

# Ahmed Khaled

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## Education

Jan 2022 - **Ph.D. Electrical and Computer Engineering**, *Princeton University*, New Jersey, United States.  
Present Advisor: Professor [Chi Jin](#). GPA: 3.96/4.0.

Oct 2015 – **B.Sc. Computer Engineering**, *Cairo University*, Egypt.  
Aug 2020 GPA: Distinction with Honors (91.3%). Rank: 3<sup>rd</sup> / 64.

## Work Experience

May 25 – **Applied Scientist Intern**, *Amazon AWS AI*, Santa Clara, California, United States.  
Aug 25 Worked on distributed optimization with [Youngsuk Park](#), [Kaan Ozkara](#), and [Tao Yu](#).

May–Aug 2024 **Student Researcher**, *Google DeepMind*, New York City, New York, United States.  
Worked on distributed and adaptive optimization with [Manzil Zaheer](#). Also did some neural network architecture research.

May–Sep 2023 **Research Scientist Intern**, *Meta*, New York City, New York, United States.  
Research scientist intern at the Fundamental AI Research Team at Meta working with [Aaron Defazio](#). Worked on adaptive optimization.

Jun–Oct 2020 **Research Intern**, *KAUST*, Saudi Arabia.

Jun–Sep 2019 Research intern in the group of Professor [Peter Richtárik](#). Worked on federated learning and optimization.

Aug–Sep 2018 **Undergraduate Research Assistant**, *Cairo University*, Egypt.  
Worked with Professors [Amir Atiya](#) and [Ahmed Abdel-Gawad](#) on fast matrix multiplication algorithms. Wrote code in CUDA C.

## Awards

2020-2025 **Top reviewer**, *various conferences*.  
Received the Best Reviewer award for [AISTATS 2025](#), ICML 2022 (awarded free registration, July 2022), [AISTATS 2022](#) (awarded Feb. 2022) and NeurIPS 2020 (awarded free registration, Oct. 2020).

2023/2024 **School of Engineering and Applied Sciences (SEAS) Travel Grant**, *Princeton University*.  
Awarded a travel grant worth used towards going to ICLR 2023 / INFORMS Annual Meeting 2024.

Oct 2020 **INFORMS Undergraduate Operations Research Prize Finalist**, *Institute for Operations Research and the Management Sciences (INFORMS)*.  
One of ten finalists selected to give a presentation on outstanding research done as an undergraduate.

Jan 2020 **SIGAPP Student Travel Award**, *ACM*, (Declined).  
Travel award worth \$700 used towards going to the ACM SAC 2020 conference. Declined due to Covid.

Sep 2019 **Mentor Achievement Award**, *Learn IT, Girl 4th Edition*.  
Awarded for successfully mentoring for three months in learning IT.

## Papers

### Conference papers

- (1) Aaron Mishkin\*, **A. Khaled\***, Yuanhao Wang, Aaron Defazio, and Robert M. Gower - **Directional Smoothness and Gradient Methods: Convergence and Adaptivity**. NeurIPS 2024.  
*Note: \* indicates joint first authorship.*
- (2) Aaron Defazio, Xinyu (Alice) Yang, Harsh Mehta, Konstantin Mishchenko, **A. Khaled**, Ashok Cutkosky - **The Road Less Scheduled** - NeurIPS 2024 **oral**.
- (3) Abdurakhmon Sadiev, Grigory Malinovsky, Eduard Gorbunov, Igor Sokolov, **A. Khaled**, Konstantin Burlachenko and Peter Richtárik - **Federated Optimization Algorithms with Random Reshuffling and Gradient Compression**. NeurIPS 2024.

