VUNG PHAM

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SUMMARY OF STATEMENT OF RESEARCH INTERESTS

My areas of expertise centered around data visualizations, data analytics, machine learning, and deep learning. My skill set holds a unique place in computer science because I have worked with different stages in a production-pipeline of a complete machine learning solution for various problem domains. They are 1) data exploration, 2) building machine learning/deep learning models, 3) interpreting/explaining the learned models, 4) reporting results to the public. My experience in writing funding proposals also prepared me to seek and develop a strong, externally funded research program.

SUMMARY OF TEACHING PHILOSOPHY STATEMENT

My curriculum development experience builds up my philosophy regarding student learning goals. Also, more than eight years of teaching experience equips me with a set of methods for enactment and assessment of these learning goals. Furthermore, my international educational background (I am a Vietnamese who studied my Bachelor in Indonesia, had my Master in Italy, and is taking my Ph.D. in the United States) and my teaching experience in an international collaboration program allow me to appreciate the importance of an inclusive learning environment. I love teaching and would like to learn and add more to my experience in my future endeavor to effectively educate students with knowledge, skills, and attitudes ready for the future workforce.

SUMMARY OF QUALIFICATIONS

- ***Teaching****:* More than eight years of teaching experience; 3 consecutive employee-of-the-year awards; and an overall 3.9/4.0 student evaluation score.
- ***Management and Curriculum Development****:* Led the academic department of the FPT Greenwich Collaboration Programs, FPT University, Hanoi, Vietnam; led a team to develop the curriculum for the first two years of this program, which is currently being delivered.
- ***Research****:* Won one best paper award, won an award in VAST 2018 Mini-Challenge 2, won honorable prizes in KDD 2020 Cup and BigData 2020 Cup challenges, and achieved Spirits of NSF I-Corps award, has one patent application in data visualization methods and devices.

- ***Writing proposal**:* Helped advisor write an NSF I-Corps proposal and executed it as an Entrepreneur Lead; helped advisor write a Partnership for Innovation – Technology Translation (PFI-TT) Proposal (to be submitted on Feb 13, 2021).
- ***Areas of expertise**:* Data Analytics, Data Visualizations, Machine Learning, and Deep Learning.

SKILLS

- Experience teaching various Computer Sciences courses in higher education institutions with a racially, culturally, and economically diverse student body.
- Strong interdisciplinary research profile in various domains related to data analytics, data visualizations, machine learning, and deep learning.
- Strong programming skills: PyThon, JavaScript, and Java.

EDUCATION

- Ph.D. Candidate, Computer Science Department, Texas Tech University, Texas, USA (GPA: 4.0/4.0)
- Master of Science in Computing Systems Engineering, Politecnico di Milano, Milan, Italy (GPA: 98/110)
- Bachelor of Science in Information Technology, President University, Indonesia (GPA: 3.65/4.0)

RESEARCH EXPERIENCE

June 2018 – present:

Position: Research Assistant at Interactive Data Visualization Lab, Computer Science Department, Texas Tech University, Lubbock, Texas, USA. **Expected graduation date: August 2021**.

Responsibilities/achievements: Researching on data analytics, data visualizations, machine learning, and deep learning; completed several projects and had one patent application, three peer-reviewed journals, one book chapter (currently under reviewed), and 24 peer-reviewed conference papers.

TEACHING AND SUPERVISING EXPERIENCE

2010 – June 2018:

Position: Lecturer, FPT Greenwich Collaboration Centre, FPT University, Hanoi, Vietnam

Responsibilities/achievements: Taught several Bachelor of Science (Honours) courses in Computing; consistently achieved high student evaluation scores across all teaching years (3.9/4.0); supervising undergraduate students.

Taught undergraduate courses:

1. Programming in Java
2. Procedural Programming in C

3. Object Oriented Programming
4. Data Structures and Algorithms
5. Database Design and Concepts
6. Database Engineering
7. Web Application Development
8. Mobile Application Development
9. Distributed Information Systems
10. Interaction Design
11. Project Design, Implementation and Evaluation

ADMINISTRATIVE EXPERIENCE

2013 – June 2018:

Position: Head of the Academic Department, FPT Greenwich Collaboration Centre, Bachelor of Science (Honours) in Computing collaboration program between University of Greenwich (UK) and FPT University (Vietnam).

Responsibilities/achievements: Managing lecturers and academic staff in the department; developed the curriculum for the first two years of this collaboration program, which is currently being delivered.

