# CURRICULUM VITAE

## Morteza Kimiaei

## Personal Information


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| **Research Office:** | Faculty of Mathematics, University of Vienna,<br>Oskar-Morgenstern-Platz 1, 1090, Vienna, Austria |
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| **Homepage** | `https://www.mat.univie.ac.at/~kimiaei` |
| **ORCID:** | `https://orcid.org/0000-0002-7973-3770` |
| **Github page:** | `https://github.com/GS1400` |


## Positions

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| **2021–2024** | **Postdoc in Computational Optimization** |
| | University of Vienna |
| **Project title** | Derivative-Free Optimization |
| | (Austrian Science Foundation, Project No. P 34317) |
| **2017–2021** | **PhD Student in Computational Optimization** |
| | Vienna Graduate School on Computational Optimization (VGSCO) |
| | `https://vgsco.univie.ac.at/` |
| **PhD thesis** | Unconstrained & bound-constrained optimization in high dimensions |
| | (Austrian Science Foundation, Project No. W1260-N35) |
| **Date of defense** | 15.06.2021 |

## Education

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|---|---|
| **2006–2008** | **Master of Science in Applied Mathematics (Optimization)** |
| | Department of Mathematics, Razi University, Kermanshah, Iran |
| **MSc thesis** | Active set trust region method for bound-constrained optimization |
| **2002–2006** | **Bachelor of Science in pure Mathematics** |
| | Department of Mathematics, Bu-Ali Sina University, Hamedan, Iran |
| **1998–2001** | **Diploma in Mathematics and Physics** |
| | Engelab High School, Asadabad, Iran |

## Teaching

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|---|---|
| **2009–2016** | Azad Islamic University, Asadabad, Mathematics Teacher |
| | Operation Research, Calculus and Analytic Geometry, Differential Equation |
| **2009–2016** | Payame Noor University, Asadabad, Mathematics Teacher |
| | Operation Research, Calculus and Analytic Geometry, Differential Equation |
| **2012–2016** | Seyyed Jamaleddin Asadabadi University, Mathematics Teacher |
| | Operation Research, Calculus and Analytic Geometry, Differential Equation |

## Scientific talks

1. M. Kimiaei, A. Neumaier. Effective matrix adaptation strategy for noisy derivative-free optimization, 19th Workshop on Advances in Continuous Optimization (EUROPT 2022), Caparica, Portugal.

2. M. Kimiaei. VSBBON – Line search in noisy black box optimization, INFORMS 2021 Annual Meeting, Oct. 24-27, at the Anaheim Convention Center & Anaheim Marriott, USA.

3. M. Kimiaei. Efficient noisy unconstrained black box optimization, the Sixth International Conference on Continuous Optimization, ICCOPT 2019, Berlin, Germany.

4. M. Kimiaei, A. Neumaier. Efficient black box optimization with complexity guarantees, the Sixth International Conference on Continuous Optimization, ICCOPT 2019, Berlin, Germany.

5. M. Kimiaei, A. Neumaier. Competitive derivative-free optimization with optimal complexity, ISMP, Bordeaux, French, July 1-6, (2018).

6. M. Kimiaei, A. Neumaier. Comparing solvers for unconstrained and box constrained optimization, 18th FGI Conference on Optimization, Paderborn, Germany, September, (2017).

## Software

Morteza Kimiaei is the main developer of the following software packages:

1. `MATRS`: A noisy derivative-free bound constrained mixed-integer optimization (Matlab): available at `https://github.com/GS1400/MATRS`

2. `IMATRS`: A noisy derivative-free bound constrained integer optimization (Matlab): available at `https://github.com/GS1400/IMATRS`

3. `MADFO`: A matrix adaptation strategy for noisy unconstrained DFO problems (Matlab): available at `https://github.com/GS1400/MADFO`

4. `SSDFO`: A subspace technique for unconstrained DFO problems (Matlab): available at `https://github.com/GS1400/SSDFO`

5. `LMLS`: A limited memory method for derivative-free least squares problems (Matlab): available at `https://github.com/GS1400/LMLS`

6. `VRDFON`: A randomized algorithm for unconstrained noisy DFO problems (Matlab): available at `https://github.com/GS1400/VRDFON`

7. `VRBBO`: A randomized algorithm for unconstrained BBO problems (Matlab): available at `https://github.com/GS1400/VRBBO`

8. `LMBOPT`: A limited memory for bound constrained optimization (Matlab): available at `https://github.com/GS1400/LMBOPT`

9. `GSCG`: A generalized shrinkage conjugate gradient method for sparse recovery (Matlab): available at `https://github.com/GS1400/GSCG`

## Computer Skills

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| **Programming Language** | **C++, Python** |
| **Mathematical Software** | **Matlab** |
| **Operating System** | **Linux, Windows** |
| **Applied Software** | **Latex, Office** |

## Language Skills

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| **Persian** | **Native Language** |
| **English** | **Advanced Knowledge** |
| **Deutsch** | **B1** |