- (4) **A. Khaled**, Chi Jin - **Tuning-Free Stochastic Optimization** - ICML 2024 **Spotlight** (acceptance rate 3.5%).
- (5) **A. Khaled**, Konstantin Mishchenko, and Chi Jin - **DoWG Unleashed: An Efficient Universal Parameter-Free Gradient Descent Method** - NeurIPS 2023.
- (6) **A. Khaled** and Chi Jin - **Faster federated optimization under second-order similarity** - ICLR 2023.
- (7) Konstantin Mishchenko, **A. Khaled**, and Peter Richtárik - **Proximal and Federated Random Reshuffling** - ICML 2022.
- (8) Elnur Gasanov, **A. Khaled**, Samuel Horváth, and Peter Richtárik - **FLIX: A Simple and Communication-Efficient Alternative to Local Methods in Federated Learning** - AISTATS 2022.
- (9) Konstantin Mishchenko, **A. Khaled**, and Peter Richtárik - **Random Reshuffling: Simple Analysis with Vast Improvements** - NeurIPS 2020.
- (10) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - **Tighter Theory for Local SGD on Identical and Heterogeneous Data** - AISTATS 2020.
- (11) **A. Khaled**, Amir F. Atiya, Ahmed H. Abdelgawad - **Applying Fast Matrix Multiplication to Neural Networks** - ACM SAC 2020.

### Journal papers

- (12) **A. Khaled**, Othmane Sebbouh, Nicolas Loizou, Robert M. Gower, and Peter Richtárik - **Unified Analysis of Stochastic Gradient Methods for Composite Convex and Smooth Optimization** - Journal of Optimization Theory and Applications (JOTA) 2023.
- (13) **A. Khaled** and Peter Richtárik - **Better Theory for SGD in the Nonconvex World** - Transactions of Machine Learning Research (TMLR) 2023.

### Preprints

- (14) **A. Khaled**, Satyen Kale, Arthur Douillard, Chi Jin, Rob Fergus, and Manzil Zaheer - **Understanding Outer Learning Rates in Local SGD** - arXiv:2509.10439 (2025).
- (15) Sélim Chraibi, **A. Khaled**, Dmitry Kovalev, Peter Richtárik, Adil Salim, and Matrin Takáč - **Distributed Fixed Points Methods with Compressed Iterates** - arXiv:1912.09925 (2019).

### Workshop papers

- (16) Aaron Mishkin\*, **A. Khaled\***, Aaron Defazio, and Robert M. Gower - **A novel analysis of gradient descent under directional smoothness** - Poster at the NeurIPS 2023 Optimization for ML workshop.
- (17) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - **Better Communication Complexity for Local SGD** - **Oral presentation** at the NeurIPS 2019 Federated Learning workshop.
- (18) **A. Khaled** and Peter Richtárik - **Gradient descent with Compressed Iterates** - Poster at the NeurIPS 2019 Federated Learning workshop.
- (19) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - **First Analysis of Local GD on Heterogeneous Data** - Poster at the NeurIPS 2019 Federated Learning workshop.

## Skills

Technical    Python, C/C++,  $\text{\LaTeX}$ , Git.  
 Languages    English (fluent) and Arabic (native).

## Programming projects

- Style Transfer (Image Processing course project): Implemented Elad and Milanfar's Style-Transfer via Texture-Synthesis paper in Python using OpenCV, scikit-learn and NumPy. [Code](#), [Report](#).
- Gated Neural Networks (Multimedia course project): Implemented a gated neural nets algorithm (PAQ7) for compression in C++. Won 1<sup>st</sup> place out of 15 teams in a department-wide text compression contest. [Report](#).
- GoSlayer (Machine Intelligence course project): Led a team of sixteen people in implementing an AI agent that plays Go based on Monte-Carlo Tree Search and various heuristics. [Code](#), [Report](#).
- Arabic OCR (Pattern Recognition course project): Implemented Nashwan et al.'s A Holistic Technique for an Arabic OCR System paper in Python using OpenCV, scikit-learn, and NumPy, in addition to multiple other papers. [Code](#), [Report](#).

- PacMan (Microprocessors course project): Wrote a multiplayer PacMan-like game in pure x86 assembly with search-based AI. [Code](#).

## Teaching

Fall 25 **SML 301, Princeton University.**

Teaching assistant for SML301: Data Intelligence: Modern Data Science Methods. Undergraduate course on Data Science.

Spring 23/24 **ECE539/COS512, Princeton University.**

& Fall 24 Teaching assistant for ECE539: Optimization for Machine Learning. Graduate course on optimization.

May 24 **Optimization Short Course, MLx Fundamentals, Oxford Machine Learning Summer School (OxML).**

Teaching assistant for a lecture on optimization at the MLx Fundamentals Oxford Machine Learning Summer School.