

# Badr ALKHAMISSI

## PhD Candidate at EPFL

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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

Present September 2023	<b>EPFL, PHD, Lausanne, Switzerland</b> <ul style="list-style-type: none"><li>&gt; Co-advised by Antoine Bosselut (NLP Lab) and Martin Schrimpf (NeuroAI Lab).</li></ul>
September 2020 September 2019	<b>Goldsmiths, University of London, MASTER OF SCIENCE, London, UK</b> <ul style="list-style-type: none"><li>&gt; MSc. in Computational Cognitive Neuroscience - Pass with Distinction.</li><li>&gt; Thesis: Episodic Meta-Reinforcement Learning on the Two-Step and Harlow Tasks (Grade: 90%).</li></ul>
June 2018 September 2014	<b>The American University in Cairo, BACHELOR OF SCIENCE, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; BSc. in Computer Science - Summa Cum Laude. <b>GPA 4.0</b></li><li>&gt; President's Cup and Mohamed El Beleidy Academic Award for class valedictorian.</li><li>&gt; Mohammed Bin Abdulkarim A. Allehedan Award for highest performing STEM student.</li><li>&gt; Academic Achievement Scholarship.</li></ul>
July 2017	<b>Tsinghua University, DEEP LEARNING SUMMER SCHOOL, Beijing, China</b> <ul style="list-style-type: none"><li>&gt; Outstanding Performance Award in Deep Learning Summer School at Tsinghua University.</li></ul>
December 2016 August 2016	<b>Stony Brook University, SEMESTER ABROAD, New York, United States</b> <ul style="list-style-type: none"><li>&gt; Best Junior Award in Stony Brook ACM Regional Qualification Contest.</li><li>&gt; Abdallah Jum'ah Study Abroad Scholarship.</li></ul>
June 2014 September 2011	<b>Manor House School, INTERNATIONAL GENERAL CERTIFICATE OF SECONDARY EDUCATION, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; Outstanding Cambridge Learner Award in Advanced Level Computing.</li></ul>

## SELECTED RESEARCH AND INDUSTRIAL EXPERIENCE

November 2022 November 2021	<b>AI Resident, META AI, Seattle, US</b> <ul style="list-style-type: none"><li>&gt; Research in NLP. Published 5 first-author papers, and 1 co-author paper. (See Publications)</li></ul> <div>NLP Hate Speech Responsible AI Reasoning Arabic NLP FAIR</div>
October 2021 October 2020	<b>Research Intern, SONY AI, Tokyo, Japan (Remotely)</b> <ul style="list-style-type: none"><li>&gt; Published 2 papers in collaboration with DeepMind and 1 paper with Sony CSL. (See Publications)</li></ul> <div>Meta-learning Reinforcement learning Symbolic Alchemy</div>
September 2019 April 2019	<b>Applied Scientist, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; Part of the LUIS Applied Science Team and the Machine Teaching Innovation Group.</li><li>&gt; Best Mentor Award.</li></ul> <div>NLU NLP MT Keras Tensorflow PyTorch Python C#</div>
March 2019 January 2018	<b>Machine Intelligence Researcher, VKANSEE, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; Research in fingerprint matching, spoofing and quality analysis through deep learning.</li></ul> <div>Computer Vision Few-Shot Learning Keras Tensorflow Python C++ QT</div>
Fall '15 & '17 & Spring '16	<b>Undergraduate Teaching Assistant, THE AMERICAN UNIVERSITY IN CAIRO, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; Teaching assistant for Deep Learning and Programming Fundamentals courses.</li></ul> <div>C++ Python Tensorflow Keras SFML</div>
Winter '16 & Summer '15	<b>Software Development Engineer Intern, MICROSOFT ADVANCED TECHNOLOGY LAB IN CAIRO, Cairo, Egypt</b> <ul style="list-style-type: none"><li>&gt; Part of the Language Understanding Intelligent Service (LUIS) team.</li></ul> <div>C# F# Swift Objective-C iOS Windows Phone .NET Visual Studio Xcode</div>

**TopoLM: Brain-Like Spatio-Functional Organization in a Topographic Language Model**

UNDER REVIEW

 Paper  Tweets

Authors: Neil Rath<sup>\*</sup>, Johannes Mehrer<sup>\*</sup>, **Badr AlKhamissi**, Taha Binhuraib, Nicholas M. Blauch, Martin Schrimpf

**DREAMING OUT LOUD: A SELF-SYNTHESIS APPROACH FOR TRAINING VISION-LANGUAGE MODELS WITH DEVELOPMENTALLY PLAUSIBLE DATA**

BABYLM @ CoNLL 2024

Accepted at BabyLM @ CoNLL 2024

Authors: **Badr AlKhamissi**<sup>\*</sup>, Yingtian Tang<sup>\*</sup>, Abdülkadir Gökce<sup>\*</sup>, Johannes Mehrer, Martin Schrimpf

**Khattat: Enhancing Readability and Concept Representation of Semantic Typography**

AI4VA at ECCV 2024

 Paper  Website  Tweets

Authors: Ahmed Hussein<sup>\*</sup>, Alaa Elsetohy<sup>\*</sup>, Sama Hadhoud<sup>\*</sup>, Tameem Bakr<sup>\*</sup>, Yasser Rohaim<sup>\*</sup>, **Badr AlKhamissi**

