Trung Vu, Ph.D.

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EDUCATION

Oregon State University (OSU), Corvallis, OR   2016-2022
Ph.D., Computer Science
Advisor: Raviv Raich
Dissertation: Convergence Analysis Framework for Fixed-Point Algorithms in Machine Learning and Signal Processing
Hanoi University of Science and Technology (HUST), Hanoi, Vietnam   2009 - 2014
B.Eng., Computer Science, *Honors program*: Talented Engineers

RESEARCH INTEREST

Optimization, matrix analysis, independent component/vector analysis, machine learning for signal processing

PUBLICATIONS

Journals

1. Hanlu Yang, **Trung Vu**, Qunfang Long, Vince Calhoun, and Tlay Adali. "Identification of Homogeneous Subgroups from Resting-State fMRI Data.", Sensors, no. 6, vol. 23, pp. 3264, 2023.

2. **Trung Vu**, Raviv Raich, and Xiao Fu, "On Local Linear Convergence of Gradient Projection for Unit-Modulus Least Squares", preprint arXiv:2206.10832, 2023 (Under review).

3. **Trung Vu**, Evgenia Chunikhina, and Raviv Raich, "On Asymptotic Linear Convergence Rate of Iterative Hard Thresholding for Matrix Completion", IEEE Transactions on Signal Processing, 2022.

4. **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.

5. **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.

6. **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.

7. **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. **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 (ICASSP), pp. 3240-3244. IEEE, 2021.

2. **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!**

3. **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 (ICASSP), pp. 3417-3421. IEEE, 2019.

4. **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 (ICASSP), pp. 2917-2921. IEEE, 2019.

5. **Trung Vu**, Raviv Raich, "Adaptive Step Size Momentum Method For Deconvolution", In Proceedings of IEEE Statistical Signal Processing Workshop (SSP), pp. 438-442. IEEE, 2018.

6. Thi-Minh-Tam Nguyen, **Viet-Trung Vu**, The-Vinh Doan, Duc-Khanh Tran. "Resolution in linguistic first order logic based on linear symmetrical hedge algebra", In Proceedings of International Conference on Information Processing and Management of Uncertainty (IPMU) in Knowledge-Based Systems, pp. 345-354. Springer, Cham, 2014.

7. Thi-Minh-Tam Nguyen, **Viet-Trung Vu**, The-Vinh Doan, Duc-Khanh Tran. "Resolution in Linguistic Propositional Logic Based on Linear Symmetrical Hedge Algebra", In Proceedings of International Conference on Knowledge and Systems Engineering (KSE), vol. 1, pp. 327-338. Springer, Cham, 2014.

8. Duc-Khanh Tran, **Viet-Trung Vu**, and Minh-Tam Nguyen. "Fuzzy linguistic propositional logic based on refined hedge algebra", In IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), pp. 1-8, 2013.

PRESENTATIONS

Conference presentations

- On Convergence of Projected Gradient Descent for Minimizing a Large-scale Quadratic over the Unit Sphere, MLSP 2019, October 13-16, Pittsburgh, US.
- Accelerating Iterative Hard Thresholding for Low-Rank Matrix Completion via Adaptive Restart, ICASSP 2019, May 11-17, London, UK.

Posters

- Local Convergence of the Heavy Ball method in Iterative Hard Thresholding for Low-Rank Matrix Completion, ICASSP 2019, May 11-17, London, UK.
- Adaptive Step Size Momentum Method for Deconvolution, SSP Workshop 2018, June 10-13, Freiburg, Germany.

Talks

- On Asymptotic Linear Convergence of Projected Gradient Descent for Constrained Least Squares, July 12, 2022 (IEEE SPS Technical Seminar).
- Accelerating Iterative Hard Thresholding for Low-Rank Matrix Completion via Adaptive Restart, Signal Processing group, March 1, 2019 (Departmental Talk).
- Adaptive Step Size Momentum Method for Deconvolution, April, 2018 (Departmental Talk).

SERVICES

Journal and conference reviews

1. ICASSP - 2018, 2019, 2021, 2022.

2. MLSP - 2019, 2020, 2021.

3. Numerical Mathematics - 2022.

4. IEEE Transactions on Medical Imaging - 2022.

5. Signal Processing - 2023

Teaching assistant (at OSU)

1. CS 290 - Web Development
   - Term(s): Spring 2019, Summer 2019, Spring 2020 (Head TA), Summer 2020 (Head TA), Fall 2020, Winter 2021, Spring 2021, Fall 2021,
   - Supervisors: Eric Ianni, Luyao Zhang, Pam Van Londen, and Nauman Chaudhry

2. CS 362 Software Engineering II
   - Term(s): Summer 2021   Supervisor: Eric Ianni

3. ECE464/564 - Digital Signal Processing
   - Term(s): Winter 2020   Supervisor: Raviv Raich

4. CS 261 - Data Structures
   - Term(s): Winter 2019   Supervisor: Samina Ehsan

5. CS 271 - Computer Architecture and Assembly Language
   - Term(s): Fall 2016, Fall 2019   Supervisors: Stephen Redfield and Justin Goins

REFERENCES

Dr. Raviv Raich
Associate Professor   E-mail: raich@eecs.oregonstate.edu
School of Electrical Engineering and Computer Science   Phone: 541-737-9862
Oregon State University, Corvallis, Oregon

Dr. Tulay Adali
Distinguished Professor   E-mail: adali@umbc.edu
Department of Computer Science and Electrical Engineering
University of Maryland, Baltimore County, Baltimore, Maryland