

# Artavazd Maranjyan

✉ [arto.maranjyan@gmail.com](mailto:arto.maranjyan@gmail.com) • [artomaranjyan.github.io](https://github.com/artomaranjyan)

## 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  
Sep 2019 – Jan 2021

- **Picsart**
  - 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

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- **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

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- BiCoLoR: Communication-Efficient Optimization with Bidirectional Compression and Local Training**  
Laurent Condat, Artavazd Maranjyan, Peter Richtárik  
Submitted to NeurIPS 2025
- 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*
- 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*
- 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)
- GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
Artavazd Maranjyan, Mher Safaryan, Peter Richtárik  
*TMLR 2025: Transactions on Machine Learning Research*
- 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)

4. **Differentially Private Random Block Coordinate Descent**  
 Artavazd Maranjyan, Abdurakhmon Sadiev, Peter Richtárik  
*OPT 2024: Optimization for Machine Learning (NeurIPS workshop)*
3. **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
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

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### 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

KAUST, Saudi Arabia

Sep 2023 - Dec 2023

## Talks and Poster Presentations

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### 2025 Talks and Poster Presentations.....

28. **35<sup>o</sup> Colóquio Brasileiro de Matemática** Rio de Janeiro, Brazil  
*Instituto Nacional de Matemática Pura e Aplicada (IMPA)* July 27-31, 2025  
 Delivered a talk and a poster on **Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity** [[poster](#)]
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

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