Badr ALKHAMISSI
AI Researcher

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I am passionate about building intelligent systems that can solve complex machine learning tasks and at the same time reveal insights about the inner workings of biological agents. Such systems do not only pave a way for solving long-standing societal problems but also shed light on what it means to be human.

🎓 EDUCATION

September 2020 – September 2019 | **Goldsmiths, University of London, MASTER OF SCIENCE, London, UK**
- › MSc. in Computational Cognitive Neuroscience - Pass with Distinction.
- › Thesis: Episodic Meta-Reinforcement Learning on the Two-Step and Harlow Tasks.

June 2018 – September 2014 | **The American University in Cairo, BACHELOR OF SCIENCE, Cairo, Egypt**
- › BSc. in Computer Science - Summa Cum Laude. **GPA 4.0**
- › President's Cup and Mohamed El Beleidy Academic Award for class valedictorian.
- › Mohammed Bin Abdulkarim A. Allehedan Award for highest performing STEM student.
- › Academic Achievement Scholarship.
- › Thesis: Video Search using Natural Language.

July 2017 | **Tsinghua University, DEEP LEARNING SUMMER SCHOOL, Beijing, China**
- › Thorough training in deep learning, covering many applications in Computer Vision, NLP, Knowledge Graph, Social Media Analysis, Multimodal Analysis and Robotics.
- › Outstanding Performance Award in Deep Learning Summer School at Tsinghua University.

December 2016 – August 2016 | **Stony Brook University, SEMESTER ABROAD, New York, United States**
- › Best Junior Award in Stony Brook ACM Regional Qualification Contest.
- › Abdallah Jum'ah Study Abroad Scholarship.

June 2014 – September 2011 | **Manor House School, INTERNATIONAL GENERAL CERTIFICATE OF SECONDARY EDUCATION, Cairo, Egypt**
- › Outstanding Cambridge Learner Award in AL Computing.

💼 INDUSTRIAL AND RESEARCH EXPERIENCE

September 2019 – April 2019 | **Applied Scientist, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt**
- › Part of the LUIS Applied Science Team.
- › Part of the Machine Teaching Innovation Group.
- › Research in Cross-Lingual Model Transfer.
- › Best Mentor Award.
- › First Place in MS ATLC Hackathon.

`NLU` `NLP` `MT` `Keras` `Tensorflow` `PyTorch` `Python` `C#`

March 2019 – January 2018 | **Machine Intelligence Research Assistant, VKANSEE, Cairo, Egypt**
- › Conduct research to improve state-of-the-art algorithms in fingerprint matching, spoofing and quality analysis through deep learning.
- › Optimize implementations for speed and space to suit embedded devices with restricted resources.
- › Assist in data collection, labeling, and preprocessing.
- › Work with and support engineers from leading mobile phone and device manufacturers to integrate Vkansee solutions into industry standard platforms.

`Computer Vision` `Few-Shot Learning` `Keras` `Tensorflow` `Python` `C++` `QT`

September 2018 – June 2018 | **Software Engineer, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt**
- › Researching the applicability of multilingual bot-interaction through Machine Translation.
- › Mentoring Summer Intern.
- › Developed Node CLI tool for MS Language Generation, part of Bot-Framework tools.
- › Collaborating with Microsoft Beijing for designing and developing core components part of MS Language Generation.
- › Incorporate Machine Translation into MS Bot-Framework.

`Visual Studio` `C#` `NodeJS` `JavaScript` `TypeScript` `Python` `.NET` `MT`

Fall '15 & '17 & Spring '16	**Undergraduate Teaching Assistant,** THE AMERICAN UNIVERSITY IN CAIRO, Cairo, Egypt ❯ Teaching assistant for Deep Learning and Programming Fundamentals courses. ❯ Hold regular office hours to help students. ❯ Give sessions and workshops to assist students with their coursework. C++ | Python | Tensorflow | Keras | SFML
Winter '16 & Summer '15	**Software Development Engineer Intern,** MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt ❯ Supporting full-text search for MS Language Understanding Intelligent Service (LUIS) utterances. ❯ Migrating existing LUIS database from Azure to MS SQL Server and adjusting LUIS features that uses this database accordingly. ❯ Design and implement the application import/export feature on LUIS. ❯ Developing different applications (iOS, Windows Phone and an Office Extension) that utilizes LUIS. C# | F# | Swift | Objective-C | iOS | Windows Phone | .NET | Visual Studio | Xcode

📘 PUBLICATIONS & CONFERENCES

DEEP DIACRITIZATION: EFFICIENT HIERARCHICAL RECURRENCE FOR IMPROVED ARABIC DIACRITIZATION COLING/WANLP2020
🔗 Paper 🔗 Demo ⊙ github.com/bkhmsi/deep-diacritization

Published in the *Proceedings of the The Fifth Arabic Natural Language Processing Workshop* - co-located with COLING'2020. The work proposes a novel architecture for automatically restoring Arabic diacritics that outperforms previous SOTA methods.

