

Sabit Hassan | Curriculum Vitae

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EDUCATION

PhD in Computer Science	<i>University of Pittsburgh</i>	2021–
<i>Supervised by:</i> Asst. Prof. Malihe Alikhani		
BSc in Computer Science	<i>Carnegie Mellon University</i>	2014–2018
<i>GPA:</i> 3.79/4.0, <i>Minors:</i> Mathematics and History		
<i>Thesis:</i> Interactive Evaluation and Training of Classifiers under Limited Resources,		
<i>Supervised by:</i> Prof. Bhiksha Raj and Assoc. Teach. Prof. Saquib Razak		

HONORS AND AWARDS

Outstanding Academic Achievement Award	<i>Carnegie Mellon University Qatar</i>	May 2018
University Honors	<i>Carnegie Mellon University</i>	May 2018
SCS College Honors	<i>Carnegie Mellon University</i>	May 2018
History Honors	<i>Phi Alpha Theta</i>	May 2018
Carnegie Mellon Dean's List	<i>Carnegie Mellon University</i>	Apr 2015–Apr 2018

RESEARCH

PhD Research	<i>University of Pittsburgh, Pittsburgh, PA</i>	Aug 2021–
<i>Computer Science Department, Supervised by: Asst. Prof. Malihe Alikhani</i>		
<ul style="list-style-type: none">Improved sign language generation by enhancing GLOSS representation with intensity modifiers [1]		
Research Assistant	<i>Qatar Computing Research Institute, Doha, Qatar</i>	Oct 2019–Jun 2021
<i>Arabic Language Technologies Group, Supervised by: Dr. Kareem Darwish</i>		
<ul style="list-style-type: none">Trained and deployed SVM and BERT models for emotion, sentiment, offensiveness, hate speech, spam, adult content, and dialect identification [2] (https://asad.qcri.org/).Collected novel datasets and trained ML/DL models for offensiveness [15] and adult content detection [3], dialect identification [4], tweets related to Covid-19 [5] and spam detection [6].Trained ensemble of ML/DL models for Arabic (2nd place) and English offensiveness detection at SemEval 2020 [7] and Arabic offensiveness detection at OSACT 2020 [8] (1st place).Automatically collected a corpus of English–Arabic parallel tweets [9].Trained SOTA Arabic/Spanish emotion detection models using transformers and studied efficacy of different cross-lingual approaches [13].Trained Arabic BERT model from scratch and performed quantitative analysis of key factors [14].		
Research Associate	<i>Carnegie Mellon University Qatar, Doha, Qatar</i>	May 2018–Aug 2019
<i>MADAR Project, Supervised by: Prof. Nizar Habash and Asst. Teach. Prof. Houda Bouamor</i>		
<ul style="list-style-type: none">Collected a dataset of tweets (21 countries) and trained ML/DL models for Arabic dialect ID.Summarized findings of MADAR Shared Task on fine-grained Arabic dialect ID at WANLP 2019 [10].		
<i>Minicomplexity Project, Supervised by: Assoc. Teach. Prof. Christos Kapoutsis</i>		
<ul style="list-style-type: none">Characterized Polynomial-size Oracle Hierarchy for small one-way finite automata and proved key properties of the hierarchy, such as strictness, upper, and lower bounds [11].		

SCS Honors Undergraduate Thesis *Carnegie Mellon University* Aug 2017–Apr 2018
School of Computer Science, Supervised by: Prof. Bhiksha Raj and Assoc. Teach. Prof. Saquib Razak

- Proposed clustering method for reducing training time of *Active Learning*.
- Proposed a stratification method that uses a learned relationship between feature vectors and classifier labels and dynamic sample allocation methods that reduce bias in *Active Testing* [12].

Summer Research *Carnegie Mellon University Qatar, Doha, Qatar* May 2017–Aug 2017
Qatar Student Initiated Undergraduate Research Project, Supervised by: Bhiksha Raj

- Studied sampling methods for reducing cost of classifier evaluation and human labeling.

Independent Studies *Carnegie Mellon University* Jan 2016–Apr 2018
Minicomplexity, Supervised by: Assoc. Teach. Prof. Christos Kapoutsis

- Studied general complexity theory and subsequently focused on complexity of finite automata

SERVICES

- **Co-organizer**, MADAR Shared Task on Fine-Grained Arabic Dialect Identification, 2019
- **Reviewer**: AAAI-22 Special Track on AI for Social Impact, SemEval 2020
- **Member**, Student Academic Committee, Carnegie Mellon University Qatar
- **Member**, Academic Review Board, Carnegie Mellon University Qatar

TEACHING

Graduate Teaching Assistant *University of Pittsburgh, Pittsburgh, PA* Aug 2021–
Led recitations, held office hours, and graded homework for:

- Algorithms and Data Structures 2 (CS 1501)

Course Assistant *Carnegie Mellon University Qatar, Doha, Qatar* Jan 2016–May 2018
Held office hours and graded homework for the following courses:

