Artavazd Maranjyan

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Education

Ph.D. in Computer Science — **Thuwal, Saudi Arabia**
King Abdullah University of Science and Technology (KAUST) — *2023 – Present*
Advisor: Peter Richtárik

M.Sc. in Applied Statistics and Data Science — **Yerevan, Armenia**
Yerevan State University — *2021 – 2023*
Thesis: On local training methods; **co-supervisors:** Peter Richtárik, Mher Safaryan

B.Sc. in Informatics and Applied Mathematics — **Yerevan, Armenia**
Yerevan State University — *2017 – 2021*
Thesis: On the Convergence of Series in Classical Systems; **supervisor:** Martin Grigoryan

Academic Experiences

Research visit to Yi-Shuai Niu — **Beijing, China**
Beijing Institute of Mathematical Sciences and Applications (BIMSA) — *9-22 March 2025*
- Gave talks at three universities (PKU, BUAA, BIMSA)
- Worked with Professor Yi-Shuai Niu on a project on Server-Assisted Federated Learning

Researcher in the group of Martin Grigoryan — **Yerevan, Armenia**
Yerevan State University — *April 2023 – Aug 2023*
- Studied the existence and properties of universal functions with respect to the Vilenkin and Haar systems across various functional spaces

Machine Learning Researcher — **Yerevan, Armenia**
YerevaNN — *March 2023 – Aug 2023*
- Worked on the intersection of Federated Learning and Optimization

Internship in the group of Peter Richtárik — **Thuwal, Saudi Arabia**
King Abdullah University of Science and Technology (KAUST) — *June 2022 – Jan 2023*
- Worked on the "GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity" paper

Machine Learning Researcher — **Yerevan, Armenia**
YerevaNN — *Jan 2022 – June 2022*
- Worked on the intersection of Federated Learning and Optimization

Industry Experiences

Co-Founder — **Yerevan, Armenia**
OnePick — *July 2021 – June 2022*
OnePick is an emerging startup that provides up-to-date and customized social media posts based on page and market data analysis
- Winner idea of InVent 2.0 venture building program organized by FAST

Backend Developer — **Yerevan, Armenia**
EXALT Technologies Ltd — *July 2021 – Sep 2021*
- Worked for Nutanix.

Machine Learning Research Engineer — **Yerevan, Armenia**
Foundation for Armenian Science and Technology (FAST) — *June 2021 – July 2021*

- Worked on Fraud detection
- Made data-driven forecasts using machine learning algorithms and statistical models

○ **Software Engineer in Test** — **Yerevan, Armenia**
Picsart — *Sep 2019 – Jan 2021*
- Worked with automation team to design and develop automated solutions across several mobile/web applications
- Worked directly with software developers, test engineers, product owners, business analysts to find and resolve issues
- Worked closely with DevOps to suggest improvements in processes and in Jenkins Continuous Integration cycle

Awards

○ **CEMSE Dean's List Award**
King Abdullah University of Science and Technology (KAUST) — *May 2025*
Awarded for excellent academic and research performance ($2,500 prize)

○ **Dean's Award**
King Abdullah University of Science and Technology (KAUST) — *Sep 2023*
Awarded to a few top students accepted to KAUST ($6,000 annually for 3 years)

○ **Outstanding Final Project Award**
Yerevan State University — *May 2021*
Recognized for the Bachelor's thesis (awarded to 6 students among 250+ students)

Publications

10. **BiCoLoR: Communication-Efficient Optimization with Bidirectional Compression and Local Training**
Laurent Condat, Artavazd Maranjyan, Peter Richtárik
Submitted to NeurIPS2025

9. **ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning**
Artavazd Maranjyan, El Mehdi Saad, Peter Richtárik, Francesco Orabona
ICML 2025: Forty-Second International Conference on Machine Learning

8. **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity**
Artavazd Maranjyan, Alexander Tyurin, Peter Richtárik
ICML 2025: Forty-Second International Conference on Machine Learning

