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DOAN NGUYEN

I am a dedicated educator and researcher with a PhD and a strong foundation in Information Technology and Mathematics. Over 20 years, I have accumulated significant experience in lecturing, coordinating, and designing courses for both postgraduate and undergraduate levels. Furthermore, my research spans various disciplines such as Machine Learning, Data Science, Cybersecurity, and Recommender Systems, reflecting my dedication to advancing knowledge and contributing to the academic community through a strong record of publications.

EDUCATION

Mar. 2017 **Doctor of Philosophy**, Japan Advanced Institute of Science and Technology, Japan.
Dissertation A Study on Recommender Systems Based on Dempster-Shafer Theory

Feb. 2007 **Master of Engineering**, Ho Chi Minh City University of Technology, Vietnam.
Thesis Digital Watermarking for Vietnamese Documents

Feb. 2002 **Bachelor of Engineering**, Vietnam.
Thesis Developing an Application for Managing Genealogy Using Visual Prolog

WORK EXPERIENCE

Jul. 2023–Present **Full-time Lecturer**, *Faculty of Higher Education*, Holmes Institute, Australia.

Jul. 2022–Jun. 2023 **Casual Lecturer**.

At Holmes Institute, I served as a casual lecturer for one year and have been working as a full-time lecturer since July 2023.

Accomplishments

- Developed one postgraduate subject for the Master of Information Systems program:
  - Predictive Analytics (HI6039)
- Coordinated and lectured ten postgraduate subjects for the Master of Information Systems program:
  - Business Analytics Fundamentals (HI6037)
  - Business Intelligence and Knowledge Management (HS3041) (*Coordinated only*)
  - Leveraging IT for Business Advantage (HI6032) (*Lectured only*)
  - Predictive Analytics (HI6039)
  - Artificial Intelligence and Machine Learning (HI6040)
  - Systems Analysis and Design (HI5030)
  - Enterprise Information Systems(HI6034)
  - Database Design (HI5033)
  - Information Systems Project Management (HI5029)
  - Professional Issues in IS Ethics & Practice (HI5031) (*Lectured only*)
- Coordinated and lectured seven undergraduate subjects for the Bachelor of Information Systems program:
  - Strategic Information Systems Management (HS3021) (*Lectured only*)
  - Information Technology for Business (HC1041) (*Lectured only*)
  - Web Design (HS1021)
  - Database Design and Use (HS2021)
  - Introduction to Programming (HS1031)
  - Data Communications and Networks (HS1011)
  - Human-Computer Interaction (HS2031)

Feb. 2023–Jun. 2023 **Casual Lecturer**, *Department of Computer Science & Computer Engineering*, La Trobe University, Australia.

At La Trobe University, I worked as a casual lecturer for one semester.

Accomplishments

- Lectured four postgraduate subjects:
  - Artificial Intelligence: Logic and Reasoning (CSE4ALR)
  - Deep Learning (CSE5DL)
  - Data Mining (CSE5DMI)
  - Big Data Management on the Cloud (CSE5BDC)

Aug. 2021–May 2022 **Full-time Postdoc**, *La Trobe Cybersecurity Research Hub*, The Department of Computer Science and Information Technology, La Trobe University, Australia.

During this period at La Trobe University, I worked on the project entitled "Anomaly Detection in IoT for Satellite Security Using Blockchain".

Accomplishments

- Developed a new solution for applying Blockchain and Multi-Centre Federating Learning to detect anomalies in the IoT system communicating through satellites.
- Developed a new method to select IoT devices to join the Federated Learning process.
- Developed a new heuristic method to aggregate a Federated Machine Learning model from a list of Machine Learning models trained locally on selected IoT devices.
- Conducted the experiments using Python and TensorFlow.

Apr. 2018–Mar. 2020 **Full-time Postdoc**, *Data Science Group*, National Institute for Materials Science, Japan.

At National Institute for Materials Science, I participated in the project entitled "Materials Research by Information Integration Initiative (MI^2I)".

Accomplishments

- Developed a new framework, called Two-Body Approximation, for flexibly designing and generating descriptors to represent crystalline materials.
- Applied K-Nearest Neighbors and Kernel Ridge Regressions for predicting formation energies of materials presented by the descriptors which were generated by the framework.
- Developed a new solution to predict the high-entropy state of random alloys using Dempster-Shafer theory and popular Machine Learning techniques in classification.
- Conducted the experiments by using Python, scikit-learn, and Pymatgen.

