

Huyen N. Nguyen

Postdoctoral Research Fellow in Biomedical Informatics at Harvard Medical School

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POSITIONS

- Sept. 2023 – Present **Harvard Medical School** Boston, Massachusetts
Postdoctoral Research Fellow in Biomedical Informatics, advised by Dr. Nils Gehlenborg
- Developed visualization systems to help scientists efficiently explore and interact with genomics and nucleomics data, supporting sense-making and decision-making.
 - Constructed novel representations for genomics visualizations based on grammar specifications to enable multimodal retrieval.
 - Conducted benchmarking with Large Vision-Language Models (LVLMs) to evaluate their performance in chart understanding tasks.
- June 2022 – Aug. 2022 **University of New Hampshire** Durham, New Hampshire
Research Consultant
- Created a lightweight end-to-end visualization platform for qualitative time series, pipelining data wrangling, natural language processing, and visualization.
 - Designed and implemented the concept as an open-source application to allow users to create WordStream visualization without programming experience.
- Sept. 2018 – Aug. 2023 **Texas Tech University** Lubbock, Texas
Ph.D. Researcher
- Formulated visualization methods to identify events and detect outliers in time-series data and applied the abstract model in high-performance monitoring.
 - Developed WordStream with D3.js, a novel tool to visualize topic evolution in text data with 10K to 75K records per dataset; optimized the algorithm for faster rendering by 300%.
 - Collaborated with soil scientists to analyze data over 21 years of underground water; contributed to developing a dashboard monitoring groundwater decline.
- June 2016 – Aug. 2016 **Vietnam Communications Corp. (Top 5 Vietnam Tech Co.)** Hanoi, Vietnam
Big Data Engineer Intern
- Applied Hadoop and Apache Spark processing frameworks to perform distributed computing in large clusters. Implemented MapReduce framework to solve the file storage issues using Maven project in Java.

EDUCATION

- 2018 – 2023 **Texas Tech University** Lubbock, Texas
Ph.D. in Computer Science
Dissertation: “Interactive Visualization and Event Detection in Time-series Data.”
- 2013 – 2018 **Hanoi University of Science and Technology** Hanoi, Vietnam
B.S. in Information Systems, 5-year Engineer Program
Awards and Honors: Temasek Foundation Singapore Scholarship (Top 0.5%), Excellence Scholarship (Top 1%) for outstanding academic performance.

PATENTS

- 2024 **USPTO #63/673,489, U.S. Provisional Application, Pending**
Multiple Linked Visualization Authoring Interfaces
- 2023 **USPTO #18/888,680, U.S. Utility Patent, Pending**
System and Method for Behavioral Analysis of Suspicious Events and Malicious Applications in Computer Systems





GRANTS AND AWARDS

- 2024 **IEEE VIS**, Co-authored, Best Paper Honorable Mention Award
- 2020 **NASA, Visionary Grant**, administered by Gordon Research Conferences, Award #17-TWSC17-0055, Visualizing Qualitative Data for Science and Education, \$10,000 (with Kathleen Bowe, UNH; Caleb Trujillo, UW-Bothell; Kevin Wee, Purdue)
- 2020 **IEEE VAST Challenge, Honorable Mention**, IEEE Visual Analytics Science and Technology, for Detailed Analysis of Patterns of Misclassification.
- 2017 **Excellence Scholarship**, Hanoi University of Science and Technology, Vietnam, (top 1%) in recognition of outstanding academic performance.
- 2016 **Full Scholarship**, Temasek Foundation Singapore, (top 0.5%) for Community Action & Leadership Exchange.

PUBLICATIONS

- 2025 **20. Similarity Framework for Visualization Retrieval**, H. N. Nguyen and N. Gehlenborg. *OSF Preprint*.
DOI: [10.31219/osf.io/p47z5_v1](https://doi.org/10.31219/osf.io/p47z5_v1)
- 2025 **19. Multimodal Retrieval of Genomics Data Visualizations**, H. N. Nguyen, S. L'Yi, T. C. Smits, S. Gao, M. Zitnik, and N. Gehlenborg. *OSF Preprint*.
DOI: [10.31219/osf.io/zatw9_v1](https://doi.org/10.31219/osf.io/zatw9_v1)
- 2024 **18. Learnable and Expressive Visualization Authoring Through Blended Interfaces**, S. L'Yi, A. vd Brandt, E. Adams, H. N. Nguyen, and N. Gehlenborg. *IEEE VIS 2024*.
Best Paper Honorable Mention
Open Access. DOI: [10.1109/TVCG.2024.3456598](https://doi.org/10.1109/TVCG.2024.3456598)
- 2024 **17. Understanding Visualization Authoring Techniques for Genomics Data in the Context of Personas and Tasks**, A. vd Brandt, S. L'Yi, H. N. Nguyen, A. Vilanova, and N. Gehlenborg. *IEEE VIS 2024*.
Open Access. DOI: [10.1109/TVCG.2024.3456298](https://doi.org/10.1109/TVCG.2024.3456298)
- 2024 **16. Explaining Unfamiliar Genomics Data Visualizations to a Blind Individual through Transitions**, T. C. Smits, S. L'Yi, H. N. Nguyen, A. P. Mar and N. Gehlenborg. *AccessVis @ IEEE VIS 2024*.
DOI: [10.1109/AccessViz64636.2024.00010](https://doi.org/10.1109/AccessViz64636.2024.00010)

