

Assoc. Prof. Ayman Ghoneim

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Specialization & Research Interests:

- Artificial Intelligence and Evolutionary Computation.
- Machine Learning and Data Mining Techniques.
- Agent-based Modeling and Simulation.

Direction A: Simulation

Building high fidelity simulators helps understanding, investigating and improving real-life systems. Agent-based modeling is used to build simulators for many applications including pedestrian flow, evacuation, traffic, trading strategies in stock markets, product/opinion diffusion, epidemics spread, and cyber-attacks. This requires strong modeling and programming skills (i.e., no ready toolboxes available), and knowledge related to several algorithms (e.g., graph theory to model connectivity).

Direction B: Mathematical Modeling and Computational Intelligence

Building mathematical models (linear/non-linear/multi-objective programs) is an effective way to model and reach an optimal solution for many problems. As the mathematical models grow bigger (i.e., in number of variables and constraints), finding solutions using mathematical paradigms will be very time consuming, thus, computational intelligence techniques (e.g., differential evolution, genetic algorithms, ... etc) are used instead to tackle many difficult problems including time-table scheduling, portfolio management and facility allocation. This requires strong modeling and programming skills (i.e., no ready toolboxes available), and domain-specific knowledge based on the problem under investigation.

Direction C: Smart Systems

We are living within and use many systems in our daily life. Making such systems smarter saves time, effort and money. Making use of real-time data and adding few Artificial Intelligence components will have significant impact on the effectiveness and efficiency of systems. To this end, smart systems can be built for Shopping Malls, Traffic Control, Commodities Delivery, and Garbage Collection, among others. This requires strong modeling and programming skills (i.e., no ready toolboxes available), and knowledge related to several algorithms (e.g., shortest-path and machine learning).

Dr. Marwa Salah

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1-Using IOT and data analytics in society service (smart services).

2-Big Data Analytics and data science (sentiment analysis, customer behavior detection, solve Water shortage problem, solve agricultural problems, detect Psychological problems.)

3-Using Mobile applications in different areas (real society problems(traffic ,help disabilities,...))

Dr. Mohamed.Mead

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Project 1: online Restaurant Management system (Website/Mobile)

This Project must include

- The basics: contact info, hours, location
- An up to date menu
- Online ordering
- A way to make reservations
- The restaurant's social media accounts
- Gift card purchasing
- An email collection form

Project 2: Tourism in Egypt

Tourists visit historical areas, museums and other areas that are considered to be attractive to the foreign person. the transportation and hotel industry is one of the industries that benefit from tourism.

This Project must include

- Manage information about the entities that own hotels by allowing them to register on website.
- allowing the registration of hotel data to each entity with the prices, and so on.
- Make the registration available to users at the website.
- Facilitate the search and booking for hotels for users.
- Providing transportation booking service to users.

Project 3: Manage Patient Records

A website or mobile application for a hospital to booking an appointment with doctor and manage patient record

this Project must include

- Manage Clinics, Doctors, and Patients information
- Search for doctor.
- Facilitate the process of making an appointment of a doctor
- Help doctor to follow up to his patient.

Project 4: School Management System (website/Mobile Application)

This Project facilitate communication between staff, teachers, parents and students, as well as this project develop the field of education by using modern methods of communication and training

This Project must include

- Manage Teachers, parents, Students, Subjects and classes information
- Manage Teachers, parents, Students, communication
- Enrolling students to class.
- Assign a teacher to class
- Assign a subject to a class
- Help parents to follow up to his son's performance in school.

Project 5: Questions Bank and Online Examination Application

This Project must include

- Create Admin, student, teacher Accounts
- Create Questions
- Build Exam
- View Exam and start exam
- View Marks

Project 6: IOT-BASED MONITORING for gardens

By using IoT technologies, it is possible to monitor the environment surrounding the crops to prevent damage and give the necessary alerts to know the condition of the crop. In this project, a prototype has been presented to monitor gardens, where the environment around plants will be monitored. In this prototype, we will focus on monitoring the temperature and Humidity, previous irrigation dates and the type of plant to alert users that the plant needs or does not need irrigation.