## Research interest

1. Nonlinear Optimization
2. Derivative-Free Optimization
3. Mixed-Integer Optimization
4. Mixed Complementarity Problems
5. Least-Squares Optimization
6. Non-smooth Optimization
7. Cardinality Constrained Optimization
8. Heuristic Optimization
9. Monotone Equations
10. Machine Learning
11. Compressed Sensing

## List of publications

**Published**

1. **M. Kimiaei**, A. Neumaier.
   Heuristic methods for noisy derivative-free
   bound constrained mixed-integer optimization.
   Accepted for publication in *Mathematical Programming Computation* (28 February 2025).
   `https://optimization-online.org/?p=22724`

2. **M. Kimiaei**.
   A developed randomized algorithm with noise level tuning
   for large-scale noisy unconstrained DFO problems.
   Published online in *Numerical Algorithms* (29 January 2025).
   `https://doi.org/10.1007/s11075-025-02016-w`

3. A. Brilli, **M. Kimiaei**, G. Liuzzi, S. Lucidi.
   Worst case complexity bounds for linesearch-type derivative-free algorithms.
   *Journal of Optimization Theory and Applications*, 203 (2024), 419–454.

4. **M. Kimiaei**, A. Neumaier.
   Effective matrix adaptation strategy for noisy derivative-free optimization.
   *Mathematical Programming Computation*, 16 (2024), 459–501.

5. A. Neumaier, **M. Kimiaei**.
   An improvement of the Goldstein line search.
   *Optimization Letters*, 18 (2024), 1313–1333.

6. A. Neumaier, **M. Kimiaei**, B. Azmi.
   Globally linearly convergent nonlinear conjugate
   gradients without Wolfe line search.
   *Numerical Algorithms*, 97 (2024), 1607–1633.

7. A. Neumaier, B. Azmi, **M. Kimiaei**.
   An active set method for bound-constrained optimization.
   *Optimization Methods and Software*, 39(6) (2024), 1216–1240.

8. **M. Kimiaei**, A. Neumaier, P. Faramarzi.
   A new subspace technique for unconstrained black box optimization.
   *ACM Transactions on Mathematical Software* 49(4) (2023), 1–25.

9. A. Hassan Ibrahim, **M. Kimiaei** and P. Kumam.
   A new black box method for monotone nonlinear equations.
   *Optimization*, 72(5) (2023), 1119–1137.

10. **M. Kimiaei**, A. Hassan Ibrahim, S. Ghaderi.
    A subspace inertial method for derivative free
    nonlinear monotone equations.
    *Optimization* (2023).
    `https://doi.org/10.1080/02331934.2023.2252849`

11. **M. Kimiaei**, A. Neumaier.
    Efficient unconstrained black box optimization.
    *Mathematical Programming Computation* 14 (2022), 365–414.

12. **M. Kimiaei**, A. Neumaier, B. Azmi.
    LMBOPT: a limited memory method for bound-constrained optimization.
    *Mathematical Programming Computation* 14 (2022), 271–318.

13. **M. Kimiaei**, A. Neumaier.
    A new limited memory method for unconstrained nonlinear least squares.
    *Soft Computing* 26 (2022), 465–490.

14. **M. Kimiaei**.
    An active set trust-region method for bound-constrained optimization.
    *Bull. Iran. Math. Soc.* 48 (2022), 1721–1745.

15. **M. Kimiaei**, H. Esmaeili, F. Rahpeymaii.
    A trust-region method using extended nonmonotone
    technique for unconstrained optimization.
    *Iranian Journal of Mathematical Sciences and Informatics*
    16(1) (2021), 15–33.

16. K. Amini, **M. Kimiaei**, H. Khotanlou.
    A nonmonotone pattern search approach for systems of nonlinear equations.
    *International Journal of Computer Mathematics*, 96(1) (2019), 33–50.

17. **M. Kimiaei**, F. Rahpeymaii.
A new nonmonotone line search adaptive trust region for nonlinear systems.
*TOP*, 27(2) (2019), 192–232.

18. **M. Kimiaei**, F. Rahpeymaii.
Impulse noise removal by an adaptive trust-region method.
*Soft Computing*, 23 (2019), 11901–11923.

19. H. Esmaeili, S. Shaebani, **M. Kimiaei**.
A new conjugate gradient methods for compressive sensing problems.
*Calcolo*, 56 (1) (2019).

20. **M. Kimiaei**.
Nonmonotone self-adaptive Levenberg-Marquardt approach
for solving systems of nonlinear equations.
*Numerical Functional Analysis and Optimization*, 39(1) (2018), 47–66.

21. H. Esmaeili, M. Rostami, **M. Kimiaei**.
Combining line search and trust-region methods for $\ell_1$-minimization.
*International Journal of Computer Mathematics*, 95(10) (2018), 1950–1972.

22. H. Esmaeili, M. Rostami, **M. Kimiaei**.
Extended Dai-Yuan conjugate gradient strategy for large-scale unconstrained
optimization with applications to compressive sensing.
*FILOMAT* , 32(6) (2018), 2173–2191.