UNIVERSITY SERVICE

Texas Tech University, Lubbock, US

Part of the team that developed and currently operating the TTU SMS Recruitment Portal. This system helps Whitacre college of engineering (with 7 Departments) communicate with prospective students.

FPT University, Hanoi, Vietnam

Liaison to the International Partners for the FPT Greenwich Collaboration Program.

HONORS AND AWARDS

- **Award**: Shortlisted winners (top 10% among 121 participated teams) in IEEE BigData Cup 2020 – Global Road Damage Detection (https://rdd2020.sekilab.global/leaderboard/).
- **Award**: Honorable prize (7th place among 549 participants) in KDD Cup 2020 – Graph Adversarial Attack and defense (https://www.biendata.xyz/competition/kddcup_2020/winners/).
- **Award**: Spirits of NSF I-Corps, Bay Area National I-Corps, Spring 2020, for the team most exemplifying hard work, discipline, and intellectual honesty. Role: Entrepreneurial Lead.
- **Award**: Best paper, EnvirVis 2019, Workshop on Visualizations in Environmental Sciences, June 3, 2019, Porto, Portugal.

- **Award**: Strong Support for Exploratory Analysis, VAST Challenge 2018: Mini-Challenge 2, IEEE VIS Conference, Berlin, Germany.
- **Honorable Mention**: Representation of Small-Scale Temporal Patterns, VAST Challenge 2018: Mini-Challenge 3, IEEE VIS Conference, Berlin, Germany.
- **Full scholarship**: Ph.D. in Computer Science from Computer Science Department, Texas Tech University.
- **Full scholarship**: Master of Science in Computing Systems Engineering from Politecnico di Milano, Italy.
- **Full scholarship**: Bachelor of Science in Information Technology from President University, Indonesia.

FUNDINGS

Source of Support: NSF, Total Amount: $50,000, Period Covered: 04/2020-10/2020, Role: Entrepreneurial Lead, Achievement: I contacted and interviewed 102 customers during this NSF I-Corps program.

PROFESSIONAL REFERENCES

Dr. Tommy Dang (Ph.D. Advisor)
Email: tommy.dang@ttu.edu
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Address: 117 Avenue V, Lubbock, TX 79415

Dr. Rattikorn Hewett (Professor)
Email: rattikorn.hewett@ttu.edu
Phone: 650 804-9771
Address: Department of Computer Science, Texas Tech University, 2500 Broadway Lubbock, TX 79409

Dr. David Weindorf (Collaborator)
Email: weind1dc@cmich.edu
Phone: 225 223-2911
Address: Central Michigan University, 251 Foust Hall, Mount Pleasant, MI 48859

PATENT

1. **V. Pham**, T. Dang, and D. Weindorf, "Data visualization device and method (serial no.: Pct/us2020/050313, filing date: September 11, 2020, priority date: September 16, 2019)," Patent.

PEER-REVIEWED PUBLICATIONS, Google scholar: https://scholar.google.com/citations?user=too4ejgAAAAJ&hl=en

1. **Pham, V.,** Pham, C., & Dang, T. (2020, December). Road Damage Detection and Classification with Detectron2 and Faster R-CNN. In *2020 IEEE International Conference on Big Data (Big Data)*. IEEE.
2. Pham, C., **Pham, V.,** & Dang, T. (2020, December). Graph Adversarial Attacks and Defense: An Empirical Study on Citation Graph. In *2020 IEEE International Conference on Big Data (Big Data)*. IEEE.
3. Pham, C., **Pham, V.,** & Dang, T. (2020, October). GenExplorer: Visualizing and Comparing Gene Expression Levels via Differential Charts. In *International Symposium on Visual Computing* (pp. 248-259). Springer, Cham.
4. **Pham, V.**, Nguyen, N., & Dang, T. (2020, October). ContiMap: Continuous Heatmap for Large Time Series Data. In *2020 IEEE Visualization in Data Science (VDS)*. IEEE.
5. Dang, T., Van, H., Nguyen, H., **Pham, V.,** & Hewett, R. (2020, July). DeepVix: Explaining Long Short-Term Memory Network With High Dimensional Time Series Data. In *Proceedings of the 11th International Conference on Advances in Information Technology* (pp. 1-10).