Dr. Nermine Othman

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- Using Sentiment analysis to detect fraud application
- Websites evaluation using opinion mining
- Interactive Chatbot for BUE Students.
- Developing Chatbot for Patients

Prof. Dr Vladimir Geroimenko

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www.amazon.co.uk/s?k=augmented+reality+Geroimenko

1. Augmented Reality and Artificial Intelligence
2. Augmented Reality and the Internet of Things
3. Augmented Reality in education, book design and environment protection
4. Augmented Reality in advertising, fashion, retail and shopping
5. Augmented Reality in archaeology, architecture, urban design and planning
6. Augmented Reality in history, museums, tourism and travel industry
7. Augmented Reality in medicine, medical training and phobia treatment
8. Augmented Reality in health care and disability assistance
9. Augmented Reality in serious computer games and entertainment
10. Augmented Reality in emergency management, rescue, public safety and security
11. Augmented Reality in social interaction, navigation and guidance
12. Augmented Reality in sports

- Using Datamining techniques for various applications.

Prof. Andreas Pester

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- AR and DL on MediaPipe
- Tiny ML solutions on Coral Dev board Mini
- Time Series Topological Data Analysis for Deep Learning Tasks
- Parameter Calibration of (Mathematical) Models with GNN
- Synthetical data vs. mathematical models of pumps
- Digital Twins for Metaverse environments of a classroom

- Learner's Digital Twin
- AI and Augmented Reality

Dr. Walid Hussein

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[1] 2.5D visual relationship detection. (Ref:
https://www.sciencedirect.com/science/article/pii/S1077314222001357?dgcid=rss_sd_al
 l)

[2] Single image super-resolution based on progressive fusion of orientation-aware features/ directional variance attention network. (Ref:
https://www.sciencedirect.com/science/article/pii/S0031320322005180?dgcid=rss_sd_al
 l

Ref:
https://www.sciencedirect.com/science/article/pii/S0031320322004770?dgcid=rss_sd_al
 l)

[3] Using temporal and structural data to reconstruct 3D cerebral vasculature from a pair of 2D digital subtraction angiography sequences. (Ref:
https://www.sciencedirect.com/science/article/pii/S0895611122000490?dgcid=rss_sd_al
 l)

[4] Bridging 2D and 3D segmentation networks by 2.5D for computation-efficient volumetric medical image segmentation. (Ref:
https://www.sciencedirect.com/science/article/pii/S0895611122000611?dgcid=rss_sd_al
 l)

[5] Detection of Intrusion behavior in cloud applications using Pearson's chi-squared distribution and decision tree classifiers. (Ref:
https://www.sciencedirect.com/science/article/pii/S016786552200246X?dgcid=rss_sd_a
 ll)

[6] Rotation invariant Gabor convolutional neural network for image classification/ Adaptive gradients and weight projection based on quantized neural networks for efficient image classification.(Ref:
https://www.sciencedirect.com/science/article/pii/S0167865522002483?dgcid=rss_sd_al
 l

Ref:
https://www.sciencedirect.com/science/article/pii/S1077314222001059?dgcid=rss_sd_al
 l)

[7] Multi-scale multi-hierarchy attention convolutional neural network for fetal brain extraction/ Progressive multi-scale fusion network for RGB-D salient object detection.

(Ref:

https://www.sciencedirect.com/science/article/pii/S003132032200509X?dgcid=rss_sd_al
l)

Ref:

https://www.sciencedirect.com/science/article/pii/S1077314222001126?dgcid=rss_sd_al
l)

[8] Learning spectral transform for 3D human motion prediction. (Ref:

https://www.sciencedirect.com/science/article/pii/S1077314222001266?dgcid=rss_sd_al
l)

[9] Recursive octree network for efficient 3D processing. (Ref:

https://www.sciencedirect.com/science/article/pii/S1077314222001333?dgcid=rss_sd_al
l)

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