

Khoa Le Anh Huynh

Phone: (804) 397 8041 | Email: huynhk4@vcu.edu

Education

➤ **PhD Biostatistics**

Class of 2025

Department of Biostatistics, Virginia Commonwealth University School of Medicine, Virginia, USA

Thesis Advisor: Dr. Jinze Liu

GPA: 3.610/4.000

Courses: Mathematics Statistics, Biostatistics Methods, Survival Analysis, Longitude data, Advanced Inference, Clinical Trials, Adaptive Clinical Trials, Analysis of Biomedical Data, Biostatistics Computing, Time Series Analysis, Statistical Learning and Data Mining.

➤ **B.S Mathematics**

Class of 2020

Department of Mathematics Statistics, University of Cincinnati, OH, USA

Thesis Advisor: Dr. Xia Wang

Thesis title: "LASSO in Generalized Linear Regression Model"

Courses: Mathematics Statistics, Financial Mathematics, Time Series, Bayesian Analysis, Stochastic Process, Probability, Advance Linear Algebra, Differential Equation, Statistics Computing.

Experience

➤ **Research Assistant**, Virginia Commonwealth University, Virginia, USA

Supervisor to Dr. Jinze Liu – Professor

August 2022 – Present

- Engaged in weekly collaboration with Senior Manager at ADA Science & Research Institute as well as NIH, showcasing the ability to effectively communicate findings and progress.
- Pioneered a novel approach for characterizing cell type phenotypes within spatial omics data, shedding light on intricate cell-cell interactions within tumor environments.

➤ **Associate Biostatistics Consulting Laboratory**, Virginia Commonwealth University, Virginia, USA

Reported to Dr. Roy Sabo – Associate Professor

August 2021 - Present

- Supervised 5+ research projects from Principal Investigators in the School of Medicine per semester
- Collaborated with PhD student to analysis and revised report before sending it to Dr. Roy Sabo and Principal Investigators

➤ **Research collaborates**, Medical Genetics Institute, Ho Chi Minh City, Vietnam

Principal Investigator: Dr. Hoa Giang

January 2022 – Present

- Utilized the combined methylation and fragmentomic signatures of blood-based circulating tumor DNA in a multimodal deep-learning analysis to enable early detection of colorectal cancer, breast cancer, gastric cancer, liver cancer and lung cancer.
- Co-presented statistical modeling and machine learning strategies for early cancer detection project during funding round with R&D Deputy Lead, Senior Scientist and Chief Financial Officer.
- Authored and co-authored 4+ manuscripts published in peer-reviewed scientific journals, featuring both analysis results and statistical methodology.

➤ **Research Assistant**, Virginia Commonwealth University, Virginia, USA

Supervisor to Dr. Jinze Liu – Professor

August 2021 – August 2022

- Conducted comprehensive analysis of mRNA, proteomics, and scATAC data, establishing streamlined pipelines for data processing and interpretation.
- Proficiently executed multi-group differential expression studies, unveiling key insights into gene expression dynamics.
- Employed advanced techniques for pathway analysis and gene ontology enrichment, contributing to a deeper understanding of biological processes and their implications.

➤ **Research Assistant**, Virginia Commonwealth University, Virginia, USA

Supervisor Dr. Mikhail Dozmorov - Associate Professor

May 2021 – September 2021

- Chromosome conformation capture techniques such as Hi-C has shown that the genome of many species is organized and known as Topologically Associating Domains
- The preciseTAD algorithms utilized random forest model trained on high-resolution genome to identify position of boundary TADs at base-level resolution with probability close to one.
- Developed algorithm that classifying boundaries of TADs from probability less significant but prominent regions with high boundary likelihood.

