Huyen N. Nguyen

Research Fellow • Data Visualization for Genomics and Biomedical Informatics
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EDUCATION

2018 – 2023 **Ph.D. in Computer Science** Lubbock, Texas
Texas Tech University
Dissertation: *Interactive Visualization and Event Detection in Time-series Data.*

2013 – 2018 **B.S. in Information Systems, 5-year Engineer Program** Hanoi, Vietnam
Hanoi University of Science and Technology
Honors: Temasek Foundation Singapore Scholarship (Top 0.5%), Excellence Scholarship (Top 1%) for outstanding academic performance.

POSITIONS

Sept. 2023 – Present **Harvard Medical School** Boston, Massachusetts
Postdoctoral Research Fellow in Biomedical Informatics
Developing visualization systems to help scientists efficiently explore and interact with genomics and nucleomics data, supporting sense-making and decision-making in the biomedical domain.

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, 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

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

2022 **13. Modie Viewer: Protein Beasts and How to View Them** H. N. Nguyen, C. Trujillo, T. Dang. *Bio+MedVis Challenges @ IEEE VIS 2022.*
🔗 Preprint

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

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

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

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

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

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

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

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** 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.

GRANTS AND AWARDS

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 **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.

SERVICES

May 2023 – Present **Reviewer**
IEEE Conference on Visualization (IEEE VIS) Full Paper (1), VIS 2023 VisComm (1), VIS 2023 alt.vis (2).

Jan. 2022 – Present **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 2021 **Student Recruiting Campaign, Dept. of Computer Science**
Connected with 200+ prospective undergraduate students. Provided resources regarding scholarships, study plans, and financial aid.

INVITED TALKS

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.

2019 Interactive Visualization for Earthquake Analytics from Social Media Data — Lubbock, Texas
Poster presentation at the Scientific Computing meets Machine Learning and Life Sciences Workshop, 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.

Software
Git, MATLAB, LaTeX, Jekyll (Markdown, Liquid) for building static websites.

Research
Grant proposal writing, interviewing and conducting user studies.

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.