- 2023 **15. Interactive Visualization and Event Detection in Time-series Data** H. N. Nguyen. *Doctoral Dissertation in Computer Science, Texas Tech University*.
🔗 Texas Tech Library Repository: <https://hdl.handle.net/2346/96896>
- 2022 **14. MalView: Interactive Visual Analytics for Comprehending Malware Behavior** H. N. Nguyen, F. Abri, V. Pham, M. Chatterjee, A. S. Namin, T. Dang, *IEEE Access*.
🔗 Open Access. DOI: [10.1109/ACCESS.2022.3207782](https://doi.org/10.1109/ACCESS.2022.3207782)
- 2022 **13. Modie Viewer: Protein Beasts and How to View Them** H. N. Nguyen, C. Trujillo, T. Dang. *Bio+MedVis Challenges @ IEEE VIS 2022*.
🔗 PDF
- 2022 **12. WordStream Maker: A Lightweight End-to-end Visualization Platform for Qualitative Time-series Data** H. N. Nguyen, T. Dang, K. A. Bowe. *NLVIZ: Exploring Research Opportunities for Natural Language, Text, and Data Visualization, IEEE VIS 2022*.
🔗 PDF
- 2021 **11. Interactive Qualitative Data Visualization for Educational Assessment** H. N. Nguyen, C. M. Trujillo, K. Wee, K. A. Bowe. *International Conference on Advances in Information Technology*.
🔗 Open Access. DOI: [10.1145/3468784.3469851](https://doi.org/10.1145/3468784.3469851)
- 2021 **10. JobNet: 2D and 3D Visualization for Temporal and Structural Association in High-Performance Computing System** N. VT. Nguyen, H. N. Nguyen, J. Hass, T. Dang. *International Symposium on Visual Computing*.
🔗 DOI: [10.1007/978-3-030-90439-5_17](https://doi.org/10.1007/978-3-030-90439-5_17)
- 2021 **9. VisMCA: A Visual Analytics System for Misclassification Correction and Analysis** H. N. Nguyen, J. Gonzalez, J. Guo, N. VT. Nguyen, T. Dang. *VAST Challenge 2020, Mini-Challenge 2 Award: Honorable Mention for Detailed Analysis of Patterns of Misclassification*.
🔗 PDF
- 2021 **8. VixLSTM: Visual Explainable LSTM for Multivariate Time Series** T. Dang, H. N. Nguyen, N. VT. Nguyen. *International Conference on Advances in Information Technology*.
🔗 DOI: [10.1145/3468784.3471603](https://doi.org/10.1145/3468784.3471603)
- 2020 **7. Interface design for HCI classroom: from learners' perspective** H. N. Nguyen, V. T. Nguyen, T. Dang *International Symposium on Visual Computing*.
🔗 DOI: [10.1007/978-3-030-64559-5_43](https://doi.org/10.1007/978-3-030-64559-5_43)
- 2020 **6. AgasedViz: Visualizing groundwater availability of Ogallala Aquifer, USA** T. Dang, V. Pham, H. N. Nguyen, N. VT. Nguyen. *Environmental Earth Sciences*.
🔗 DOI: [10.1007/s12665-020-8851-6](https://doi.org/10.1007/s12665-020-8851-6)
- 2020 **5. DeepVix: Explaining long short-term memory network with high dimensional time series data** T. Dang, H. Van, H. N. Nguyen, V. Pham, R Hewett. *International Conference on Advances in Information Technology*.
🔗 DOI: [10.1145/3406601.3406643](https://doi.org/10.1145/3406601.3406643)

- 2019 **4. *WordStream: Interactive Visualization for Topic Evolution*** T. Dang, H. N. Nguyen, V. Pham. *EuroVis*.
 DOI: 10.2312/evs.20191178
- 2019 **3. *EQSA: Earthquake Situational Analytics from Social Media*** H. N. Nguyen, T. Dang. *IEEE Conference on Visual Analytics Science and Technology*.
 DOI: 10.1109/VAST47406.2019.8986947
- 2019 **2. *Visualization and explainable machine learning for efficient manufacturing and system operations*** D. D. Le, V. Pham, H. N. Nguyen, T. Dang. *Smart and Sustainable Manufacturing Systems, ASTM International*.
 DOI: 10.1520/SSMS20190029
- 2019 **1. *HackerNets: Visualizing Media Conversations on Internet of Things, Big Data, and Cybersecurity*** H. Van, H. N. Nguyen, R. Hewett, T. Dang. *IEEE International Conference on Big Data*.
 DOI: 10.1109/BigData47090.2019.9006417

