Binh Minh Tran

Contact Information

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Education

2027 – 2031 (expected) **Doctor of Philosophy, Medical Science**
Computational RNA Biology, The Australian National University.
Supervisor: Prof Eduardo Eyras (supervision and funding confirmed).

2023 – 2026 **Bachelor of Advanced Computing (Honours)**
Computational Data Science, The University of Sydney.
Weighted average mark (WAM) **82/100** (Distinction).
Thesis: *Multimodal Graph Learning for Breast Cancer Survival Prediction*.
Supervisor: A/Prof Xiuying Wang.

2019 – 2022 **High School Diploma, Specialised Physics Programme**
HUS High School for Gifted Students, VNU University of Science, Hanoi.
GPA **9.5/10**; outstanding academic achievement award, 2019–2022.

Research Interests

Machine Learning **AI in Medicine** **Computational Biology** **RNA Biology** **Cancer Genomics**

Publications

Applicant's name in bold. † Equal contribution.

Peer-Reviewed Conference Papers

[C4] **B. M. Tran**, L. Zhang, X. Wang. HiNT-Surv: Hierarchical Niche-Aware Multimodal Survival Prediction from Imaging Mass Cytometry, Clinicopathologic Variables, and Genomic Data. *IEEE Symposium on Computational Intelligence in Health and Medicine (CIHM)* at IEEE SSCI, 2027. Accepted (full paper)

[C3] **B. M. Tran**†, V. A. Nguyen†, L. H. Nguyen, Q. A. Dang, N. M. H. Nguyen, Q. A. Nguyen, H. N. Tran, T. B. V. Nguyen, D. H. Tran. A Multimodal Deep Learning Framework for Breast Cancer Receptor Status Prediction.
International Symposium on Integrated Uncertainty in Knowledge Modelling and Decision Making (IUKM), Springer LNAI vol. 16918, pp. 102–114, 2026. [DOI] [PDF]

[C2] L. H. Nguyen, **B. M. Tran**, D. H. Tran. A Variational Graph Neural Network with Multi-view Integration for Predicting lncRNA–Disease Associations.
Asian Conference on Intelligent Information and Database Systems (ACIIDS), Springer CCIS vol. 2964, pp. 355–369, 2026. [DOI]

[C1] L. H. Nguyen, **B. M. Tran**, D. H. Tran. Dual-Stream Contrastive Graph Representation Learning for lncRNA–Disease Association Prediction.
FISU Joint Conference on Artificial Intelligence (FJCAI), pp. 151–158, 2026. [ISBN]

Publications — Continued

Peer-Reviewed Journal Articles

[J1] T. B. V. Nguyen, N. M. H. Nguyen, **B. M. Tran**, Q. A. Dang, V. A. Nguyen. A Deep Learning Model Supporting Classification and Localisation of Breast Tumour Lesions on Ultrasound. *Journal of Medical Research*, Hanoi Medical University, 2026 (in Vietnamese). Accepted

Manuscripts Under Review

[M3] **B. M. Tran**, V. A. Nguyen, Q. A. Dang, N. M. H. Nguyen, H. N. Tran, D. H. Tran. Hierarchical Graph Learning with Multimodal Distillation for Breast Cancer Survival Prediction. *Asian Conference on Intelligent Information and Database Systems (ACIIDS)*, 2027. Under review

[M2] **B. M. Tran**†, V. A. Nguyen†, Q. A. Dang, N. M. H. Nguyen, Q. A. Nguyen, H. N. Tran, D. H. Tran, T. B. V. Nguyen. Development and Cross-Cohort Evaluation of a Multimodal Deep-Learning Model for ER, PR and HER2 Status Classification in Breast Cancer. *Scientific Reports*, 2026. Under review [bioRxiv]

[M1] **B. M. Tran**, D. Q.-A. Nguyen, M.-H. Ha, D. M. Pham, T. D. Nguyen, Q. B. Doan, D. T. Doan, M.-A. Nguyen, D.-T. Nguyen, O. T.-C. Chen. H2F-GCN: Skeleton-based Hypergraph Frequency Coordinate Fusion Graph Convolution Network for Physical Rehabilitation Assessment. *IEEE Access*, 2026. Under review

Research Experience

Oct 2026 – Present
Visiting Researcher, Centre for Computational Biomedical Sciences, John Curtin School of Medical Research, The Australian National University, Canberra, Australia.
Host: Prof Eduardo Eyras.
- Investigating how multimodal deep learning can incorporate epitranscriptomic evidence into genetic variant interpretation.

Feb 2026 – Oct 2026
Honours Researcher, School of Computer Science, The University of Sydney, Australia.
Supervisor: A/Prof Xiuying Wang.
- Designed NIMSurv for interpretable breast-cancer survival prediction using hierarchical graphs, clinical data and imaging mass cytometry.
- Evaluated NIMSurv on 544 METABRIC patients, achieving Uno's C of **0.703** for 10-year disease-specific survival under patient-level cross-validation.
- Developed HiNT-Surv, an earlier model, accepted at IEEE SSCI 2027 [C4].