Publications

1. Van Hoang, S., Minh Nguyen, K., Hoang Nguyen, A., **Le Anh Huynh, K.**, & Phuong Nguyen Tran, H. (2021). The value of the Global Registry of Acute Coronary Events and Gensini scores in predicting long-term outcomes in Vietnamese patients with non-ST-elevation acute coronary syndrome. *Biomedical Research and Therapy*, 8(2), 4233-4241. <https://doi.org/10.15419/bmrat.v8i2.662>
2. Jain, N., Hung, I. C., Kimura, H., Goh, Y. L., Jau, W., **Huynh, K.**, Panag, D. S., Tiwari, R., Prasad, S., Manirambona, E., Vasanthakumaran, T., Amanda, T. W., Lin, H. W., Vig, N., An, N. T., Uwiringiyimana, E., Popkova, D., Lin, T. H., Nguyen, M. A., Jain, S., ... Huy, N. T. (2022). The global response: How cities and provinces around the globe tackled Covid-19 outbreaks in 2021. *The Lancet regional health. Southeast Asia*, 4, 100031. <https://doi.org/10.1016/j.lansea.2022.100031>
3. Trang, V., **Huynh, K.**[#], Truong, H. T., Nguyen, H. T., Hoang, G. T., Dao, D. Q., Van Vu, U., Hassan, Z., Nguyen, M., & Truong, L. V. (2022). Predicting Anxiety and Depression Among Patients With COVID-19 in Concentrated Isolation at Medical Camps in Vietnam: A Descriptive Cross-Sectional Study. *Frontiers in psychiatry*, 13, 823586. <https://doi.org/10.3389/fpsyt.2022.823586>
4. Hoang, S. V., Nguyen, K. M., Huynh, T. M., **Huynh, K.**, Nguyen, P. H., & Tran, H. (2022). Chest X-ray Severity Score as a Putative Predictor of Clinical Outcome in Hospitalized Patients: An Experience From a Vietnamese COVID-19 Field Hospital. *Cureus*, 14(3), e23323. <https://doi.org/10.7759/cureus.23323>
5. Hoang, S. V., Nguyen, K. M., Le, H., Tung, A. T., Huynh, P., Le, T. V., Huynh, K., Vuong, N., Dhoubi, N., & Nguyen, H. T. (2022). The effects of the COVID-19 lockdown on patients with chronic cardiovascular disease in Vietnam. *Journal of infection in developing countries*, 16(2), 268–275. <https://doi.org/10.3855/jidc.15002>
6. Hoang, S., Pham, Q. D. D., Nguyen, K. M., **Huynh, K. L. A.**, Ngo, T. T., Le, H. N. M., & Tran, H. P. N. (2022). Association between Lipoprotein(a) Concentration and Adverse Cardiovascular Events in Vietnamese Patients with Acute Myocardial Infarction: An observational cohort study. *Biomedical Research and Therapy*, 9(1), 4873-4883. <https://doi.org/10.15419/bmrat.v9i1.724>
7. Hoang, S. V., Nguyen, H. P., Huynh, T. M., Vinh, K. T., **Huynh, K.**, Nguyen, K. M. (2022). Relationship between Asian-BMI classification and radiographic severity index in hospitalized COVID-19 patients, 7(4). <https://doi.org/10.32895/UMP.MPR.6.4.6>
