develop `R` and `Shiny` software packages implementing new data analysis and visualization techniques.

R for Data Science Introductory Course *Stanford, CA*
Course Instructor for CME/STATS 195 *Fall '16, '17, '18*
- Created a short course on R application to data science covering topics such as: data wrangling, exploration, visualization and modeling.
- Taught a class of 60+ graduate and undergraduate students.
- Course details and syllabus can be found at: `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 DoubleClick ad exchange auction bid dat 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 *Palo Alto, CA*
Consultanting Project *Sep. 2012 - Feb. 2013*
- Worked with 30k+ user data to find the most predictive survey questions using QR factorization, and sparse CCA.
- Developed an answer-imputation technique using binomial matrix completion.
- Reduced the number of questions by 30% while retaining high test accuracy.

Skills

Programming (Working knowledge): Python, R, Matlab; (Basic knowledge): C++, Spark, Scala, SQL
Languages English, Polish, Vietnamese

Publications

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

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

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

L.H. Nguyen. 'TimeSeriesExperiment' package for analysis and visualization of short time course data. *Bioconductor* (2018) `https://doi.org/doi:10.18129/B9.bioc.TimeSeriesExperiment`

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*

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* (2014) `http://dx.doi.org/10.1016/j.jmps.2014.07.007`

Relevant Coursework

- numerical linear algebra,
- convex optimization,
- stochastic processes,
- probabilistic graphical models,
- distributed algorithms,
- statistical learning theory,
- Bayesian statistics,
- algorithms in advanced machine learning,
- theories of deep learning,
- statistical and machine learning methods for genomics

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.

Extracurricular Activities

Stanford Women in Mathematics, Statistics and Computational Engineering — *Stanford, CA*
CO-FOUNDER AND FINANCIAL OFFICER — *Mar. 2018 - Present*
Stanford Polish Student Association — *Stanford, CA*
CO-PRESIDENT, FINANCIAL OFFICER — *Oct. 2016 - Jun. 2018*
Asian American Graduate Students Association — *Stanford, CA*
CORE MEMBER — *Jun. 2015 - Jun. 2016*

Teaching Assistant

BIOS 221/STATS 366, Modern Statistics for Modern Biology — *Stanford, Jun. 2015 - Oct. 2015*
CS 261, Optimization and Algorithmic Paradigms — *Stanford, Mar. 2015 - Jun. 2015*
CME 106, Intro to Probability and Statistics — *Stanford, Jan. 2015 - Mar. 2015*
CME 200, Linear Algebra with Application to Engineering Computations — *Stanford, Oct. 2014 - Dec. 2014*