

# Artavazd Maranjyan

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## Education

- **Ph.D. in Computer Science** **Thuwal, Saudi Arabia**  
2023 – 2025  
*King Abdullah University of Science and Technology (KAUST)*  
Advisor: Peter Richtárik
- **M.Sc. in Applied Statistics and Data Science** **Yerevan, Armenia**  
2021 – 2023  
*Yerevan State University*  
■ Thesis: [On local training methods](#); co-supervisors: Peter Richtárik, Mher Safaryan
- **B.Sc. in Informatics and Applied Mathematics** **Yerevan, Armenia**  
2017 – 2021  
*Yerevan State University*  
■ Thesis: [On the Convergence of Series in Classical Systems](#); supervisor: Martin Grigoryan

## Academic Experiences

- **Research visit to Yi-Shuai Niu** **Beijing, China**  
9-22 March 2025  
*Beijing Institute of Mathematical Sciences and Applications (BIMSA)*
  - 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**  
April 2023 – August 2023  
*Yerevan State University*
  - 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**  
March 2023 – August 2023  
*YerevaNN*
  - Worked on the intersection of Federated Learning and Optimization
- **Internship in the group of Peter Richtárik** **Thuwal, Saudi Arabia**  
June 2022 – January 2023  
*King Abdullah University of Science and Technology (KAUST)*
  - Worked on the "GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity" paper
- **Machine Learning Researcher** **Yerevan, Armenia**  
January 2022 – June 2022  
*YerevaNN*
  - Worked on the intersection of Federated Learning and Optimization

## Industry Experiences

- **Co-Founder** **Yerevan, Armenia**  
July 2021 – June 2022  
*[OnePick](#)*
  - Built an MVP platform to help content creators and marketers generate or select photos that best matched their text descriptions
  - Participated in the [InVent 2.0](#) venture building program, advancing through team formation, idea generation, product development, and pitching
  - Secured initial funding and continued development beyond the program
- **Backend Developer** **Yerevan, Armenia**  
July 2021 – September 2021  
*EXALT Technologies Ltd*
  - Worked for Nutanix.
- **Machine Learning Research Engineer** **Yerevan, Armenia**  
June 2021 – July 2021  
*Foundation for Armenian Science and Technology (FAST)*
  - Worked on Fraud detection
  - Made data-driven forecasts using machine learning algorithms and statistical models

## Software Engineer in Test

Yerevan, Armenia

September 2019 – January 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)* September 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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11. **Ringleader ASGD: The First Asynchronous SGD with Optimal Time Complexity under Data Heterogeneity**  
Artavazd Maranjyan, Peter Richtárik  
*Submitted to ICLR 2026*
10. **BiCoLoR: Communication-Efficient Optimization with Bidirectional Compression and Local Training**  
Laurent Condat, Artavazd Maranjyan, Peter Richtárik  
*Submitted to ICLR 2026*
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. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
Artavazd Maranjyan, Mher Safaryan, Peter Richtárik  
*TMLR 2025: Transactions on Machine Learning Research*
5. **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

- 2024–Now Transactions on Machine Learning Research (TMLR)  
 2026 International Conference on Learning Representations (ICLR)  
 2024 SIAM Journal on Mathematics of Data Science (SIMODS)  
 2024 The Journal of Machine Learning Research (JMLR)

### 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**  
 September 2023 - Dec 2023

## Talks and Poster Presentations

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### 2025 Talks and Poster Presentations

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|---|---|
| 30. <b>AMCS/STAT graduate seminar</b><br>KAUST<br>Delivered a talk on <b>Ringleader ASGD: The First Asynchronous SGD with Optimal Time Complexity under Data Heterogeneity</b>  | <b>KAUST, Saudi Arabia</b><br>November 13, 2025   |
| 29. <b>Mathematics and Applications Colloquium</b><br>KAUST<br>Delivered a talk on <b>Ringleader ASGD: The First Asynchronous SGD with Optimal Time Complexity under Data Heterogeneity</b> [ <a href="#">slides</a> ]  | <b>KAUST, Saudi Arabia</b><br>October 28, 2025    |
| 28. <b>35º Colóquio Brasileiro de Matemática</b><br>Instituto Nacional de Matemática Pura e Aplicada (IMPA)<br>Delivered a talk and a poster on <b>Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity</b> [ <a href="#">slides</a> ] [ <a href="#">poster</a> ]   | <b>Rio de Janeiro, Brazil</b><br>July 27-31, 2025 |
| 27. <b>41st Conference on Uncertainty in Artificial Intelligence</b><br>Rio Othon Palace<br>Presented a poster on <b>MindFlayer SGD: Efficient Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times</b> [ <a href="#">poster</a> ]   | <b>Rio de Janeiro, Brazil</b><br>July 21-25, 2025 |
| 26. <b>Forty-Second International Conference on Machine Learning</b><br>Vancouver Convention Center<br>Presented posters on <ul style="list-style-type: none"> <li>○ <b>Ringmaster ASGD: The First Asynchronous SGD with Optimal Time Complexity</b> [<a href="#">poster</a>]</li> <li>○ <b>ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning</b> [<a href="#">poster</a>]</li> </ul> | <b>Vancouver, Canada</b><br>July 13-19, 2025      |
| 25. <b>Stochastic Numerics and Statistical Learning</b><br>KAUST<br>Presented a poster on <b>ATA: Adaptive Task Allocation for Efficient Resource Management in Distributed Machine Learning</b> [ <a href="#">poster</a> ]   | <b>KAUST, Saudi Arabia</b><br>May 18, 2025        |

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)