

Badr ALKHAMISSI

PhD Fellow

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https://bkhmsi.github.io github.com/bkhmsi linkedin.com/in/bkhmsi scholar.google.com/bkhmsi

I am passionate about building sample efficient 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. Please see [website](#) for a more detailed resumé.

EDUCATION

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| Present September 2023 | EPFL, PHD, Lausanne, Switzerland <ul style="list-style-type: none">Co-advised by Antoine Bosselut (NLP Lab) and Martin Schrimpf (NeuroAI Lab) |
| September 2020 September 2019 | Goldsmiths, University of London, MASTER OF SCIENCE, London, UK <ul style="list-style-type: none">MSc. in Computational Cognitive Neuroscience - Pass with Distinction.Thesis: Episodic Meta-Reinforcement Learning on the Two-Step and Harlow Tasks (Grade: 90%). |
| June 2018 September 2014 | The American University in Cairo, BACHELOR OF SCIENCE, Cairo, Egypt <ul style="list-style-type: none">BSc. in Computer Science - Summa Cum Laude. GPA 4.0President's Cup and Mohamed El Beledy 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 <ul style="list-style-type: none">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 <ul style="list-style-type: none">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 <ul style="list-style-type: none">Outstanding Cambridge Learner Award in AI Computing. |

RESEARCH AND INDUSTRIAL EXPERIENCE

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|--------------------------------|--|
| November 2022 November 2021 | AI Resident, META AI, Seattle, US <ul style="list-style-type: none">Research in NLP. Published 5 first-author papers, and 1 co-author paper. (See Publications) <div>NLP Hate Speech Responsible AI Reasoning Arabic NLP FAIR</div> |
| October 2021 October 2020 | Research Intern, SONY AI, Tokyo, Japan (Remotely) <ul style="list-style-type: none">Published 2 papers in collaboration with DeepMind and 1 paper with Sony CSL. (See Publications) <div>Meta-learning Reinforcement learning Symbolic Alchemy</div> |
| September 2019 April 2019 | Applied Scientist, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt <ul style="list-style-type: none">Part of the LUIS Applied Science Team and the Machine Teaching Innovation Group.Research in Cross-Lingual Model Transfer.Best Mentor Award.First Place in MS ATLCL Hackathon. <div>NLU NLP MT Keras Tensorflow PyTorch Python C#</div> |
| March 2019 January 2018 | Machine Intelligence Researcher, VKANSEE, Cairo, Egypt <ul style="list-style-type: none">Research in fingerprint matching, spoofing and quality analysis through deep learning.Optimize implementations for speed and space to suit embedded devices with restricted resources. <div>Computer Vision Few-Shot Learning Keras Tensorflow Python C++ QT</div> |

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|--------------------------------|--|
| September 2018 June 2018 | Software Engineer, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt <ul style="list-style-type: none"> ➤ 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. ➤ Incorporate Machine Translation into MS Bot-Framework. <div>Visual Studio C# NodeJS JavaScript TypeScript Python .NET MT</div> |
| Fall '15 & '17 & Spring '16 | Undergraduate Teaching Assistant, THE AMERICAN UNIVERSITY IN CAIRO, Cairo, Egypt <ul style="list-style-type: none"> ➤ 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. <div>C++ Python Tensorflow Keras SFML</div> |
| Winter '16 & Summer '15 | Software Development Engineer Intern, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt <ul style="list-style-type: none"> ➤ 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. <div>C# F# Swift Objective-C iOS Windows Phone .NET Visual Studio Xcode</div> |

PUBLICATIONS & CONFERENCES



INVESTIGATING CULTURAL ALIGNMENT OF LARGE LANGUAGE MODELS IN SUBMISSION (2024)

 Paper  Tweets  [github.com/https://github.com/bkhmsi/cultural-trends](https://github.com/bkhmsi/cultural-trends)
 Authors: **Badr AlKhamissi**, Muhammad ElNokrashy, Mai AlKhamissi, Mona Diab


PARTIAL DIACRITIZATION: A CONTEXT-CONTRASTIVE INFERENCE APPROACH IN SUBMISSION (2024)

 Paper  Demo  [github.com/https://github.com/munael/ccpd-partial-arabic-diacritization](https://github.com/munael/ccpd-partial-arabic-diacritization)
 Authors: Muhammad ElNokrashy, **Badr AlKhamissi**



INSTRUCTION-TUNING ALIGNS LLMs TO THE HUMAN BRAIN UNIRePS & INSTRUCTION TUNING WS AT NEURIPS 2023

 Paper  Tweets
 Authors: Khai Loong Aw, Syrielle Montariol*, **Badr AlKhamissi***, Martin Schrimpf, Antoine Bosselut