**Brain-Like Language Processing via a Shallow Untrained Multihead Attention Network**

PREPRINT & ABSTRACT

ACCEPTED TO CCN 2024

 Paper  Tweets  [github.com/https://github.com/bkhmsi/brain-language-suma](https://github.com/bkhmsi/brain-language-suma)

Authors: **Badr AlKhamissi**, Greta Tuckute, Antoine Bosselut<sup>\*</sup>, Martin Schrimpf<sup>\*</sup>

**MEDITRON: OPEN MEDICAL FOUNDATION MODELS ADAPTED FOR CLINICAL PRACTICE**

PREPRINT (IN SUBMISSION) 2024

 Paper  [github.com/https://github.com/epfLLM/meditron](https://github.com/epfLLM/meditron)

Authors: Zeming Chen, Angelika Romanou<sup>\*</sup>, Antoine Bonnet<sup>\*</sup>, Alejandro Hernández-Cano<sup>\*</sup>, **Badr AlKhamissi**<sup>\*</sup>, Kyle Matoba<sup>\*</sup>, [...], Physician Evaluation Group, Noémie Boillat-Blanco, Kristina Keitel, Javier Elkin, Blaise Robert, Syrielle Montariol, Mary-Anne Hartley<sup>\*</sup>, Martin Jaggi<sup>\*</sup>, Antoine Bosselut<sup>\*</sup>

**Investigating Cultural Alignment of Large Language Models**

ACL 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

**A Context-Contrastive Inference Approach To Partial Diacritization**

ARABICNLP 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**

COLM 2024, UNIREPS & INSTRUCTION TUNING WS AT NEURIPS 2023

 Paper  Tweets

Authors: Khai Loong Aw, Syrielle Montariol<sup>\*</sup>, **Badr AlKhamissi**<sup>\*</sup>, Martin Schrimpf, Antoine Bosselut

**Depth-Wise Attention (DWATT): A Layer Fusion Method for Data-Efficient Classification**

LREC-COLING 2024 (ORAL) & ENLSP-II WS AT NEURIPS 2022

 Paper  Poster

Authors: Muhammad ElNokrashy<sup>\*</sup>, **Badr AlKhamissi**<sup>\*</sup>, Mona Diab

**“FLEX TAPE CAN’T FIX THAT”: BIAS AND MISINFORMATION IN EDITED LANGUAGE MODELS**

EMNLP 2024

 Paper

Authors: Karina Halevy, Anna Sotnikova, **Badr AlKhamissi**, Syrielle Montariol, Antoine Bosselut

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

ARABICNLP 2023

 Paper  Poster

Authors: Ahmed ElBakry<sup>\*</sup>, Mohamed Gabr, Muhammad ElNokrashy, **Badr AlKhamissi**<sup>\*</sup>

**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<sup>\*</sup>, Maged S. Alshaibani<sup>\*</sup>, **Badr AlKhamissi**<sup>\*</sup>, 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<sup>\*</sup>, **Badr AlKhamissi**<sup>\*</sup>

**Token: Task Decomposition and Knowledge Infusion for Few-Shot Hate Speech Detection**

EMNLP 2022 (ORAL)

 Paper  Tweets

Authors: **Badr AlKhamissi**<sup>\*</sup>, Faisal Ladhak<sup>\*</sup>, 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 (ORAL)

[Paper](#) [Best Paper Award](#) [Tweets](#)

Authors: **Badr AlKhamissi\***, Mona Diab

## A REVIEW OF LANGUAGE MODELS AS KNOWLEDGE BASES

PREPRINT 2022

[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 (ORAL)

[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 (ORAL)

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

## ORGANIZING COMMITTEE

ArabicNLP 2025 (Publicity Chair). ICML Workshop on Large Languages and Cognition (2024). ArabicNLP 2024 (Social Chair).

## PROGRAM COMMITTEE MEMBER (REVIEWER)

EMNLP 2024. NeurIPS 2024. ArabicNLP 2024. Cognitive Computational Neuroscience (CCN) 2024. ACL 2024 (ARR). NAACL 2024. EMNLP 2023. ACL 2023. ENLSP-II Workshop at NeurIPS 2022. 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.

## SELECTED PROJECTS

### EGYPTIANS IN AI RESEARCH

MARCH 2023 - PRESENT

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

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

AI

Community

## TALKS

- Psychology Days at Riga Stradins University (Invited Talk)
- NCCR Evolving Language Group (Invited Talk)
- Cohere For AI Community Talk – Geo Regional Africa Group (Invited Talk)
- ARBML Board (Invited Talk)
- AiBelmasry Podcast (Guest Speaker)
- TEDxMIU Talk: Representation Matters: Celebrating Egyptians in the AI Revolution
- Cohere For AI Community Talk: Presenting OPT-R Paper (Invited Talk)
- Mada Masr Podcast Guest Speaker (April 6th 2023 Episode)
- 3rd Localization Day Egyptian Association for Globalization and Language Solutions (Keynote Speaker)
- IndabaX Egypt 2019: Tutorial