6. **Pham, V.,** Nguyen, N. V., & Dang, T. (2020, July). Scagcnn: Estimating visual characterizations of 2d scatterplots via convolution neural network. In *Proceedings of the 11th International Conference on Advances in Information Technology* (pp. 1-9).
7. **Pham, V.,** & Dang, T. (2020). ScagnosticsJS: Extended Scatterplot Visual Features for the Web. In *Eurographics 2020 - Short Papers*. The Eurographics Association.
8. **Pham, V.,** Nguyen, V. T. N., & Dang, T. DualNetView: Dual Views for Visualizing the Dynamics of Networks. In *2020 EuroVis Workshop on Visual Analytics (EuroVA).* The Eurographics Association.
9. **Pham, V.,** Weindorf, D., & Dang, T. (2020). SoilScanner: 3D Visualization for Soil Profiling using Portable X-ray Fluorescence. In *2020 Workshop on Visualisation in Environmental Sciences (EnvirVis)*. The Eurographics Association.
10. Le, D. D., **Pham, V.,** & Dang, T. (2020, May). Securing autonomous system in multi-domain tactical environment. In *Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications II* (Vol. 11413, p. 1141320). International Society for Optics and Photonics.
11. Dang, T., **Pham, V.**, Nguyen, H. N., & Nguyen, N. V. (2020). AgasedViz: visualizing groundwater availability of Ogallala Aquifer, USA. *Environmental Earth Sciences*, *79*(5), 1-12.
12. Sun, F., Bakr, N., Dang, T., **Pham, V.,** Weindorf, D. C., Jiang, Z., ... & Wang, Q. B. (2020). Enhanced soil profile visualization using portable X-ray fluorescence (PXRF) spectrometry. *Geoderma*, *358*, 113997.
13. **Pham, V.**, Nguyen, N., Li, J., Hass, J., Chen, Y., & Dang, T. (2019, December). Mtsad: Multivariate time series abnormality detection and visualization. In *2019 IEEE International Conference on Big Data (Big Data)* (pp. 3267-3276). IEEE.
14. Pham, C., **Pham, V.,** & Dang, T. (2019, December). Solar Flare Prediction Using Two-tier Ensemble with Deep Learning and Gradient Boosting Machine. In *2019 IEEE International Conference on Big Data (Big Data)* (pp. 5844-5853). IEEE.
15. D. Le, **V. Pham**, H. Nguyen, and T. Dang. (2019, November). Visualization and Explainable Machine Learning for Efficient Manufacturing and System Operations. *Smart and Sustainable Manufacturing Systems* 3, no. 2 (2019): 127-147.
16. **Pham, V.**, & Dang, T. (2019, October). Outliagnostics: Visualizing Temporal Discrepancy in Outlying Signatures of Data Entries. In *2019 IEEE Visualization in Data Science (VDS)* (pp. 29-37). IEEE.
17. Nguyen, B. D., Nguyen, N. V., **Pham, V.**, & Dang, T. (2019, October). Visualization of Data from HACC Simulations by Paraview. In *2019 IEEE Scientific Visualization Conference (SciVis)* (pp. 31-32). IEEE.
18. Dang, T., Nguyen, H. N**., Pham, V**. (2019). WordStream: Interactive Visualization for Topic Evolution. In *EuroVis (Short Papers)* (pp. 103-107).
19. **Pham, V.,** & Dang, T. (2019). SOAViz: Visualization for Portable X-ray Fluorescence Soil Profiles. In *2019 Workshop on Visualisation in Environmental Sciences (EnvirVis)*. The Eurographics Association. (Best Paper Award)
20. **Pham, V.**, Nguyen, V. T., & Dang, T. (2018, December). IoTViz: Visualizing emerging topics in the internet of things. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 4569-4576). IEEE.
21. Nguyen, H. N., Nguyen, V. T., Nguyen, N. V., **Pham, V.**, & Dang, T. (2018, December). IoTNegViz: An interactive tool for visualizing negative aspects of IoT. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 4565-4568).
22. Nguyen, N. V., Nguyen, V. T., **Pham, V.**, & Dang, T. (2018, December). Finanviz: Visualizing emerging topics in financial news. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 4698-4704). IEEE.
23. Nguyen, V. T., **Pham, V.**, & Dang, T. (2018, December). Ufo_tracker: Visualizing ufo sightings. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 4352-4359). IEEE.
24. **Pham, V.**, & Dang, T. (2018, December). Cvexplorer: Multidimensional visualization for common vulnerabilities and exposures. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 1296-1301). IEEE.
25. Dang, T., Nguyen, N. V., & **Pham, V.** (2018, December). HealthTvizer: Exploring Health Awareness in Twitter Data through Coordinated Multiple Views. In *2018 IEEE International Conference on Big Data (Big Data)* (pp. 3647-3655). IEEE.
26. **Pham, V. V.**, & Dang, T. (2018, October). Mtdes: Multi-dimensional temporal data exploration system; strong support for exploratory analysis award in vast 2018, mini-challenge 2. In *2018 IEEE Conference on Visual Analytics Science and Technology (VAST)* (pp. 100-101). IEEE.