DEPTH-WISE ATTENTION (DWATT): A LAYER FUSION METHOD FOR DATA-EFFICIENT CLASSIFICATION COLING 2024 & ENLSP-II WS AT NEURIPS 2022

 Paper  Poster
 Authors: Muhammad ElNokrashy*, **Badr AlKhamissi***, Mona Diab



ROSETTA STONE AT KSAA-RD SHARED TASK: A HOP FROM LANGUAGE MODELING TO WORD-DEFINITION ALIGNMENT ARABICNLP 2023

 Paper  Poster
 Authors: Ahmed ElBakry*, Mohamed Gabr, Muhammad ElNokrashy, **Badr AlKhamissi***

OPT-R: EXPLORING THE ROLE OF EXPLANATIONS IN FINETUNING AND PROMPTING FOR REASONING SKILLS OF LARGE LANGUAGE MODELS NLRSE WS AT ACL 2023

 Paper  Poster  Tweets
 Authors: **Badr AlKhamissi**, Siddharth Verma, Ping Yu, Zhijing Jin, Asli Celikyilmaz, Mona Diab

ALERT: ADAPT LANGUAGE MODELS TO REASONING TASKS ACL 2023

 Paper  Poster
 Authors: Ping Yu, Tianlu Wang, Olga Golovneva, **Badr AlKhamissi**, Siddharth Verma, Zhijing Jin, Gargi Ghosh, Mona Diab, Asli Celikyilmaz



TAQYIM: EVALUATING ARABIC NLP TASKS USING CHATGPT MODELS PREPRINT 2023

 Paper  Tweets  [github.com/https://github.com/ARBML/Taqyim](https://github.com/ARBML/Taqyim)
 Authors: Zaid Alyafeai*, Maged S. Alshaibani*, **Badr AlKhamissi***, Hamzah Luqman, Ebrahim Alareqi, Ali Fadel

SHADOW-CAVE MODELS: HOW PLATO'S ALLEGORY ILLUMINATES THE LIMITATIONS OF LARGE LANGUAGE MODELS PREPRINT 2023

 Paper  Tweets
 Authors: Muhammad ElNokrashy*, **Badr AlKhamissi***

TOKEen: TASK DECOMPOSITION AND KNOWLEDGE INFUSION FOR FEW-SHOT HATE SPEECH DETECTION EMNLP 2022 (ORAL)

 Paper  Tweets
 Authors: **Badr AlKhamissi***, Faisal Ladhak*, Sridi Iyer, Ves Stoyanov, Zornitsa Kozareva, Xian Li, Pascale Fung, Lambert Mathias, Asli Celikyilmaz, Mona Diab

META AI AT ARABIC HATE SPEECH 2022: MULTITASK LEARNING WITH SELF-CORRECTION FOR HATE SPEECH CLASSIFICATION OSACT5 AT LREC 2022

 Paper  Best Paper Award  Tweets
 Authors: **Badr AlKhamissi***, Mona Diab

[Paper](#) [Website](#) [Tweets](#)

Authors: **Badr AlKhamissi***, Millicent Li*, Asli Celikyilmaz, Mona Diab, Marjan Ghazvininejad

EPIPHENOMENAL REPRESENTATIONS OF ABSTRACT RULES IN A CONNECTIONIST MODEL OF THE DELAYED MATCH TO SAMPLE TASK

COSYNE 2022

[Poster](#)

Authors: **Badr AlKhamissi**, Muhammad ElNokrashy, Zeb Kurth-Nelson, Sam Ritter

HOW TO LEARN AND REPRESENT ABSTRACTIONS: AN INVESTIGATION USING SYMBOLIC ALCHEMY

WORKSHOP 2022

AUTOML LATE-BREAKING

[Paper](#) [Poster](#) [github.com/https://github.com/BKHMSI/alchemist](https://github.com/BKHMSI/alchemist)

Authors: **Badr AlKhamissi**, Akshay Srinivasan, Zeb Kurth-Nelson, Sam Ritter

THE EMERGENCE OF ABSTRACT AND EPISODIC NEURONS IN EPISODIC META-RL

MEMARI WS (SPOTLIGHT) AT NEURIPS 2022 & L2L WS AT ICLR 2021

[Paper](#) [Poster](#)

Authors: **Badr AlKhamissi**, Muhammad ElNokrashy, Michael Spranger

DEEP SPIKING NEURAL NETWORKS WITH RESONATE-AND-FIRE NEURONS

PREPRINT 2021

[Paper](#)

