

## Education

- Jan 2022 – Present **Ph.D. Electrical and Computer Engineering**, *Princeton University*, Princeton, New Jersey.  
Advisor: Professor [Chi Jin](#). Anticipated graduation: December 2026.
- Oct 2015 – Aug 2020 **B.Sc. Computer Engineering**, *Cairo University*, Egypt.  
GPA: Distinction with Honors (91.3%). Rank: 3<sup>rd</sup>/64.

## Work Experience

- Jun–Oct 2020 **Research Intern**, *King Abdullah University of Science and Technology*, Saudi Arabia.  
Remote research intern in the group of Professor [Peter Richtárik](#). Worked on federated and convex composite optimization.
- Jun–Sep 2019 **Research Intern**, *King Abdullah University of Science and Technology*, Saudi Arabia.  
Worked in the group of Professor [Peter Richtárik](#) on stochastic optimization. Analyzed algorithms for distributed and non-convex optimization.
- Aug–Sep 2018 **Undergraduate Research Assistant**, *Cairo University*, Egypt.  
Worked with Professor [Amir Atiya](#) and Professor [Ahmed Abdel-Gawad](#) on fast matrix multiplication algorithms. Wrote code in CUDA C.
- Jun–Aug 2016 **Nafham**, *Intern*.  
Recorded more than 40 educational videos on high school mathematics and tutored multiple students in Arabic. Also wrote web pages in HTML, JavaScript, & CSS, and PHP with Bootstrap and Laravel.
- Aug–Sep 2017

## Awards

- 2020/2022 **Top reviewer**, *various conferences*.  
One of the top 10% of reviewers for ICML 2022 (awarded free registration, July 2022), [AISTATS 2022](#) (awarded Feb. 2022) and NeurIPS 2020 (awarded free registration, Oct. 2020).
- 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 at the 2020 INFORMS annual meeting.
- Sep 2019 **Mentor Achievement Award**, *Learn IT, Girl 4th Edition*.  
Awarded for successfully mentoring Natalia Grzywalska over March–June 2019 in learning IT.

## Papers

### Conference papers

- (1) Konstantin Mishchenko, **A. Khaled**, and Peter Richtárik - [Proximal and Federated Random Reshuffling](#) - ICML 2022.
- (2) Elnur Gasanov, **A. Khaled**, Samuel Horváth, and Peter Richtárik - [FLIX: A Simple and Communication-Efficient Alternative to Local Methods in Federated Learning](#) - AISTATS 2022.
- (3) Konstantin Mishchenko, **A. Khaled**, and Peter Richtárik - [Random Reshuffling: Simple Analysis with Vast Improvements](#) - NeurIPS 2020.
- (4) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - [Tighter Theory for Local SGD on Identical and Heterogeneous Data](#) - AISTATS 2020.

- (5) **A. Khaled**, Amir F. Atiya, Ahmed H. Abdelgawad - [Applying Fast Matrix Multiplication to Neural Networks](#) - ACM SAC 2020.

#### Workshop papers

- (1) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - [Better Communication Complexity for Local SGD](#) - *Oral presentation* at the NeurIPS 2019 Federated Learning Workshop.
- (2) **A. Khaled** and Peter Richtárik - [Gradient descent with Compressed Iterates](#) - Poster at the NeurIPS 2019 Federated Learning Workshop.
- (3) **A. Khaled**, Konstantin Mishchenko, and Peter Richtárik - [First Analysis of Local GD on Heterogeneous Data](#) - Poster at the NeurIPS 2019 Federated Learning Workshop.

#### Preprints

- (1) **A. Khaled** and Chi Jin - [Faster federated optimization under second-order similarity](#) - arXiv:2209.02257 (2022).
- (2) Abdurakhmon Sadiev, Grigory Malinovsky, Eduard Gorbunov, Igor Sokolov, **A. Khaled**, Konstantin Burlachenko and Peter Richtárik - [Federated Optimization Algorithms with Random Reshuffling and Gradient Compression](#) - arXiv:2206.07021 (2022).
- (3) **A. Khaled**, Othmane Sebbouh, Nicolas Loizou, Robert M. Gower, and Peter Richtárik - [Unified Analysis of Stochastic Gradient Methods for Composite Convex and Smooth Optimization](#) - arXiv:2006.11573 (2020).
- (4) **A. Khaled** and Peter Richtárik - [Better Theory for SGD in the Nonconvex World](#) - arXiv:2002.03329 (2020).
- (5) Sélím Chraïbi, **A. Khaled**, Dmitry Kovalev, Peter Richtárik, Adil Salim, and Matrin Takáč - [Distributed Fixed Points Methods with Compressed Iterates](#) - arXiv:1912.09925 (2019).

## Skills

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

## Software & course projects

These projects involved implementing research papers from scratch.

- Image Processing: Implemented Elad and Milanfar's Style-Transfer via Texture-Synthesis paper in Python using OpenCV, scikit-learn and NumPy. [Code](#), [Report](#).
- Multimedia: Implemented a gated neural nets algorithm (PAQ7) for compression in C++. Won 1<sup>st</sup> place out of 15 teams over the department for the best compression ratio on an Arabic text dataset. [Report](#).
- Pattern Recognition: 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](#).