

# 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 high-performance monitoring.
  - Developed interactive web-based visualizations for various domains, including biomedical, 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

## 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)

## FELLOWSHIPS AND GRANTS

- 2020 **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)
- 2020 **Excellence Scholarship**, Department of Computer Science, Texas Tech University, in *in Recognition of Outstanding Academic Performance*, \$5000.

## TEACHING EXPERIENCE

- Fall 2021 – Present **Lab Instructor, CS 2413: Data Structures** Texas Tech University  
 Organized lab sessions; designed and graded weekly programming assignments for 70-100 students. Delivered lectures as a parallel part of the course.
- Jan 2023 **Guest Lecture, Advanced Data Visualization** 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, 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.

## AWARDS AND HONORS

- 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.

## 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.*

## 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 plans, 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,  $\LaTeX$ , Jekyll (Markdown, Liquid) for building static websites.

### **Research**

Proposal writing, interviewing and conducting user studies.