23. **M. Kimiaei**, S. Ghaderi.
A new restarting adaptive trust-region
method for unconstrained optimization.
*Journal of the Operations Research Society of China*,
5(4) (2017), 487–507.

24. **M. Kimiaei**.
A new class of nonmonotone adaptive trust-region
method for nonlinear equations with box constrained.
*Calcolo*, 54(3) (2017), 769–812.

25. F. Rahpeymaii, **M. Kimiaei**.
A Barzilai Borwein adaptive trust-region method
for solving systems of nonlinear equation.
*International Journal of Research in Industrial Engineering*,
6(4) (2017), 339–349.

26. F. Rahpeymaii, **M. Kimiaei**, A. Bagheri.
A limited memory quasi-Newton trust-region
method for box constrained optimization.
*Computational and Applied Mathematics*,
303 (2016), 105–118.

27. K. Amini, **M. Kimiaei**, M.A.K. Shiker.
A line search trust-region algorithm with nonmonotone
adaptive radius for solving systems of nonlinear equations.
*4OR*, 14(2) (2016), 133–152.

28. K. Amini, H. Esmaeili, **M. Kimiaei**.
A nonmonotone trust-region-approach with nonmonotone adaptive radius for nonlinear systems.
*Iranian Journal of Numerical Analysis and Optimization*, 6(1) (2016), 101–121.

29. H. Esmaeili, **M. Kimiaei**.
A trust-region method with improved adaptive radius for systems of nonlinear equations.
*Mathematical Methods of Operations Research*, 83 (2016), 109–105.

30. **M. Kimiaei**, H. Esmaeili.
A trust-region approach with novel filter adaptive radius for systems of nonlinear equations.
*Numerical Algorithms*, 73(4) (2016), 999–1016.

31. **M. Kimiaei**, M. Rostami.
Impulse noise removal based on new hybrid spectral conjugate gradient approach.
*KYBERNETIKA*, 52(5) (2016), 791–823.

32. H. Esmaeili, **M. Kimiaei**.
An efficient adaptive trust-region method for systems of nonlinear equations.
*International Journal of Computer Mathematics*, 92(1) (2015), 151–166.

33. M. Ahookhosh, K. Amini, **M. Kimiaei**, M.R. Peyghami.
A limited memory trust-region method with adaptive radius for large-scale unconstrained optimization.
*Bulletin of the Iranian Mathematical Society*, 42(4) (2015), 819–837.

34. H. Esmaeili, **M. Kimiaei**.
An efficient implementation of a trust region method for box constrained optimization.
*Journal of Applied Mathematics and Computing*, 48 (2015), 495–517.

35. M. Ahookhosh, K. Amini, **M. Kimiaei**.
A globally convergent trust-region method for large-scale symmetric nonlinear systems.
*Numerical Functional Analysis and Optimization*, 36 (2015), 830–855.

36. H. Esmaeili, **M. Kimiaei**.
An improved adaptive trust-region method for unconstrained optimization.
*Mathematical Modelling and Analysis*, 19(4) (2014), 469–490.

37. H. Esmaeili, **M. Kimiaei**.
A new adaptive trust-region method for systems of nonlinear equations.
*Applied Mathematical Modelling*, 38(11–12) (2014), 3003–3015.

38. M. Ahookhosh, H. Esmaeili, **M. Kimiaei**.
An effective trust-region-based approach for symmetric nonlinear systems.
*International Journal of Computer Mathematics*, 90 (3) (2013), 671–690.

39. **M. Kimiaei**, F. Rahpaymaii.
A fixed point method for convex systems.
Applied Mathematics, 3 (2012), 1327-1333.

**Submitted**

1. **M. Kimiaei**, S. Babaei-kafaki, V. Kungurtsev, M. Yousefi.
Restarting nonlinear conjugate gradient methods (2025).
`https://optimization-online.org/?p=29041`

2. Ahmad Mosavi, **M. Kimiaei**, S. Babaei-kafaki, V. Kungurtsev.
A class of diagonal quasi-Newton penalty decomposition algorithms for sparse bound-constrained nonconvex optimization (2025).
`https://optimization-online.org/?p=29052`

**Work in progress**

1. **M. Kimiaei**, A. Neumaier.
A feasible point method for linearly constrained black box optimization.
Manuscript (2025).

2. **M. Kimiaei**, V. Kungurtsev, and T. Mitchell. Stationarity Concepts, Solution Quality, and Tradeoffs for Cardinality Constrained Optimization (2025).

3. **M. Kimiaei**, V. Kungurtsev, Survey of the use of Machine Learning and Reinforcement Learning to Solve Mixed Continuous Combinatorial Optimization Problems with a Focus on Operations Research (2025).

**Unpublished**

1. **M. Kimiaei**, A. Neumaier.
Efficient composite heuristics for integer bound constrained noisy optimization. Unpublished manuscript (2022).
`https://optimization-online.org/?p=19118`