Authors: **Badr AlKhamissi**, Muhammad ElNokrashy, David Bernal-Casas

ADAPTING MARBERT FOR IMPROVED ARABIC DIALECT IDENTIFICATION: SUBMISSION TO THE NADI 2021 SHARED TASK

ARABICNLP WS AT EACL 2021

[Paper](#) [Poster](#) [github.com/https://github.com/mohamedgabr96/NeuralDialectDetector](https://github.com/mohamedgabr96/NeuralDialectDetector)

Authors: **Badr AlKhamissi***, Mohamed Gabr*, Muhammad ElNokrashy, Khaled Essam

DEEP DIACRITIZATION: EFFICIENT HIERARCHICAL RECURRENCE FOR IMPROVED ARABIC DIACRITIZATION

COLING 2020

ARABICNLP WS AT

[Paper](#) [github.com/https://github.com/BKHMSI/deep-diacritization](https://github.com/BKHMSI/deep-diacritization)

Authors: **Badr AlKhamissi**, Muhammad ElNokrashy, Mohamed Gabr

PROGRAM COMMITTEE MEMBER (REVIEWER)

NAACL 2024. EMNLP 2023. Multilingualism and Cross-Lingual NLP Track at ACL 2023. ENLSP Workshop at NeurIPS 2022. Language Modeling and Analysis of Language Models Track at EMNLP 2022. Main Track and Late-Breaking Workshop at AutoML 2022. I (Still) Can't Believe It's Not Better! Workshop at NeurIPS 2021. Meta-Learn Workshop at NeurIPS 2021. Learning to Learn Workshop at ICLR 2021. Meta Learn Workshop at NeurIPS 2020.

ORAL PRESENTATION

EMNLP 2022. MemARI at NeurIPS 2022. OSACT5 at LREC 2022. WANLP at EACL 2021. WANLP at COLING 2020.

POSTER PRESENTATION

ArabicNLP 2023. UniReps at NeurIPS 2023. Instruction Tuning and Following at NeurIPS 2023. ACL 2023. NLRSE at ACL 2023. ENLSP at NeurIPS 2022. AutoML Workshop at AutoML 2022. Learning to Learn at ICLR 2021.

SELECTED PROJECTS

EGYPTIANS IN AI RESEARCH

MARCH 2023 - PRESENT

[Website](#) [Blog Post](#) github.com/bkhmsi/egyptians-in-ai

Website dedicated to showcasing the profiles of prominent Egyptian researchers in the field of Artificial Intelligence.

AI Community

FONT-TO-SKETCH: MORPHING ANY FONT TO A VISUAL REPRESENTATION

MARCH 2023 - MAY 2023

[Website](#) [github.com/https://github.com/BKHMSI/Font-To-Sketch](https://github.com/BKHMSI/Font-To-Sketch)

Morphing whole words and phrases to a visual representation of a given semantic concept using diffusion-based models.

AI Community

EPISODIC META-RL ON THE TWO-STEP AND HARLOW TASKS

JUNE 2020 - AUGUST 2020

[Blog Post](#) github.com/bkhmsi/Meta-RL-TwoStep-Task github.com/bkhmsi/Meta-RL-Harlow

MSc. Dissertation. Reproduces the results of animal behavior and artificial agents on both the Two-Step and Harlow tasks using an episodic meta-RL model that combines 3 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

[Video](#) [Poster](#) 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

 [Poster](#)  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: SIMPLE NOTE SHARING

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](#)

TALKS

- > AiBelmasry Podcast
- > TEDxMIU Talk: Representation Matters: Celebrating Egyptians in the AI Revolution
- > Cohere For AI Community Talk: Presenting OPT-R Paper
- > Mada Masr Podcast Guest Speaker (April 6th 2023 Episode)
- > 3rd Localization Day Egyptian Association for Globalization and Language Solutions Keynote Speaker
- > Goldsmiths, University of London Career Event (Speaker)
- > LyRise: NeurIPS 2021 Egypt Meetup (Panelist)
- > IndabaX Egypt 2019: Tutorial

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

- > Best Paper Award for the Fine-Grained Hate Speech Detection Shared Task in Arabic.
- > First place in all four categories of the second NADI shared task. '21
- > 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
- > Shortlisted in Dell EMC's Graduation Project Competition - 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

ACTIVITIES AND VOLUNTEERING

- > Led website development track for the ACL-6060 D&I Initiative.
- > Official Author of Towards Data Science.
- > Volunteered in the organization of the 28th International Conference on Computational Linguistics (COLING'2020).
- > Participated in giving 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. 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 CISV Egyptian delegation. Participated in organizing a summer camp in Paris, June '10.
- > 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.