

Trung Vu, Ph.D.

CONTACT INFORMATION	800 E Middlefield Rd LinkedIn Corporation, Mountain View, CA 94043 Web: trungvietvu.github.io	Phone: (+1) 541-745-9676 Email: trvu@linkedin.com
EDUCATION	Oregon State University (OSU) , Corvallis, OR 97330, USA 2016-2022 Ph.D., Computer Science Dissertation: Convergence Analysis Framework for Fixed-Point Algorithms in Machine Learning and Signal Processing Advisor: Dr. Raviv Raich Hanoi University of Science and Technology (HUST) , Hanoi, Vietnam 2009 - 2014 B.Eng., Computer Science, <i>Honors program</i> : Talented Engineers	
RESEARCH INTEREST	Optimization methods, independent component/vector analysis, machine learning for signal processing, and large language models	
WORK EXPERIENCES	AI Engineer at LinkedIn 2024–now <ul style="list-style-type: none">Supervisor: Viral GuptaDescription:<ul style="list-style-type: none">Develop machine-learning models based on the study of state-of-the-art techniques for recommendation systems Postdoctoral Researcher at University of Maryland, Baltimore County 2022–2024 <ul style="list-style-type: none">Supervisor: Tülay AdalıDescription:<ul style="list-style-type: none">Developing efficient data-driven methods for fMRI data analysis, with a focus on independent component/vector analysis (ICA/IVA) for joint blind source separation (BSS) — authored in 1 journal paper and 2 conference papers; co-authored 1 journal paper and 4 conference papersWriting 1 grant proposal, mentoring 3 graduate students in the MLSP lab at UMBC, giving 2 guest lectures in ENEE 718 (optimization methods) and being co-instructor in ENEE 620 (probability and random processes) Teaching Assistant (TA) at OSU 2016–2022 <ul style="list-style-type: none">Supervisor: Eric IanniCourses: CS 290 - Web Development (8 quarters), CS 362 Software Engineering II (1 quarter), ECE 464/564 - Digital Signal Processing (1 quarter), CS 261 - Data Structures (1 quarter), CS 271 - Computer Architecture and Assembly Language (2 quarters)Description: Grading homework assignments and exams, holding weekly office hours and review sessions, revising course materials (improving structure and strengthening assessments) Head TA at OSU 2022 <ul style="list-style-type: none">Courses: CS 290 - Web Development (2 quarters)Description: Leading a group of 6 TAs to ensure the service quality of a class of 200 students, communicating with both instructors and TAs about weekly duties and grading progress, setting an example for other TAs to follow R&D Engineer at Viettel R&D Institute , Hanoi, Vietnam 2014-2015 Supervisor: Dr. Tran-Su Le, Deputy Director of Centre C4I <i>Threat Evaluation and Weapon Assignment (TEWA) systems in military surface-based air defence environment.</i> <ul style="list-style-type: none">Headed a team of three R&D engineers investigating real-time threat evaluation algorithms including Fuzzy Logic, Bayesian Networks, and Neural Networks. All of those new algorithms outperform the rule-based method run by the system at that time.Developed an explicit GUI tool for easily constructing and training Bayesian Networks.Designed a complete evaluation of TEWA systems by adding stimulation situations, collecting real-world data and generating data from battle tactics.	

Journals

1. **Trung Vu**, Francisco Laport, and Hanlu Yang, Vince D. Calhoun, and Tülay Adalı, “Constrained Independent Vector Analysis with Reference for Multi-Subject fMRI Analysis”, *IEEE Transactions on Biomedical Engineering*, 2024 (Accepted)
2. **Trung Vu**, Raviv Raich, and Xiao Fu, “On Local Linear Convergence of Gradient Projection for Unit-Modulus Least Squares”, *IEEE Transactions on Signal Processing*, vol. 71, pp. 3883–3897, 2023
3. Hanlu Yang, **Trung Vu**, Qunfang Long, Vince Calhoun, and Tülay Adalı. “Identification of Homogeneous Subgroups from Resting-State fMRI Data”, *Sensors*, no. 6, vol. 23, pp. 3264, 2023
4. **Trung Vu**, Evgenia Chunikhina, and Raviv Raich, “On Asymptotic Linear Convergence Rate of Iterative Hard Thresholding for Matrix Completion”, *IEEE Transactions on Signal Processing*, vol. 70, pp. 5940–5953, 2022
5. **Trung Vu** and Raviv Raich, “On Asymptotic Linear Convergence of Projected Gradient Descent for Constrained Least Squares”, *IEEE Transactions on Signal Processing*, vol. 70, pp. 4061–4076, 2022
6. **Trung Vu** and Raviv Raich, “A Closed-Form Bound on the Asymptotic Linear Convergence of Iterative Methods via Fixed Point Analysis”, *Optimization Letters*, vol. 1, pp. 1–14, 2022
7. **Trung Vu**, Evgenia Chunikhina, and Raviv Raich, “Perturbation Expansions and Error Bounds for the Truncated Singular Value Decomposition”, *Linear Algebra and Its Applications*, vol. 627, pp. 94–139, 2021.
8. **Trung Vu**, Phung Lai, Raviv Raich, Anh Pham, Xiaoli Z. Fern and UK Arvind Rao, “A Novel Attribute-based Symmetric Multiple Instance Learning for Histopathological Image Analysis”, *IEEE Transactions on Medical Imaging*, vol. 39, no. 10, pp. 3125–3136, 2020

