Ahmed Magd Aly

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Research Interests

Deep Learning, Reinforcement Learning, Self-supervised Learning, Computer vision, Robotics
(ordered according to my interest in the topic)

Education

Korea Advanced Institute of Science and Technology (KAIST) **Aug 2021 - Present**
S. Korea, Daejeon
M.Sc. in Robotics

- Current CGPA: 4.00/4.30

Innopolis University **Aug 2020 – June 2021**
Russia, Innopolis
M.Sc. in Robotics and Computer Vision (transferred after 1st year)

- CGPA before leaving: 4.67/5.00

Nile University **Graduated Fall 2020**
Egypt, Giza
B.Sc. in Mechatronics Engineering

- CGPA: 3.98/4.00 (2nd among +100 students)

Misr University for Science and Technology (MUST) **Aug 2015 – Jun 2016**
Egypt, Giza
B.Sc. in Engineering (transferred after 1st year)

- CGPA before leaving: 4.74/5.0 (1st among +250 students)

Relevant Coursework (for more details about the content click here):
Programming for AI (current grade 60/60), Deep Learning (A), Computer Vision (A+), Artificial Intelligence and Machine Learning (A), Introduction to Visual Intelligence (A-), Deep Learning for Computer Vision (S), Probability and Statistics (S), *Machine Learning (A), *Dynamics of Nonlinear Robotics Systems (A), *Fundamentals of Robot Control (A), *Convex Optimization and Computational Intelligence (A), *Sensing Perception and Actuation (A), and the other fundamental course during B.Sc. mostly with (A+)

Auditing:
Bayesian Machine Learning, Advances in CNNs

Final Semester:
Deep Reinforcement Learning

* means that this course was taken at Innopolis University with grading system: A, B, C, D and F
S means "pass" in pass/fail courses

All of the major courses at KAIST are taught by professors from the Graduate School of AI, with great profiles (ex. Google Brain, MIT CSAIL, etc.), teaching up to date topics with practical implementations (e.g. Diffusion Models, BERT & GPT, etc.)

Honors & Awards

Scholarships:

- M.Sc. Full scholarship recipient at KAIST **2021**
- Full scholarship recipient at Innopolis University **2020**
- Bank of Egypt full scholarship recipient for B.Sc. at Nile University **2016**

Contests:

- Finalist in IDAO (International Data Analysis Olympiad – Organized by Yandex Russia) BegInnors team [Link] **2021**
- 1st place in deep learning contest (domain generalization) for master students in Innopolis University. My model achieved the same score during training and testing domains. [Link] **2020**
- Best project in Rigid Body Dynamics in undergrad **2018**

Honorary Titles:

- 2nd highest CGPA in all engineering disciplines at Nile University at the time of graduation **2020**
- Recipient of the Dean's Honor award – Nile University **2019**
- Highest CGPA at MUST (before transfer) **2016**
- Bank of Egypt full scholarship recipient for B.Sc. at Nile University **2016**

Research Experience

Graduate Student Researcher **Aug 2021 – Present**
KAIST – VDC Lab, advised by Dongsuk Kum
Mapping the surroundings of the ego-vehicle in bird's eye view (BEV)

Undergraduate Researcher **Jun 2019 – Jul 2020**
Nile University - SESC, advised by Hossam Hassan Ammar
Worked on multiple research topics related to robotics, as mentioned in my publication section

Participating in Undergraduate Research Forum (UGRF) **Feb 2016 – Jul 2019**
Nile University
Conducted research activities in a number of course projects, and presented their posters during the event.

Publications

5. A Bangunharcana, **A Magd**, KS Kim. Paper_name_left_off_for_anonymity. *Under submission for the Conference on Computer Vision and Pattern Recognition (CVPR) 2023.*
4. A Bangunharcana, **A Magd**, KS Kim. SSu-ReAl : Self-Supervised Multi-Frame Monocular Depth via Recurrent Alignments. *Under submission for the International Conference on Robotics and Automation (ICRA) 2023.*
3. AS Sayed, AA Mohamed, **AM Aly**, YM Hassan, AM Abdulaziz, HH Ammar, R Shalaby. Experimental modeling of hexapod robot using artificial intelligence. In *The International Conference on Artificial Intelligence and Computer Vision (AICV) 2020.* [Link]
2. HA Elkholy, AT Azar, **A Magd**, H Marzouk, HH Ammar. Classifying Upper Limb Activities Using Deep Learning. In *The International Conference on Artificial Intelligence and Computer Vision (AICV) 2020.* [Link]
1. AT Azar, **AM Aly**, AS Sayed, MEB Radwan, HH Ammar. Neuro-Fuzzy System for 3-DOF Parallel Robot Manipulator. In *Novel Intelligent and Leading Emerging Sciences Conference (NILES) 2019.* [Link]

Skills & Hobbies

Programming Languages:	Python, C++, C#, Java, MATLAB, LaTeX
Libraries:	PyTorch, TensorFlow, Keras, OpenCV, and packages related to data science, ROS
Software:	LabVIEW, SolidWorks, Fusion360, ANSYS, MSC Adams, MAXIMA
Languages:	Arabic (Native) – English (Advanced)
Hobbies:	Exercising, Long distance cycling (~150 km), and Sightseeing

Experience

- Wrote paper review articles (e.g. [Link]).
- Presented a plethora of research paper reviews for the most impactful papers in the field (e.g. [Link])
- Implemented many AI papers (e.g. YOLO, ResNet, etc.)
- Enrolled in +8 courses for AI in KAIST and Innopolis, not to mention the endless self-study from open-sourced material (e.g. cs231n, DeepMind x UCL RL course, etc.)
- Participated in competitions during my undergrad (e.g. ACM competitive programming, walking robot competition)
- Enrolled in FESTO professional diploma, working on (programming robotics, PLCs, pneumatics and hydraulic circuits, and programming CNCs)

Selected Projects

Some projects during my masters can be accessed through my github page or my website

- AI related: Training various models for tasks such as lane segmentation, object detection, depth estimation, optical flow estimation, etc.
- Implemented a computer vision algorithm for omnidirectional image stitching (360° stitching) and depth estimation for stereo cameras
- Implemented a convex optimization algorithm to achieve an obstacle avoidance path planning for UAVs
- Implemented a computer vision algorithm and hardware settings to help achieve a robust UAV localization, which helps the UAVs to autonomously land on charging stations
- Simulated a plethora of robotic manipulators using python and MATLAB

The followings, are projects during my undergraduate studies, some can be found on my website

- Built an automated vacuum cleaner from scratch and controlling its motion via a PID controller
- Built a 6DOF robotic arm from scratch with my teammates during an Erasmus+ project
- Applied PD, Feedback linearization + PD and Robust controls on SCARA manipulator
- Built "2048 game" with python
- Designed a potato harvester machine using SolidWorks
- Simulated and studied different motions for Stewart Platform (a parallel manipulator) using MSC Adams
- Video encryption using MATLAB

Freelancing:

- Designing a linear peristaltic pump operated with a non-standard four-stroke engine for FX GROUP (a startup group at Latvia) 2019. [Link]
- Programming a PLC to automate a production line for pipes in one of the factories in Egypt (2019)