

Huyen N. Nguyen

Computer Science Ph.D. Candidate • Interactive visualization systems and analysis
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Education

- 2018 – Present **Texas Tech University** Lubbock, Texas
Ph.D. Candidate in Computer Science
Research areas: *Visualization and visual analytics*. Advised by Dr. Tommy Dang.
Dissertation topic: *Time-embedded visualization for event detection in multivariate time-series data*.
- 2013 – 2018 **Hanoi University of Science and Technology** Hanoi, Vietnam
B.S. in Information Systems, 5-year Engineer Program
Honors: Temasek Foundation Singapore Scholarship (Top 0.5%), Excellence Scholarship (Top 1%) for outstanding academic performance.

Research Experience

- Sept. 2018 – Present **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 the monitoring tasks.
 - Developed interactive web-based visualizations for various domains, including bio-medical, qualitative, social media, and cybersecurity data.
- June 2022 – Aug. 2022 **University of New Hampshire** Durham, New Hampshire
Research Consultant
 - Developed concepts and designs to scale WordStream text visualization prototype to a practical application for the vast users
 - Programmed the interactive system and evaluated its usefulness with end-users
- Sept. 2018 – May 2019 **Texas Tech University** Lubbock, Texas
Research Assistant
 - Developed WordStream, a novel visual tool to visualize topic evolution in text data from 10,000 to 75,000 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 a monitoring dashboard to detect groundwater decline and depletion
- 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

Funded Grant

- 2019 **NASA**, administered by Gordon Research Conferences: Visionary Research Grant, Award #17-TWSC17-0055, Visualizing Qualitative Data for Science and Education, \$10,000, (with Kathleen Bowe, University of New Hampshire, Caleb Trujillo, University of Washington Bothell, and Kevin Wee, Purdue University)

Publications

- 2022 **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 **Modie Viewer: Protein Beasts and How to View Them** H. N. Nguyen, C. Trujillo, T. Dang. *Bio+MedVis Challenges @ IEEE VIS 2022*.
🔗 PDF
- 2022 **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 **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 **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 **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 **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 **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 **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 **WordStream: Interactive Visualization for Topic Evolution** T. Dang, H. N. Nguyen, V. Pham. *EuroVis*.
DOI: [10.2312/evs.20191178](https://doi.org/10.2312/evs.20191178)
- 2019 **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](https://doi.org/10.1109/VAST47406.2019.8986947)
- 2019 **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](https://doi.org/10.1520/SSMS20190029)
- 2019 **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](https://doi.org/10.1109/BigData47090.2019.9006417)

Awards and Honors

- 2020 **IEEE VAST Challenge, Honorable Mention** (IEEE Visual Analytics Science and Technology), *Detailed Analysis of Patterns of Misclassification*.
- 2020 **Excellence Scholarship** (Department of Computer Science, Texas Tech University), *in Recognition of Outstanding Academic Performance, \$5000*.

Talks and Presentations

- 2022 **Modie Viewer: Protein Beasts and How to View Them** Oklahoma City, Oklahoma
Bio+MedVis Challenge @ IEEE VIS 2022.
- 2020 **Data Visualization and Applications** Thai Nguyen, Vietnam
The Advanced Wireless Communication Networks (AWCN) Laboratory, Thai Nguyen University of Technology.
- 2019 **Visual Analytics and Virtual Reality** Lubbock, Texas
The Cognition & Cognitive Neuroscience Area of Experimental Psychology, Department of Psychological Sciences, Texas Tech University.
- 2019 **WordStream: An Interactive Visualization for Topic Evolution** Lewiston, Maine
Poster presentation at the Conference of Visualization in Science and Education, Gordon Research Conference.

Teaching Experience

Texas Tech University

- Fall 2021 – Summer 2022 **Lab Instructor, CS 2413: Data Structures**
Organized lab sessions; designed and graded weekly programming assignments for 70-100 students. Delivered lectures as a parallel part of the course.
- Fall 2021 – Spring 2022 **Mentor, Tech Intrapreneurship Program**
Scholarships in STEM, by the NSF and Texas Instruments
Hold weekly discussions on professional development. Mentored a student on transferable skills in practice and systematic approaches to programming and engineering.
- Fall 2019 **Teaching Assistant, CS 4365: Software Engineering II, CS 5368: Intelligent Systems, 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.

University Service

- Jan. 2022 – Present **STEM Center for Outreach, Research & Education – STEM CORE (Graduate Student Affiliate)**
Introduced Virtual Reality (VR) to 20 Middle school students, instructed and helped them use VR tools to create models from their imagination.
- Mar. 2022 **Undergraduate Research Conference (Reviewer)**
Reviewed five (5) research presentations by undergraduate students from a variety of disciplines. Provided feedback and recognition of their achievements.
- Feb. 2022 **Graduate School Poster Competition (Judge)**
Provided feedback and scores to five (5) poster presentations from multiple research disciplines. Suggested improvements where applicable.
- May – June 2021 **Student Recruiting Campaign, Department of Computer Science**
Connected with 200+ prospective undergraduate students. Provided resources regarding scholarships, study plan, and financial aid.

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.

Software

Git, MATLAB, L^AT_EX, Jekyll (Markdown, Liquid) for building static websites.

Research

Proposal writing, interviewing, and conducting user studies.

Certificates

- 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.