7. **MindFlayer SGD: Efficient Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**
Artavazd Maranjyan, Omar Shaikh Omar, Peter Richtárik
UAI 2025: The 41st Conference on Uncertainty in Artificial Intelligence
OPT 2024: Optimization for Machine Learning (NeurIPS workshop)
Oral presentation (top 5% of 107 submissions)

6. **LoCoDL: Communication-Efficient Distributed Learning with Local Training and Compression**
Laurent Condat, Artavazd Maranjyan, Peter Richtárik
ICLR 2025: The Thirteenth International Conference on Learning Representations
Spotlight presentation (top 5.1% of the submitted papers)

5. **Differentially Private Random Block Coordinate Descent**
Artavazd Maranjyan, Abdurakhmon Sadiev, Peter Richtárik
OPT 2024: Optimization for Machine Learning (NeurIPS workshop)

4. **Menshov-type theorem for divergence sets of sequences of localized operators**
Martin Grigoryan, Anna Kamont, Artavazd Maranjyan
Journal of Contemporary Mathematical Analysis, vol. 58, no. 2, pp. 81–92, 2023

3. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**
Artavazd Maranjyan, Mher Safaryan, Peter Richtárik
arXiv:2210.16402, 2022

2. **On the divergence of Fourier series in the general Haar system**
Martin Grigoryan, Artavazd Maranjyan
Armenian Journal of Mathematics, vol. 13, pp. 1–10, 2021

1. **On the unconditional convergence of Faber-Schauder series in L^1**
Tigran Grigoryan, Artavazd Maranjyan
Proceedings of the YSU A: Physical and Mathematical Sciences, vol. 55, no. 1 (254), pp. 12–19, 2021

Academic and Professional Involvement

Reviewer
Transactions on Machine Learning Research (TMLR) 2024-2025
SIAM Journal on Mathematics of Data Science (SIMODS) 2024
The Journal of Machine Learning Research (JMLR) 2024

Mentorship
Co-mentored a group of schoolgirls from diverse backgrounds and grades on a STEM project. The students conducted chemical experiments and developed an educational website to document and share their findings. I primarily supported the website's creation. [website] [certificate]

Organized weekly group seminars — **KAUST, Saudi Arabia**
KAUST — *Sep 2023 - Dec 2023*

Talks and Poster Presentations

2025 Talks and Poster Presentations

27. ***41st Conference on Uncertainty in Artificial Intelligence*** — **Rio de Janeiro, Brazil**
Rio Othon Palace — *July 21-25, 2025*
Presented a poster on **MindFlayer SGD: Efficient Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**

26. ***Forty-Second International Conference on Machine Learning*** — **Vancouver, Canada**
Vancouver Convention Center — *July 13-19, 2025*
Presented posters on
- **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity**
- **ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning**

25. ***Stochastic Numerics and Statistical Learning*** — **KAUST, Saudi Arabia**
KAUST — *May 18, 2025*
Presented a poster on **ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning** [poster]

24. ***The Thirteenth International Conference on Learning Representations*** — **Singapore**
Singapore EXPO — *April 24-28, 2025*
Presented a poster on **LoCoDL: Communication-Efficient Distributed Learning with Local Training and Compression** (Spotlight presentation (top 5.1% of the submitted papers))

23. ***Federated Learning One World Seminar (FLOW)*** — **Online**
FLOW Talk #126 — *April 16, 2025*
Delivered a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [video] [slides]

22. ***KAUST Rising Stars in AI Symposium 2025*** — **KAUST, Saudi Arabia**
KAUST — *April 7-10, 2025*
Presented a poster on **ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning** [poster]

21. ***Machine Learning Reading Group*** — **Yerevan, Armenia**
YSU Krisp-AI Lab — *March 28, 2025*
Delivered a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

20. ***Flower AI Summit 2025*** — **London, England**
King's House — *March 26, 2025*
Delivered a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