8. Nguyen, H. T., **Khoa Huynh, L. A.**[#], Nguyen, T. V., Tran, D. H., Thu Tran, T. T., Khang Le, N. D., Le, N. T., Pham, T. N., Le, M. T., Quynh Pham, T. M., Nguyen, T. H., Van Nguyen, T. C., Nguyen, T. D., Tran Nguyen, B. Q., Phan, M. D., Giang, H., & Tran, L. S. (2022). Multimodal analysis of ctDNA methylation and fragmentomic profiles enhances detection of nonmetastatic colorectal cancer. *Future oncology (London, England)*, 18(35), 3895–3912. <https://doi.org/10.2217/fon-2022-1041>
9. Nguyen, V. C., Nguyen, T. H., Phan, T. H., Tran, T. T., Pham, T. T. T., Ho, T. D., Nguyen, H. H. T., Duong, M. L., Nguyen, C. M., Nguyen, Q. B., Bach, H. T., Kim, V. V., Pham, T. A., Nguyen, B. T., Nguyen, T. N. V., **Huynh, L. A. K.**, Tran, V. U., Tran, T. T. T., Nguyen, T. D., Phu, D. T. B., ... Tran, L. S. (2023). Fragment length profiles of cancer mutations enhance detection of circulating tumor DNA in patients with early-stage hepatocellular carcinoma. *BMC cancer*, 23(1), 233. <https://doi.org/10.1186/s12885-023-10681-0>
10. Pham, T. M. Q., Phan, T. H., Jasmine, T. X., Tran, T. T. T., **Huynh, L. A. K.**, Vo, T. L., Nai, T. H. T., Tran, T. T., Truong, M. H., Tran, N. C., Nguyen, V. T. C., Nguyen, T. H., Nguyen, T. H. H., Le, N. D. K., Nguyen, T. D., Nguyen, D. S., Truong, D. K., Do, T. T. T., Phan, M. D., Giang, H., ... Tran, L. S. (2023). Multimodal analysis of genome-wide methylation, copy number aberrations, and end motif signatures enhances detection of early-stage breast cancer. *Frontiers in oncology*, 13, 1127086. <https://doi.org/10.3389/fonc.2023.1127086>
11. Nguyen, V. T. C., Nguyen, T. H., Doan, N. N. T., Pham, T. M. Q., Nguyen, G. T. H., Nguyen, T. D., Tran, T. T. T., Vo, D. L., Phan, T. H., Jasmine, T. X., Nguyen, V. C., Nguyen, H. T., Nguyen, T. V., Nguyen, T. H. H., **Huynh, L. A. K.**, Tran, T. H., Dang, Q. T., Doan, T. N., Tran, A. M., Nguyen, V. H., ... Tran, L. S. (2023). Multimodal analysis of methylomics and fragmentomics in plasma cell-free DNA for multi-cancer early detection and localization. *eLife*, 12, RP89083. <https://doi.org/10.7554/eLife.89083>
12. Ellis, L. P., Hess, O., **Huynh, K. L. A.**, Bearman, G., Kang, L., & Doern, C. D. (2023). A comparison of severity of illness between the SARS-CoV-2 Omicron variant and Delta variant. *Antimicrobial stewardship & healthcare epidemiology : ASHE*, 3(1), e188. <https://doi.org/10.1017/ash.2023.453>