Conference papers

1. Francisco Laport, Adriana Dapena Janeiro, **Trung Vu**, Hanlu Yang, Vince Calhoun, and Tülay Adalı, “Reproducibility And Replicability In Neuroimaging: Constrained IVA As An Effective Assessment Tool”, In *Proceedings of European Signal Processing Conference. IEEE*, 2024 (Accepted)
2. Matthew Callahan, **Trung Vu** and Raviv Raich, “Provable Randomized Coordinate Descent For Matrix Completion”, In *Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP)*, pp. 9421–9425. IEEE, 2021
3. Hanlu Yang, Meiby Ortiz-Bouza, **Trung Vu**, Francisco Laport, Ben Gabrielson, Vince D. Calhoun, Selin Aviyente, and Tülay Adalı, “Subgroup Identification Through Multiplex Community Structure Within Functional Connectivity Networks”, In *Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing*, pp. 2141–2145. IEEE, 2024
4. **Trung Vu**, Hanlu Yang, Francisco Laport, Ben Gabrielson, Vince D. Calhoun, and Tülay Adalı, “A Robust and Scalable Method with an Analytic Solution for Multi-Subject fMRI Data Analysis”, In *Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing*, pp. 1831–1835. IEEE, 2024
5. **Trung Vu**, Francisco Laport, Hanlu Yang, and Tülay Adalı, “Constrained Independent Vector Analysis with References: Algorithms and Performance Evaluation”, In *Proceedings of Asilomar Conference on Signals, Systems, and Computers*, pp. 827–831. IEEE, 2023
6. Francisco Laport, **Trung Vu**, Hanlu Yang, Vince Calhoun, and Tülay Adalı, “Reproducibility in Joint Blind Source Separation: Application to fMRI Analysis”, In *Proceedings of Asilomar Conference on Signals, Systems, and Computers*, pp. 1448–1452. IEEE, 2023

7. **Trung Vu** and Raviv Raich, “On the Asymptotic Linear Convergence of Gradient Descent for Nonsymmetric Matrix Completion”, In Proceedings of Asilomar Conference on Signals, Systems, and Computers, pp. 1049–1053. IEEE, 2023
8. **Trung Vu** and Raviv Raich, “Exact Linear Convergence Rate Analysis for Low-Rank Symmetric Matrix Completion via Gradient Descent”, In Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing, pp. 3240–3244. IEEE, 2021
9. **Trung Vu**, Raviv Raich, and Xiao Fu, “On Convergence of Projected Gradient Descent for Minimizing a Large-scale Quadratic over the Unit Sphere”, In Proceedings of IEEE International Workshop on Machine Learning for Signal Processing (MLSP), pp. 1–6. IEEE, 2019 — **Student Paper Award!**
10. **Trung Vu** and Raviv Raich, “Local Convergence of the Heavy Ball method in Iterative Hard Thresholding for Low-Rank Matrix Completion”, In Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing, pp. 3417–3421. IEEE, 2019
11. **Trung Vu** and Raviv Raich, “Accelerating Iterative Hard Thresholding for Low-Rank Matrix Completion via Adaptive Restart”, In Proceedings of IEEE International Conference on Acoustics Speech and Signal Processing, pp. 2917–2921. IEEE, 2019
12. **Trung Vu**, Raviv Raich, “Adaptive Step Size Momentum Method For Deconvolution”, In Proceedings of IEEE Statistical Signal Processing Workshop, pp. 438–442. IEEE, 2018

PROFESSIONAL
SERVICES

Reviewer for journals and conferences

ICASSP 2018-2024 — 37 papers; MLSP 2018-2023 — 8 papers;

Journal of Machine Learning Research — 1 journal; IEEE Transactions on Signal Processing — 1 journal; Signal Processing — 2 journals; Numerical Mathematics — 1 journal; IEEE Transactions on Medical Imaging — 1 journal

Talks

- Constrained Independent Vector Analysis with Reference for Multi-Subject fMRI Analysis, *IEEE Brain Discovery and Neurotechnology Workshop 2023*, Nov 9-10, Washington DC, USA (Poster)
- Constrained Independent Vector Analysis with References: Algorithms and Performance Evaluation, *ASILOMAR 2023*, Oct 28-31, California, USA (Poster)
- On Asymptotic Linear Convergence of Projected Gradient Descent for Constrained Least Squares, *IEEE SPS Technical Seminar 2022*, July 12, Oregon, USA (Presentation)
- On Convergence of Projected Gradient Descent for Minimizing a Large-scale Quadratic over the Unit Sphere, *MLSP 2019*, October 13-16, Pennsylvania, USA (Presentation)
- Accelerating Iterative Hard Thresholding for Low-Rank Matrix Completion via Adaptive Restart, *ICASSP 2019*, May 11-17, Brighton, UK (Presentation)
- Local Convergence of the Heavy Ball method in Iterative Hard Thresholding for Low-Rank Matrix Completion, *ICASSP 2019*, May 11-17, Brighton, UK (Poster)
- Adaptive Step Size Momentum Method for Deconvolution, *SSP 2018*, June 10-13, Freiburg, Germany (Poster)
- Accelerating Iterative Hard Thresholding for Low-Rank Matrix Completion via Adaptive Restart, *Signal Processing group*, March 1, 2019, Oregon, USA (Departmental Talk)

REFERENCES

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