TEACHING EXPERIENCE

- Summer 2024 **Mentor, Summer Institute in Biomedical Informatics** Harvard Medical School
 Managed a team of four mentors and one undergraduate student from MIT on benchmarking state-of-the-art large vision-language models (vLLM) on genomics data visualization, including text description and grammar-based specification.
- Fall 2021 – Spring 2023 **Instructor, CS 2413: Data Structures Lab** Texas Tech University
 Organized lab sessions; designed and graded weekly programming assignments for 70-140 students. Delivered lectures as a parallel part of the course.
- Jan 2023 **Guest Lecture: Advanced Data Visualization Class** University of Washington Bothell
 Delivered a lecture on “Interaction in Visualization” and hold a discussion on interactivity and accessibility in creating visualization with 15 students.
- Fall 2021 – Spring 2022 **Mentor, Tech Intrapreneurship Program** Texas Tech University
Scholarships in STEM, by the NSF and Texas Instruments
 Hold weekly discussions on professional development. Mentored a student on transferable skills in programming and engineering practice.
- Fall 2019 **Teaching Assistant, CS 4365: Software Engineering II, CS 5368: Intelligent Systems/Intro Artificial Intelligence, CS 5384: Logic for Computer Scientists**
 Graded assignments for 200 students; assisted with coursework questions. Presented tutorials on modeling and analysis with the User Requirements Notation.

TALKS AND PRESENTATIONS

- 2024 Understanding Visualization Authoring for Genomics Data through User Interviews (Abstract presented by Sehi L’Yi)
BioVis @ ISMB 2024 Montreal, Quebec, Canada

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| 2024 | Emerging Themes from a User Study Comparing Two Qualitative Data Visualization Platforms
(Poster presented by Kit Thompson, Jamie Serrano, and Jayrylle Jaylo)
<i>Student Academic Showcase, UW Bothell</i> | Bothell, WA |
| 2023 | How can data visualization and qualitative research enhance each other?
<i>The 2023 GRC on Visualization in Science and Education</i> | Lewiston, ME |
| 2023 | Interactive Visualization for Time-series Data
<i>Khoury Vis Lab, Northeastern University, 2023</i> | Boston, MA |
| 2022 | Interactive Visualization for Time-series Data
<i>HIDIVE (formerly Gehlenborg) Lab, Harvard Medical School, 2022</i> | Boston, MA |
| 2022 | Modie Viewer: Protein Beasts and How to View Them
<i>Bio+MedVis Challenge @ IEEE VIS 2022.</i> | Oklahoma City, OK |
| 2020 | Data Visualization and Applications
<i>The Advanced Wireless Communication Networks (AWCN) Laboratory, Thai Nguyen University of Technology.</i> | Thai Nguyen, Vietnam |
| 2019 | Visual Analytics and Virtual Reality
<i>Department of Psychological Sciences, Texas Tech University.</i> | Lubbock, TX |
| 2019 | WordStream: An Interactive Visualization for Topic Evolution
<i>The 2019 Gordon Research Conference (GRC) on Visualization in Science and Education.</i> | Lewiston, ME |
| 2019 | Interactive Visualization for Earthquake Analytics from Social Media Data
<i>Presented at the Scientific Computing meets Machine Learning and Life Sciences Workshop, Texas Tech University.</i> | Lubbock, TX |

SERVICES

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| 2023 – Present | Reviewer
VIS 2024 Full Papers, PacificVis 2025 Papers (Journal Track), VIS 2024 VISxAI, ACM Transactions on Computing Education, VIS 2023 Full Papers, VIS 2023 VisComm, VIS 2023 alt.vis. |
| 2022 – 2023 | Graduate Student Affiliate, STEM Center for Outreach, Research & Education
Introduced Virtual Reality (VR) to 20 Middle school students, instructed and helped them use VR tools to create models from their imagination. |
| Mar. 2022 | Reviewer, Undergraduate Research Conference
Reviewed five (5) research presentations by undergraduate students from a variety of disciplines. Provided feedback and recognition of their achievements. |
| Feb. 2022 | Judge, Graduate School Poster Competition
Provided feedback and scores to five (5) poster presentations from multiple research disciplines. Suggested improvements where applicable. |

- May – June **Student Recruiting Campaign, Dept. of Computer Science**
2021 Connected with 200+ prospective undergraduate students. Provided resources regarding scholarships, study plans, and financial aid.

CERTIFICATES

- 2022 Responsible Scholarship for Engineers
CITI Program, Credential ID 36664877
- 2019 International Teaching Assistant
The ITA Workshop, Texas Tech University.
- 2019 Human Subject Training, TTU Social and Behavioral Research
Human Research Protection Program, Texas Tech University.

SKILLS

Programming languages

JavaScript, Python, R, C, C++

- D3.js, HTML, and CSS for building interactive visualizations on the web.
- spaCy for natural language processing; OpenCV for image processing.
- Web development: Jekyll (Markdown, Liquid), React

Software

Premiere Pro, Adobe Audition, Git, MATLAB, \LaTeX

Research

Grant proposal writing, interviewing and conducting user studies.

Languages

English (fluent), Vietnamese (native).