Trung Vu

Contact Information

1148 Kelley Engineering Center
2500 NW Monroe Ave
Corvallis, OR 97331, USA

Phone: (+1) 541-745-9676
Email: vutru@oregonstate.edu
Web: https://trungvietvu.github.io/

Education

Oregon State University (OSU), Corvallis, OR 2016-present
Ph.D., Computer Science
Advisor: Raviv Raich
Dissertation: 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 theory, matrix analysis, machine learning for signal processing, perturbation theory, random matrix theory, differential geometry

Publications

Journals

1. **Trung Vu** and Raviv Raich, "On Local Linear Convergence of Gradient Projection for Unit-Modulus Least Squares", arXiv preprint arXiv:2206.10832, 2022. Under review.
2. **Trung Vu** and Raviv Raich, "On Asymptotic Linear Convergence Rate of Iterative Hard Thresholding for Matrix Completion", arXiv preprint arXiv:2112.14733, 2022. Under review.
3. **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.
4. **Trung Vu** and Raviv Raich, "A Closed-Form Bound on the Asymptotic Linear Convergence of Iterative Methods via Fixed Point Analysis", Optimization Letters, 2022.
5. **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.
6. **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** and Raviv Raich, "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.

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.

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 & Computer Science — Phone: 541-737-9862
Oregon State University, Corvallis, Oregon

Dr. Xiao Fu
Assistant Professor — E-mail: xiao.fu@oregonstate.edu
School of Electrical Engineering & Computer Science — Phone: 541-737-3617
Oregon State University, Corvallis, Oregon

Dr. Jinsub Kim
Assistant Professor — E-mail: kimjinsu@oregonstate.edu
School of Electrical Engineering & Computer Science — Phone: 541-737-3304
Oregon State University, Corvallis, Oregon