Dec 2025 – Present
Research Collaborator, Department of Obstetrics & Gynaecology, Hanoi Medical University, Vietnam.
- Developed a multimodal, multitask model integrating clinical data, H&E whole-slide images and tumour RNA-seq to predict ER, PR and HER2 status in breast cancer [C3].
- Cross-validated on 937 TCGA-BRCA cases and reached an external macro AUC of **0.931** on 122 CPTAC-BRCA cases without retraining.

Dec 2025 – Mar 2026
Research Assistant, Center for Biomedical and Pharmaceutical Research, Vietnam Academy of Science and Technology (VAST), Vietnam.
- Applied reproducible NGS workflows (quality control, assembly, gene prediction, annotation) to mutation and microbial gene-function analyses.

Dec 2024 – Dec 2025
Research Assistant, Hanoi University of Industry, Vietnam.
Supervisor: A/Prof Dang Hung Tran.
- Developed and evaluated two graph-learning models for lncRNA–disease association prediction, a multi-view variational graph neural network [C2] and a dual-stream contrastive model [C1], and drafted both manuscripts.

Research Grants

Dec 2026 – Nov 2027

AI Model for Individualised Post-Test Probability after High-Risk NIPT
Department of Obstetrics & Gynaecology, Hanoi Medical University.
Role: Co-principal investigator, with Nguyen Van An.
Supervisor: Nguyen Thi Bich Van, MD, PhD.
Funding: VND 10,000,000 (Hanoi Medical University).
Aim: Develop and calibrate an individualised probability model for confirmed trisomy 21, 18 or 13 following a high-risk NIPT result, using signed Z-score, fetal fraction and assay platform in retrospective high-risk referrals.

Presentations

Sep 2026

Oral presentation, 12th International Symposium on Integrated Uncertainty in Knowledge Modelling and Decision Making (IUKM 2026), Quy Nhon, Vietnam.
A Multimodal Deep Learning Framework for Breast Cancer Receptor Status Prediction [C3].

Jun 2026

Oral presentation, Vietnamese Young Intellectuals Forum in Australia, University of Technology Sydney, Australia.
An Interpretable Multimodal Deep Learning Framework for Breast Cancer Receptor Status Prediction.

Oct 2025

Invited talk (in Vietnamese), National Student Science Workshop on Cloud Computing, Quantum Computing and Big Data, Vietnam National Union of Students, Ho Chi Minh City, Vietnam.
The Power of Connecting Vietnamese Knowledge: Young People's Aspirations in the Student Network for Cloud Computing, Big Data and Quantum Computing.

Honours and Awards

- **Fourth Prize**, 23rd Youth Science and Technology Conference of the Vietnamese Health Sector, 2026
- **Top 10 Finalist**, AURORA Scientific Research Awards (NIC-AU), 2026
- **Outstanding Student Award**, Embassy of Vietnam in Australia, 2026
- **Second Prize**, Vietnamese Young Intellectuals Forum in Australia, 2026
- **Third Prize**, Youth Science and Technology Conference, Hanoi Medical University, 2026
- **Certificate of Merit**, Central Committee of the Ho Chi Minh Youth Union, 2026
- **Certificate of Merit**, Vietnam National Union of Students, 2026
- **January Star Award**, Vietnam National Union of Students, 2025
- **Sydney International Student Award**, The University of Sydney, 2023

Industry Experience

Dec 2024 – Mar 2025

Data Engineer Intern, Viettel Software, Hanoi, Vietnam.
Built and maintained Python/SQL ETL pipelines; contributed to data-quality monitoring, schema design and pipeline/query performance tuning.

Jun – Jul 2024

Data Engineer Intern, Agribank, Hanoi, Vietnam.
Supported ETL into reporting systems and contributed to dashboards and operational reports for internal stakeholders.

Research Skills

Machine learning	Graph neural networks, multimodal fusion, multiple-instance learning, self-supervised and contrastive learning, Cox and discrete-time survival models
Biomedical data	H&E whole-slide images, imaging mass cytometry, clinical data, RNA-seq and gene expression, NGS preprocessing and annotation, lncRNA–disease networks
Evaluation	Patient-level nested cross-validation, bootstrap confidence intervals, paired tests with multiple-testing correction, effect sizes, calibration, external validation
Programming	Python (PyTorch, PyTorch Geometric, scikit-learn), R, SQL, Bash
Tools	Git, Linux, LaTeX

Leadership and Service

Mar 2026 – Present	**Executive Team Member** (data and cloud computing), Vietnam–Australia Innovation Network (NIC-AU).
Jul 2025 – Present	**Chief of Office** (previously Deputy Head of Communications), Vietnamese Students' Association in Australia (SVAU).
Jan 2023 – Mar 2026	**Permanent Vice President** (previously Vice President and member), United Associations of Vietnamese Students in NSW (UAVS-NSW).

Languages

Vietnamese (native), English (IELTS 7.0), French (DELF A1)

References

Referee 1	**Associate Professor Xiuying Wang** School of Computer Science, The University of Sydney, Australia. Email: xiu.wang@sydney.edu.au
Referee 2	**Associate Professor Dang Hung Tran** Hanoi University of Industry, Vietnam. Email: hungtd@haui.edu.vn
Referee 3	**Professor Eduardo Eyras** John Curtin School of Medical Research, The Australian National University, Australia. Email: eduardo.eyras@anu.edu.au