

# Mai Elkady

## Research Interests

Machine Learning, Data Mining, Deep Learning, Big Data, Computational Biology, Bioinformatics

## Education

- Aug 2018 – **Ph.D. in Computer Science**, *Purdue University*, West Lafayette, IN, USA.  
Present
  - GPA: 3.8
  - Advisor: Petros Drineas
  - Honors: The Purdue University Teaching Academy Graduate Teaching Award for Spring 2020
- Aug 2016 – **M.Sc. in Computer Science**, *Purdue University*, West Lafayette, IN, USA.  
May 2018
  - GPA: 3.8
  - Honors: Fulbright Scholarship
- Sep 2007 – **B.Sc. in Communication Systems**, *Ain Shams University*, Cairo, Egypt.  
June 2012
  - GPA: 3.58
  - Honors: Dean's list for Fall 2007 and Spring 2008

## Skills

- Programming Languages Python, C/C++, MATLAB, R, SQL, PHP
- Languages Fluent in English and Arabic (mother tongue), Basic knowledge in German (A1)

## Posters

"TeraPCA: A Fast and scalable method to study genetic variation in tera-scale genotypes", American Society of Human Genetics (ASHG), Orlando, FL, October 2017 (presented by A. Bose)/ Gene Goloub SIAM Summer School, Aussois, France, June 2019 (presented by **M.Elkady**)

## Publications

A. Bose, V. Kalantzis, E. Kontopoulou, **M. Elkady**, P. Paschou, P. Drineas, "TeraPCA: A fast and scalable software package to study genetic variation in tera-scale genotypes", Bioinformatics

## Projects

- Aug 2020 – **IronHacks COVID-19 Data Science Challenge**, *Purdue University*.  
Sep 2020 Participated and won third place in the Ironhacks COVID-19 Data Science Challenge where the task was to predict the weekly foot traffic at merchants in Indiana in order to understand the COVID-19 impact and risk. To solve this problem I used **Python** to train a ridge regression model that was able to obtain good results in predicting the foot traffic at various stores in Indiana.
- Dec 2018 – **Flower Species Identification**, *PyTorch Scholarship Challenge Program*, Udacity.  
Jan 2019 Employed a DenseNet pre-trained Convolutional Neural Network model to train an image classifier to identify 102 different species of flowers. The code was written in **Python** and used **PyTorch** for deep learning, and the training was done utilizing GPUs on Google Colab. The project was then deployed as a webapp using Flask on herokuapp.

- May 2017 – **Synthetic Genotype Data Simulator**, *Purdue University*.  
 Aug 2017 As part of a team, implemented a data simulator in **C/C++** that generates synthetic genotype data using the Pritchard-Stephens-Donnelly (PSD) model.
- Oct 2016 – **Data Mining Project: Predicting Pulp Fiction Lovers**, *Purdue University*.  
 Nov 2016 As part of a class Kaggle competition, tried several Machine learning approaches, and coded them in **R** and **Python**, to predict whether users will like the movie Pulp Fiction given their previous movie ratings.
- Sep 2011 – **Seniors Graduation Project**, *Ain Shams University*.  
 June 2012
  - Wrote **Bash scripts** to parse log files of calls in Vodafone network, and stored the output of the parsing in a **MySQL** database.
  - Built a website in **PHP** that graphically represents data stored in the database.

## Attended Conferences and Summer Schools

- June 2019 **Gene Goloub SIAM Summer School (G2S3)**, *Aussois, France*.  
 Selected as one of the 40 participants to attend the 9th G2S3 on high performance data analytics
- Sep 2018 **Grace Hopper Conference (GHC)**, *Houston, Texas*.  
 Awarded a scholarship by Purdue Computer Science department to attend GHC 2018

## Experience

- Nov 2020 - **Fellow**, *Research Center for Open Digital Innovation (RCDOI)*, Purdue University.  
 Present
  - Worked preparing data for IronHacks COVID-19 August 2020 Hackathon.
  - Analyzed participants data to gather interesting observations, and determine the important factor predicting a participant to submit.
  - Working on analyzing topics for participants notebooks, by running **LDA** for **topic modelling**.
- May 2020 – **Research Assistant**, *Computer Science Department*, Purdue University.  
 Dec 2020
  - Worked on data size reduction by selecting the most informative rows and sketching the columns for the purpose of being used later in logistic regression.
  - Wrote code in Python and MATLAB to implement and examine potential methods of solving this problem.
- Aug 2018 – **Teaching Assistant**, *Computer Science Department*, Purdue University.  
 May 2020 for Programming in C (CS 240) - Fall 2018, Fall 2019, Spring 2020
  - Held labs and office hours to assist students with coding problems
  - Graded quizzes, and exams
  - Developed assignments to test the student's understanding
 for Foundations of Computer Science (CS 182) - Spring 2019
  - Held office hours to assist students with problems
  - Graded Homeworks
- Feb 2013 – **Junior Lab Engineer**, *Electronics Department*, The American University in Cairo (AUC).  
 July 2016
  - Operated and maintained electronic equipment (servers, computers, printers, sophisticated measurement equipment, kits and development board) in the Electronics and Communications Engineering laboratories and offices.
  - Assisted students with technical problems in labs and with courses' projects including senior projects.
- Dec 2015 – **System Administrator & Developer for Arches**, *Theban Mapping Project (TMP)*, AUC.  
 Jan 2016
  - Worked on creating a web based database of Egyptian archaeological sites using an open source software product called 'Arches' which has been particularly developed for inventories of cultural heritage.
  - Customized Arches for the Egyptian database by writing code in Python, JavaScript, HTML, and CSS

Sep 2014 – **Teaching Assistant for Communications Lab (ECNG 4314)**, *Electronics Department*, AUC.

- Dec 2014
- Assisted students with technical difficulties in the lab
  - Graded quizzes

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## Activities

Jan 2017 – **Outreach officer**, *Purdue Fulbright Association (PFA)*, West Lafayette, IN, USA.

- Aug 2019
- Organized events and activities for PFA members.

Jan 2016 – **Volunteer**, *Safarni*, Cairo, Egypt.

- July 2016
- Designed decorations for safarni travel days.
  - Directed and supervised kids during the safarni travel days.

May 2015 – **Graphic designer & Social media member**, *Have A Dream*, Cairo, Egypt.

- May 2016
- Prepared designs and illustrations to promote Have A Dream events.
  - Managed Have A Dream facebook's page and website.

Sep 2012 – **Exchange Participant**, *International Kindergarten Project*, Lublin, Poland.

- Oct 2012
- Taught children aged from 4 - 12 years about Egypt and its culture.
  - Prepared weekly activities plan for each day (with games, dances, songs and/or presentations) to engage the children in learning.