19. ***Academic Report of the School of Mathematical Sciences*** — **Beijing, China**
Beihang University (BUAA) — *March 17, 2025*
Invited by Jiaxin Xie to give a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

18. ***Optimization Seminar*** — **Beijing, China**
Beijing Institute of Mathematical Sciences and Applications (BIMSA) — *March 13, 2025*
Invited by Yi-Shuai Niu to give a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

17. ***Seminar*** — **Beijing, China**
Peking University — *March 12, 2025*
Invited by Kun Yuan to give a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

16. ***AMCS/STAT graduate seminar*** — **KAUST, Saudi Arabia**
KAUST — *February 27, 2025*
Delivered a talk on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [slides]

2024 Talks and Poster Presentations

15. ***Workshop on Optimization for Machine Learning (NeurIPS 2024)*** — **Vancouver, Canada**
Vancouver Convention Center — *December 15, 2024*
Presented
- **MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times** (Oral presentation, top 5% of 107 submissions) [video]
- **Differentially Private Random Block Coordinate Descent**
- **LoCoDL: Communication-Efficient Distributed Learning with Local Training and Compression**

14. **MLR Weekly Seminar** — **Online**
Machine Learning Research at Apple — *November 21, 2024*
Invited by Samy Bengio to give a talk on **MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times** [slides]

13. ***International Conference on Algebra, Logic, and their Applications*** — **Online**
Yerevan State University — *October 18, 2024*
Delivered a talk on **MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**

12. ***CEMSE E-Poster Competition*** **KAUST, Saudi Arabia**
KAUST *October 10, 2024*
Awarded 3rd place for presenting a poster on
GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity.

11. ***Analysis, PDEs and Applications*** **Yerevan, Armenia**
Yerevan State University *July 6, 2024*
Delivered a talk on **MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times** [abstract]

10. ***Stochastic Numerics and Statistical Learning*** **KAUST, Saudi Arabia**
KAUST *May 27, 2024*
Presented a poster on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [poster]

9. **CS 331: Stochastic Gradient Descent Methods** **KAUST, Saudi Arabia**
KAUST *May 5, 2024*
Delivered a guest lecture on **MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**

8. ***The Machine Learning Summer School in Okinawa 2024*** **Okinawa, Japan**
Okinawa Institute of Science and Technology (OIST) *March 13, 2024*
Presented a poster on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [poster]

7. ***KAUST Rising Stars in AI Symposium 2024*** **KAUST, Saudi Arabia**
KAUST *February 21, 2024*
Presented a poster on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [poster]

2023 Talks and Poster Presentations

6. **Group Seminar** **KAUST, Saudi Arabia**
KAUST *November 16, 2023*
Delivered a talk on **Differentially Private Coordinate Descent for Composite Empirical Risk Minimization**

5. ***Algorithms & Computationally Intensive Inference seminars*** **Coventry, England**
University of Warwick *October 6, 2023*
Delivered a talk on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [slides]

4. ***Mathematics in Armenia: Advances and Perspectives*** **Yerevan, Armenia**
Yerevan State University *July 5, 2023*
Delivered a talk on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [abstract]

3. ***Machine Learning Reading Group*** **Yerevan, Armenia**
Yerevan State University *March 10, 2023*
Delivered a talk on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [video (Armenian)]

2022 Talks and Poster Presentations

2. ***Federated Learning One World Seminar (FLOW)*** **Online**
FLOW Talk #88 *December 7, 2022*
Delivered a talk on **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity** [video]

1. ***Machine Learning Reading Group*** **Yerevan, Armenia**
Yerevan State University *April 10, 2022*
Delivered a talk on **ProxSkip: Yes! Local Gradient Steps Provably Lead to Communication Acceleration! Finally!**

Hobbies

Ultimate Frisbee, Dancing (bachata, salsa), Board Games, Table Football (Foosball)