May 2017–Mar. 2018 **Full-time Postdoc**, *Graduate School of Advanced Science and Technology*, Japan Advanced Institute of Science and Technology, Japan.

At Japan Advanced Institute of Science and Technology, I also joined in the project MI^2I.

Accomplishments

- Developed a new descriptor, called Extended Orbital Field Matrix, for representing crystalline materials.
- Developed another new descriptor based on chemical bonds among atoms for representing crystalline materials.
- Applied K-Nearest Neighbors and Kernel Ridge Regressions for predicting formation energies of materials presented by the developed descriptors.
- Conducted experiments by using Python, scikit-learn, and Pymatgen.

May 2007–Mar. 2013 **Full-time Lecturer**, *Faculty of Computer Science and Engineering*, Ho Chi Minh City University of Technology, Vietnam.

At Ho Chi Minh City University of Technology, I lectured and supervised undergraduate students and joined in doing research.

Accomplishments

- Lectured six undergraduate subjects: Database Systems, Electronic Commerce, Data Structures and Algorithms, Algorithms Analysis and Design, Programming Methodology, and Introduction to Information Technology.
- Supervised undergraduate students on their projects and theses.
- Worked as the chief investigator on a project aimed at developing a new solution for applying watermarking techniques to a vector-based 2D map.
- Worked as a co-chief investigator on a project aimed at developing a solution for the copyright protection of books written in the Vietnamese language.

Dec. 2004–Jan. 2007 **Full-time Lecturer**, *NIIT Hoa Sen*, Hoa Sen University, Vietnam.

At Hoa Sen University, I lectured and supervised students who were in the International Programmer Training Program and pursuing D-NIIT certificate.

Feb. 2002–Nov. 2004 **Full-time Developer**, *Center for Developing Information Technology and Geographic Information System*, Ho Chi Minh City University of Technology, Vietnam.

During the period, I worked as a developer for projects in the field of Geographic Information Systems.

COMPUTER SKILLS

AI/ML Google Colab, Jupyter Notebook, TensorFlow, PyTorch, GitHub.

Programming Languages Python, C++, C, C#, SQL, Visual Prolog

DBMSs Microsoft SQL Server, Oracle, PostgreSQL

SELECTED PUBLICATIONS

2024 Nguyen, V.D., Diro, A.A., Chilamkurti, N.K., Heyne, W. and Phan, K.T., "A Novel Blockchain-Enabled Federated Learning Scheme for IoT Anomaly Detection," *IEEE Transactions on Emerging Topics in Computational Intelligence* (Major revision).

2024 Pham, D., Phan, K.T., Abuadbba, S., Nguyen, V.D., Chilamkurti, N.K., "Split Learning without Local Weight Sharing to Enhance Client-side Data Privacy," *IEEE Transactions on Dependable and Secure Computing* (Major revision).

2021 Diro, A.A., Chilamkurti, N.K., Nguyen, V.D. and Heyne, W., "A Comprehensive Study of Anomaly Detection Schemes in IoT Networks Using Machine Learning Algorithms," *Sensors*, vol. 21, no. 24, pp. 8320.

2020 Nguyen, V.D., Huynh, V.N. and Sriboonchitta, S., "Integrating Community Context Information into a Reliably Weighted Collaborative Filtering System Using Soft Ratings," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 50, no. 4, pp. 1318–1330.

2019 Nguyen, V.D., Pham, T.L and Dam, H.C., "Application of Materials Informatics on Crystalline Materials for Two-Body Terms Approximation," *Computational Materials Science*, vol. 166, pp. 155-161.

2018 Pham, T.L., Nguyen, D.N., Nguyen, V.D., Kino, H., Miyake, T. and Dam, H.C., "Learning Structure-Property Relationship in Crystalline Materials: A Study of Lanthanide-Transition Metal Alloys," *The Journal of Chemical Physics*, vol. 148, no. 20, pp. 204106.

2017 Nguyen, V.D. and Huynh, V.N., "Using Community Preference for Solving Sparsity and Cold-Start Problems in Collaborative Filtering Approach," *Electronic Commerce Research and Applications*, vol. 26, pp. 101-108.

2017 Nguyen, V.D. and Huynh, V.N., "Two-Probabilities Focused Combination in Recommender Systems," *International Journal of Approximate Reasoning*, vol. 80, pp. 225-238.

REFERENCES

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