

# Artavazd Maranjyan

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## Education

- **Ph.D. in Computer Science** **Thuwal, Saudi Arabia**  
2023 – Present  
*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

## Experience

- **Researcher in the group of Martin Grigoryan** **Yerevan, Armenia**  
April 2023 – Aug 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 – Aug 2023  
*YerevaNN*
  - Worked on the intersection of Federated Learning and Optimization.
- **Internship in the group of Peter Richtárik** **Thuwal, Saudi Arabia**  
June 2022 – Jan 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**  
Jan 2022 – June 2022  
*YerevaNN*
  - Worked on the intersection of Federated Learning and Optimization.
- **Co-Founder** **Yerevan, Armenia**  
July 2021 – June 2022  
*OnePick*

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**  
July 2021 – Sep 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

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

### Dean's Award

Thuwal, Saudi Arabia

Sep 2023 - Sep 2026

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

Awarded to a few top students accepted to KAUST (6000\$ annually for 3 years).

### Outstanding Final Project Award

Yerevan, Armenia

### Yerevan State University

May 2021

Recognized for the Bachelor's thesis (awarded to 6 students among 250+ students).

## Papers

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

### 2024 Talks and Posters.....

11. **MindFlayer: 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. **MindFlayer: 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 Posters.....

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 Posters.....

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

## Hobbies

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