Ahmed Magd Aly Shehata

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Research Interests

Specific for PhD: RL (meta-, continual-, hierarchical learning), Generative models (Diffusion, VAEs), SLL
Broad and Previous Experience: Machine-, Deep Learning, Computer Vision, Robotics

Education

Korea Advanced Institute of Science and Technology (KAIST) **Aug 2021 - Present**
M.Sc. in Robotics
- Thesis: BEV generation of ego-vehicle's surroundings using Diffusion models
- Current CGPA: 4.06/4.30

Innopolis University – Transferred **Aug 2020 – June 2021**
M.Sc. in Robotics and Computer Vision
- CGPA before leaving: 4.67/5.00

Nile University **Graduated Fall 2020**
B.Sc. in Mechatronics Engineering
- Thesis: Intelligent EMG-Assisted Continuous Knee Motion [Link]
- CGPA: 3.98/4.00 (2^{nd}/+100 students)

Misr University for Science and Technology (MUST) – Transferred **Aug 2015 – Jun 2016**
B.Sc. in Engineering
- CGPA before leaving: 4.74/5.0 (1^{st}/+250 students)

Relevant Coursework (for more details about the content click here):
Programming for AI (A+), 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+), Advances in CNNs(auditing), Bayesian Machine Learning(auditing), Deep Reinforcement Learning (Will take in Final Semester)

* Courses from Innopolis University with grading system: A, B, C and D – (S) is used for pass/fail courses

Honors & Awards

Scholarships:
- M.Sc. Full scholarship recipient at KAIST **2021**
- Full scholarship recipient at Innopolis University **2020**
- Funding support from the Academy of Scientific Research and Technology (ASRT) in Egypt, for my graduation project. **2020**
- Bank of Egypt full scholarship recipient for B.Sc. at Nile University **2016**

Contests:
- Finalist in IDAO (International Data Analysis Olympiad, Yandex) BegInnors team [Link] **2021**
- 1st place in deep learning contest (domain generalization) in Innopolis University. [Link] **2020**
- Best project in Rigid Body Dynamics for modeling and controlling Steward platforms. **2018**

Honorary Titles:
- Graduating from Nile University with highest honors **2020**
- Recipient of the Dean's Honor award – Nile University **2019**

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. *Submitted and currently under review 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. *Submitted and currently under review 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

Programming Languages:	Python, C++, C#, Java, MATLAB
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)

Experience

- Wrote multiple paper review articles (e.g. [Link]).
- Presented many reviews on impactful research paper in the field (e.g. [Link])
- Implemented many AI papers (e.g. YOLO, ResNet, etc.)
- Completed +8 AI courses at KAIST and Innopolis, in addition to self-study from open-source material such as cs231n and the DeepMind x UCL RL course
- 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 AI and Robotics Projects, visit my github page and my website for demos

- Trained models for tasks such as lane segmentation, object detection, depth estimation, and optical flow estimation, image generation, neural machine translation, diffusion models, etc.

- Implemented a computer vision algorithm for omnidirectional image stitching (360° stitching) and depth estimation for stereo cameras
- Implemented a convex optimization algorithm for UAV obstacle avoidance path planning
- Implemented a computer vision algorithm and hardware settings for UAV localization and autonomous landing on charging stations
- Simulated robotic manipulators (6DOF KUKA, parallel manipulators, etc.) using Python and MATLAB

Undergraduate Projects, for demos visit website

- Built an automated vacuum cleaner with PID motion control
- Built a 6DOF robotic arm from scratch with a team during an Erasmus+ project
- Applied PD, Feedback linearization + PD and Robust controls on SCARA manipulator
- Built the"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)

Volunteering:

- Head of scientific committee in "Building" club at MUST, where I used to help students in their courses by preparing detailed notes and solutions that they can get from library.

MISC.

Long distance cycling (~150km), sightseeing, excercising and watching anime.