27. Dang, T., & **Pham, V. V**. (2018, October). Timematrix: Visual representation for temporal pattern detection in dynamic networks, vast 2018 mini-challenge 3. In *2018 IEEE Conference on Visual Analytics Science and Technology (VAST)* (pp. 108-109). IEEE.

CONFERENCE PRESENTATIONS

1. In *2020 EuroVis Workshop on Visual Analytics (EuroVA).* The Eurographics Association. May 25, 2020.
   Author presentation of the paper: DualNetView: Dual Views for Visualizing the Dynamics of Networks.
2. In *2020 IEEE International Conference on Big Data (Big Data)*. IEEE, December 2020.
   Author presentation of the paper: Road Damage Detection and Classification with Detectron2 and Faster R-CNN.
3. In *2020 IEEE Visualization in Data Science (VDS)*. IEEE. October 2020.
   Author presentation of the paper: ContiMap: Continuous Heatmap for Large Time Series Data.
4. In *11th International Conference on Advances in Information Technology, July 1-3, 2020.*
   Author presentation of the paper: Scagcnn: Estimating visual characterizations of 2d scatterplots via convolution neural network.
5. In *2020 Workshop on Visualisation in Environmental Sciences (EnvirVis)*. The Eurographics Association. May 25, 2020.
   Author presentation of the paper: SoilScanner: 3D Visualization for Soil Profiling using Portable X-ray Fluorescence.
6. In *Eurographics 2020, May 25-29, 2020.*
   Author presentation for the paper: ScagnosticsJS: Extended Scatterplot Visual Features for the Web.
7. In *2018 IEEE Conference on Visual Analytics Science and Technology (VAST)*, 21-26 October 2018.
   Author presentation of the paper: MTDES: Multi-dimensional temporal data exploration system
   Author presentation of the paper: Timematrix: Visual representation for temporal pattern detection in dynamic networks

PROFESSIONAL DEVELOPMENT

- **International Teaching Assistant Certificate:** This intensive three-week workshop assesses the participant's English proficiency. I passed and am APPROVED to teach at Texas Tech University.
- **Google TensorFlow Developer Certificate:** This exam covers fundamental, practical machine learning skills through the building and training of models using TensorFlow.
- **Self-taught Machine Learning and Deep Learning Pathway:** As part of my life-long learning journey, I designed this pathway with online courses/specializations to update myself on machine learning and deep learning:
  1. Mathematics for Machine Learning (Coursera Specialization, completed)
     Specialization Info: https://www.coursera.org/specializations/mathematics-machine-learning
  2. Machine Learning (Coursera Course, completed)
     Course Info: https://www.coursera.org/learn/machine-learning/
  3. Deep Learning (Coursera Specialization, completed)
     Specialization Info: https://www.coursera.org/specializations/deep-learning
  4. TensorFlow (Two Coursera Specializations, completed)
     Specialization 1 Info: https://www.coursera.org/professional-certificates/tensorflow-in-practice
     Specialization 2 Info: https://www.coursera.org/specializations/tensorflow-advanced-techniques

5. Deep Neural Networks with PyTorch (Coursera Course, completed)

   Course Info: https://www.coursera.org/learn/deep-neural-networks-with-pytorch
6. Natural Language Processing (Coursera Specialization, in progress)

   Specialization Info: https://www.coursera.org/specializations/natural-language-processing
7. Generative Adversarial Neural Networks (Coursera Specialization, in progress)

   Specialization Info: https://www.coursera.org/specializations/generative-adversarial-networks-gans
8. AI for Medicine (Coursera Specialization, in progress)

   Specialization Info: https://www.coursera.org/specializations/ai-for-medicine#courses
9. AI in Healthcare (Coursera Specialization, in progress)

   Specialization Info: https://www.coursera.org/specializations/ai-healthcare#courses