

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 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	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 Beleidy Academic Award for class valedictorian.Mohammed Bin Abdulkarim A. Allehedan Award for highest performing STEM student.Academic Achievement Scholarship.
July 2017	Tsinghua University, DEEP LEARNING SUMMER SCHOOL, Beijing, China <ul style="list-style-type: none">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 Advanced Level Computing.

SELECTED RESEARCH AND INDUSTRIAL EXPERIENCE

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.Best Mentor Award. <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. <div>Computer Vision Few-Shot Learning Keras Tensorflow Python C++ QT</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. <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">Part of the Language Understanding Intelligent Service (LUIS) team. <div>C# F# Swift Objective-C iOS Windows Phone .NET Visual Studio Xcode</div>

- MIXTURE OF COGNITIVE REASONERS: MODULAR REASONING WITH BRAIN-LIKE SPECIALIZATION** UNDER REVIEW
[Paper](#) [Website](#) [Tweets](#) [github.com/https://github.com/bkhmsi/mixture-of-cognitive-reasoners](https://github.com/bkhmsi/mixture-of-cognitive-reasoners)
 Authors: **Badr AlKhamissi**, C. Nicolò De Sabbata, Zeming Chen, Martin Schrimpf*, Antoine Bosselut*
- FROM LANGUAGE TO COGNITION: HOW LLMs OUTGROW THE HUMAN LANGUAGE NETWORK** CCN 2025 (POSTER)
[Paper](#) [Tweets](#)
 Authors: **Badr AlKhamissi**, Greta Tuckute, Yingtian Tang, Taha Binhuraib, Antoine Bosselut*, Martin Schrimpf*
- THE LLM LANGUAGE NETWORK: A NEUROSCIENTIFIC APPROACH FOR IDENTIFYING CAUSALLY IMPORTANT UNITS** NAACL 2025 (ORAL)
[Paper](#) [Website](#) [github.com/https://github.com/bkhmsi/llm-localization](https://github.com/bkhmsi/llm-localization)
 Authors: **Badr AlKhamissi**, Greta Tuckute, Antoine Bosselut*, Martin Schrimpf*
- TOPLM: BRAIN-LIKE SPATIO-FUNCTIONAL ORGANIZATION IN A TOPOGRAPHIC LANGUAGE MODEL** ICLR 2025 (ORAL)
[Paper](#) [Tweets](#)
 Authors: Neil Rathi*, Johannes Mehrer*, **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
[Paper](#)
 Authors: **Badr AlKhamissi***, Yingtian Tang*, Abdülkadir Gökce*, Johannes Mehrer, Martin Schrimpf
- KHATTAT: ENHANCING READABILITY AND CONCEPT REPRESENTATION OF SEMANTIC TYPOGRAPHY** AI4VA AT ECCV 2024
[Paper](#) [Website](#) [Tweets](#)
 Authors: Ahmed Hussein*, Alaa Elsetohy*, Sama Hadhoud*, Tameem Bakr*, Yasser Rohaim*, **Badr AlKhamissi**
- MEDITRON: OPEN MEDICAL FOUNDATION MODELS ADAPTED FOR CLINICAL PRACTICE** UNDER REVIEW
[Paper](#) [github.com/https://github.com/epfLLM/meditron](https://github.com/epfLLM/meditron)
 Authors: Zeming Chen, Angelika Romanou*, Antoine Bonnet*, Alejandro Hernández-Cano*, **Badr AlKhamissi***, Kyle Matoba*, [...], Physician Evaluation Group, Noémie Boillat-Blanco, Kristina Keitel, Javier Elkin, Blaise Robert, Syrielle Montariol, Mary-Anne Hartley*, Martin Jaggi*, Antoine Bosselut*
- 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*, **Badr AlKhamissi***, 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*, **Badr AlKhamissi***, 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*, 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
- SHADOW-CAVE MODELS: HOW PLATO’S ALLEGORY ILLUMINATES THE LIMITATIONS OF LARGE LANGUAGE MODELS** PREPRINT 2023
[Paper](#) [Tweets](#)
 Authors: Muhammad ElNokrashy*, **Badr AlKhamissi***
- TOKEN: TASK DECOMPOSITION AND KNOWLEDGE INFUSION FOR FEW-SHOT HATE SPEECH DETECTION** EMNLP 2022 (ORAL)
[Paper](#) [Tweets](#)
 Authors: **Badr AlKhamissi***, Faisal Ladhak*, Srinu 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).

SELECTED PROGRAM COMMITTEE MEMBER (REVIEWER)

NeurIPS 2025. EMNLP 2025. ACL 2025. NAACL 2025 (Area Chair). EMNLP 2024. NeurIPS 2024. ArabicNLP 2024. Cognitive Computational Neuroscience (CCN) 2024. ACL 2024. 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, 2020. Learning to Learn Workshop 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

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