

# 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

## Experience

- **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
- **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 [certificate] 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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### Dean's Award

#### ○ *King Abdullah University of Science and Technology (KAUST)*

Sep 2023

Awarded to a few top students accepted to KAUST (6000\$ 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)

## Papers

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### 7. Differentially Private Random Block Coordinate Descent

Artavazd Maranjyan, Abdurakhmon Sadiev, Peter Richtárik

Submitted to Artificial Intelligence and Statistics 2025

### 6. MindFlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times

Artavazd Maranjyan, Omar Shaikh Omar, Peter Richtárik

*arXiv:2410.04285*, 2024

### 5. LoCoDL: Communication-Efficient Distributed Learning with Local Training and Compression

Laurent Condat, Artavazd Maranjyan, Peter Richtárik

*arXiv:2403.04348*, 2024

### 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, p. 1–10, Sep. 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

## Talks and Poster Presentations

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### 2024 Talks and Poster Presentations.....

12. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Poster presentation @ CEMSE E-Poster Competition* [3rd place]  
KAUST, Thuwal, Saudi Arabia, October 10, 2024
11. **MindPlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**  
*Talk @ Analysis, PDEs and Applications* [abstract]  
Yerevan State University, Yerevan, Armenia, July 6, 2024
10. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Poster presentation @ Stochastic Numerics and Statistical Learning: Theory and Applications Workshop 2024* [poster]  
KAUST, Thuwal, Saudi Arabia, May 27, 2024
9. **MindPlayer: Efficient Asynchronous Parallel SGD in the Presence of Heterogeneous and Random Worker Compute Times**  
*Guest lecture @ CS 331, Stochastic Gradient Descent Methods*  
KAUST, Thuwal, Saudi Arabia, May 5, 2024
8. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Poster presentation @ The Machine Learning Summer School in Okinawa 2024* [poster]  
Okinawa Institute of Science and Technology (OIST), Okinawa, Japan, March 13, 2024
7. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Poster presentation @ KAUST Rising Stars in AI Symposium 2024* [poster]  
KAUST, Thuwal, Saudi Arabia, February 21, 2024

### 2023 Talks and Poster Presentations.....

6. **Differentially Private Coordinate Descent for Composite Empirical Risk Minimization**  
*Talk @ Group Seminar*  
KAUST, Thuwal, Saudi Arabia, November 16, 2023
5. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Talk @ Algorithms & Computationally Intensive Inference seminars* [slides]  
University of Warwick, Coventry, England, October 6, 2023
4. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Talk @ Mathematics in Armenia: Advances and Perspectives* [abstract]  
Yerevan State University, Yerevan, Armenia, July 5, 2023
3. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**  
*Talk @ Machine Learning Reading Group Yerevan* [video (Armenian)]  
Yerevan State University, Yerevan, Armenia, March 10, 2023

## 2022 Talks and Poster Presentations.....

### 2. **GradSkip: Communication-Accelerated Local Gradient Methods with Better Computational Complexity**

Talk @ *Federated Learning One World Seminar (FLOW)* [video]

Online, December 7, 2022

### 1. **ProxSkip: Yes! Local Gradient Steps Provably Lead to Communication Acceleration! Finally!**

Talk @ *Machine Learning Reading Group Yerevan*

Yerevan State University, Yerevan, Armenia, April 10, 2022

## Reviewing and Organizational Work

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Academic and Professional Involvement

Reviewing

○ Reviewer for *Transactions on Machine Learning Research (TMLR)* 2024

○ Reviewer for *The Journal of Machine Learning Research (JMLR)* 2024

**KAUST**

○ Organized weekly group seminars Sep 2023 - Dec 2023

## Hobbies

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