Note: # co-first author or first author

Submitted Manuscripts

1. Anxiety and its risk factors among non-Japanese residents living in Japan undergoing COVID-19 situation: a cross-sectional survey (**accepted** Plos One)
2. Small circular mRNA vaccines (**under-revision** in Nature Biomedical Engineering)
3. Polybacterial intracellular coinfection of epithelial stem cells in periodontitis (**under-review** in Nature Communication - <https://www.biorxiv.org/content/10.1101/2023.08.23.554343v1>)
4. GZMK+ CD8+ T cells Target a Specific Acinar Cell Type in Sjögren's Disease (under-revision in Nature - <https://www.researchsquare.com/article/rs-3601404/v1>)

Presentations

Contributed (Poster) Presentation

- 1) Massey Walter Lawrence research retreat, Massey Cancer Center (June 2023)
Title: TACIT: Threshold-based Assignment of Cell Types from Multiplexed Imaging DaTa by **Khoa Huynh**, Katarzyna M Tyc, Xufeng Qu, Bruno F Matuck, Quinn T Easter, Kevin M. Byrd, Jinze Liu.
Speaker: Khoa Huynh

Contributed (Oral) Presentation

- 1) Interdisciplinary Workshop for Undergraduate Students, SAMSI (May 2019)
Title: Characterizing and Predicting Alzheimer's Diagnosis by Xinyi, L., **Huynh, K.**, Tan, X., Donahey, F., Pan, L., and Zhu, L.
Speaker: Khoa Huynh, Lingnong Pan, Frederick Donahey, Lynn Zhu, and Xin Tan
- 2) The Undergraduate Mathematics Day, University of Dayton (October 2019)
Title: LASSO in Generalized Linear Regression Model by **Huynh, K.**, and Wang, X.
Speaker: Khoa Huynh
- 3) The 37th Annual Workshop on Mathematical Problems in Industry, Virtual (June 2021)
Title: Utilizing clinical data to predict the severity of presentation of chronic lung diseases by Bao, Y., **Huynh, K.**, Jacobs, L., Castro, I., Edwards, K., Kemajou-Brown, I., Konda, V., McGraw, V., Mohammadi, Z., Reed, H., Rumschitzki, D., Rush, W., Scruggs, S., Shemtaga, H., Sun, Y., Walt, H., and Williams, O.
Speaker: Victoria McGraw, Hanna Reed, and Hunter Walt
- 4) Biostatistics Student Research Symposium Program, Virginia Commonwealth University (September 2021)
Title: Improving machine learning modeling and predictions of 3D domain boundaries by **Huynh, Khoa**, and Dozmorov, M.
Speaker: Khoa Huynh
- 5) Biostatistics Student Research Symposium Program, Virginia Commonwealth University (September 2022)
Title: A comparison of gene co-regulation pattern analysis methods with multi-group RNA-seq data by **Huynh, K.**, Liu, J. and Tyc, K.
Speaker: Khoa Huynh
- 6) Biostatistics Student Research Symposium Program, Virginia Commonwealth University (September 2023)
Title: TACIT: Threshold-based Assignment of Cell Types from Multiplexed Imaging DaTa by **Huynh, K.**, Liu, J. and Tyc, K.
Speaker: Khoa Huynh
- 7) IADR/AADOCR/CADR General Session & Exhibition (March 2024)
Title: Multiomics analyses of polycellular and polymicrobial assemblages within human biofluids by Brittany Rupp, Theresa M. Weaver, Bruno Matuck, Yuan Li, Zhi Ren, Saima Wase, Katarzyna Tyc, Nikhil Kumar, **Khoa Huynh**, Quinn T. Easter, Ally Giunta, Mandy Bush, Ajay Gulati, Adam Kimple, Jinze Liu, Hyun Koo, Kevin M. Byrd.
Speaker: Brittany Rupp
- 8) IADR/AADOCR/CADR General Session & Exhibition (March 2024)
Title: Highly Multiplexed, Spatial Immunophenotyping of Peri-implantitis and Periodontitis by Akira Hasuike, Quinn T. Easter, Bruno Matuck, Benedikt Nilges, Maria del Mar Muniz Moreno, **Khoa Huynh**, Nikhil Kumar, Zhaoxu Chen, Katarzyna M. Tyc, Jinze Liu, Kang I. Ko, Kevin M. Byrd.
Speaker: Akira Hasuike
- 9) IADR/AADOCR/CADR General Session & Exhibition (March 2024)
Title: Co-Coordination of Immune Responses by Gingival Keratinocytes and Fibroblasts by Quinn T. Easter, Bruno Matuck, Akira Hasuike, Benedikt Nilges, Maria del Mar Muniz Moreno, **Khoa Huynh**, Nikhil Kumar, Zhaoxu Chen, Katarzyna M. Tyc, Jinze Liu, Kang I. Ko, Kevin M. Byrd.
Speaker: Quinn T. Easter
- 10) IADR/AADOCR/CADR General Session & Exhibition (March 2024)
Title: A Universal Method for Cryopreserving Biofluids to Scale Cell Analyses by Theresa M. Weaver, Brittany Rupp, Bruno Matuck, Saima Wase, Manuela da Silva Spinola, Katarzyna Tyc, Nikhil Kumar, **Khoa Huynh**, Quinn T. Easter,

Teaching Experience

- **Graduate Assistant**, Virginia Commonwealth University, Virginia, USA August 2020 – December 2021
 - Graded assignments on Biostatistics Research Methods I and II
 - Clarified concept and problems for student in class for over 70 students.
- **Learning Commons**, University of Cincinnati, Ohio, USA
 - Peer Tutoring* May 2018 – May 2020
 - Provided one-on-one coaching for students seeking help in Calculus, Probability, and Statistics
 - Facilitated in-class tutoring sessions with University of Cincinnati students.
 - Supplemental Review Session Leaders* January 2018 – May 2018
 - Led a mandatory 45-minute session once a week in a classroom of 20 students.
 - Prepared questions and practice problems for students
 - Attended mentor-leader meetings once a week to discuss improvements and give feedback.

Awards/Honors

Jacob B. and Veronica Schmitt Scholarship Endowment Fund
Harry S. Kieval Mathematics Fund
Undergraduate Research Award 2020
Undergraduate Research Award 2018
STEM Fellowship
Undergraduate Research Workshop Grant

Technical Skills

Statistical computing: R, Python, SAS
Publishing: LaTeX

Professional and Service

- Reviewer, Plos One Since 2022
- Reviewer, Human Genomics Since 2022
- Reviewer, Hindawi Since 2022