Python \| PyTorch \| Arabic NLP \| NLP

META-RL ON THE EPISODIC HARLOW TASK PREPRINT
⊙ github.com/bkhmsi/episodic-harlow

Introduces an episodic variant of the Harlow visual fixation task and uses it as a testbed to analyze the performance and reinstatement gate activations of an episodic meta-RL agent.

Python \| PyTorch \| EMRL \| Meta-RL \| RL

PROGRAM COMMITTEE MEMBER IN THE METALEARN2020 WORKSHOP AT NEURIPS NEURIPS/METALEARN2020

I was a junior reviewer in a workshop on meta-learning at NeurIPS'2020. Responsible of reviewing three papers.

💻 SELECTED PROJECTS

EPISODIC META-RL ON THE TWO-STEP AND HARLOW TASKS JUNE 2020 - AUGUST 2020
⊙ github.com/bkhmsi/Meta-RL-TwoStep-Task ⊙ github.com/bkhmsi/Meta-RL-Harlow

Reproduces the results of animal behavior and artificial agents on both the Two-Step and Harlow tasks using an episodic meta-RL computational model that combines three fully-fledged RL systems inspired from the machine learning and neuroscience literature.

Python \| PyTorch \| Meta-RL \| RL \| EMRL \| Neuroscience

VIDEO SEGMENT RETRIEVAL BY TEXT QUERIES SEPTEMBER 2017 - MAY 2018
⊙ github.com/bkhmsi/forget-me-not

Undergraduate Thesis Project. Proposes a framework for searching long untrimmed videos for segments that logically correlate with a natural language query.

Python \| PyTorch \| Tensorflow \| Keras \| Computer Vision \| NLP

SKETCH INVERSION USING DEEP CONVOLUTIONAL NEURAL NETWORKS MAY 2017
⊙ github.com/bkhmsi/sketchback

Synthesising photo-realistic images from pencil sketches of human faces and architectural drawings of buildings.

Python \| Tensorflow \| Keras \| Computer Vision

KORASTAK.COM JUNE 2016 - PRESENT
🔗 korastak.com

Notes-sharing platform with the goal of democratizing the studying experience for students in Egyptian universities.

NodeJS \| AngularJS \| Firebase \| HTML \| CSS

🈯 LANGUAGES

Arabic	●●●●●
English	●●●●●
French	●●○○○

🟰 SKILLS

Proficient	Python, PyTorch, TF, Keras, C++, JS, NodeJS, C#, Java, SQL, Matlab, HTML, CSS
Prior Exp	Swift, Obj-C, F#, Elm, VB, PHP, Verilog, Ruby, iOS Dev, Android Dev, Windows Phone Dev, Alexa Dev, Unity, Arduino

🏆 OTHER AWARDS

> Dean's list from Fall '14 till Spring '18 - The American University in Cairo '14 - '18
> Computer Science Exemplary Student - The American University in Cairo '18
> Highest-GPA Award for Expected to Graduate - The American University in Cairo '18
> Third Place Amazon Innovation Hackathon - The American University in Cairo '18
> Highest-GPA Award for Juniors - The American University in Cairo '17
> Second Prize in Amazon Alexa Hackathon - The American University in Cairo '17
> High Achiever in CS1101 Course - The American University in Cairo '15
> Second Place in Common Reading Program Essay Contest - The American University in Cairo '14

➕ ACTIVITIES AND VOLUNTEERING

> Volunteered in the organization of the 28th International Conference on Computational Linguistics (COLING'2020).
> I gave a tutorial on multilingual embeddings at IndabaX'19 Egypt.
> Participated in several competitive programming contests including Google Hash Code, Facebook Hacker Cup and more. Qualified to ACM ECPC representing AUC, June '15 - June '18.
> Associate Head of the Computer Science and Engineering Association academics. committee at AUC, responsible for organizing academic events and workshops, Spring '17
> Co-Founded Creative Coding Cairo under FabLab Egypt. Organize monthly meet-ups for the community, Juyl '16 - Sep '17.
> Developed a Database System for Doum Cultural Foundation using MS Access VB and SQL. Sending HTML emails for Doum's News-list. Managing their website and their digital presence. Volunteer in organizing some of their workshops and cultural events, Cairo, September '12 - May '16.
> Member of the academic committee in the Astronomy Club at AUC, assisted in the organization of the 2nd Astronomy Conference in AUC, Fall '14.
> Member of the CISV Egyptian delegation. Participated in organizing a summer camp in Paris, basing activities on: diversity, conflict resolution, sustainable development and human rights through experiential learning, June '15.
> A member of the children jury delegation of long and short films in Cairo International Film Festival for Children; our role was to select a winner for each prize in the film festival, '07, '08, '10.