- CMUQ Freshman Edge Summer Program
- Great Theoretical Ideas in Computer Science (15-251)
- Parallel and Sequential Data Structures and Algorithms (15-210)
- Fundamentals of Programming and Computer Science (15-112)
- Concepts of Mathematics (21-127)

Summer Internship Mentor *Qatar Computing Research Institute, Doha, Qatar* May 2020–Jul 2020

- Mentored interns on the use of machine learning in NLP tasks

COURSEWORK

- **CS 2731**: Introduction to NLP
- **11-785**: Introduction to Deep Learning
- **10-601**: Introduction to Machine Learning
- **15-451**: Algorithm Design and Analysis
- **15-440**: Distributed Systems
- **CS 2710**: Foundation of AI
- **15-437**: Web Application Development
- **15-453**: Formal Language, Automata and Computability
- **21-484**: Graph Theory

TECHNICAL SKILLS

- **Programming**: Python, JavaScript, Java, C,
- **Machine Learning, Deep Learning, and NLP**: Tensorflow, Keras, Pytorch
- **Web Development**: Django, Flask, Angular JS, Bootstrap
- **Other tools**: ROS, Hadoop, **Languages**: English, Bengali

PROJECTS

- FARASA** *Qatar Computing Research Institute, Doha, Qatar* 2020–2021
Arabic Language Technologies Group, Supervised by: Dr. Kareem Darwish
- Assisted in frontend development of FARASA toolkit (<https://farasa.qcri.org/>)
 - Implemented API quota allocation and managed SQL database of requests and users
- Early Warning Simulation** *Qatar Computing Research Institute, Doha, Qatar* 2020–2021
Arabic Language Technologies Group, Supervised by: Dr. Kareem Darwish
- Developed a system that crawls newspapers articles and identifies antagonism level against Qatar
 - Developed frontend and managed MongoDB database of newspapers articles
- Road Surface Identification** *Carnegie Mellon University* Spring 2018
Course: Introduction to Deep Learning (11–785)
- Collected a dataset of mobile sensor data while driving over different road surfaces
 - Proposed a hybrid HMM–LSTM model for road surface identification
- Remote Method Invocation Library** *Carnegie Mellon University* Fall 2017
Course: Distributed Systems (15–440)
- Implemented concurrent Remote Method Invocation library over a distributed file system.
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PUBLICATIONS

Published/Accepted:

* denotes equal contribution

- [1] Inan, M.*, Yang, Z.*, **Hassan, S.***, Quandt, L., & Alikhani, M..(2022, May) Modeling Intensification for Signed Language Generation: A Computational Approach. In *Findings of 60th Conference of the Association for Computational Linguistics*.
- [2] **Hassan, S.**, Mubarak, H., Abdelali, A., & Darwish, K. (2021, April). ASAD: Arabic Social Media Analytics and unDerstanding. In *Proceedings of the Demonstrations of the 16th Conference of the European Chapter of the Association for Computational Linguistics* (pp. 113–118)
- [3] Mubarak, H., **Hassan, S.**, & Abdealali, A. (2021, April). Adult Content Detection on Arabic Twitter: Analysis and Experiments. In *Proceedings of the Sixth Arabic Natural Language Processing Workshop* (pp. 136–144)
- [4] Abdelali, A., Mubarak, H., Samih, Y., **Hassan, S.**, & Darwish, K. (2021, April). QADl: Arabic Dialect Identification in the Wild. In *Proceedings of the Sixth Arabic Natural Language Processing Workshop* (pp. 1–10)
- [5] Mubarak, H., & **Hassan, S.** (2021, April). ArCorona: Analyzing Arabic Tweets in the Early Days of Coronavirus (COVID–19) Pandemic. In *Proceedings of the 12th International Workshop on Health Text Mining and Information Analysis* (pp. 1–6)
- [6] Mubarak, H., Abdelali, A., **Hassan, S.**, & Darwish, K. (2020, October). Spam Detection on Arabic Twitter. In *International Conference on Social Informatics* (pp. 237–251). Springer, Cham.
- [7] **Hassan, S.**, Samih, Y., Mubarak, H., & Abdelali, A. (2020, December). ALT at SemEval–2020 task 12: Arabic and English offensive language identification in social media. In *Proceedings of the Fourteenth Workshop on Semantic Evaluation* (pp. 1891–1897). [2nd place in Arabic subtask A]
- [8] **Hassan, S.**, Samih, Y., Mubarak, H., Abdelali, A., Rashed, A., & Chowdhury, S. A. (2020, May). ALT submission for OSACT shared task on offensive language detection. In *Proceedings of the 4th Workshop on Open-Source Arabic Corpora and Processing Tools, with a Shared Task on Offensive Language Detection* (pp. 61–65). [1st place in subtask A]
- [9] Mubarak, H., **Hassan, S.**, & Abdelali, A. (2020, May). Constructing a bilingual corpus of parallel tweets. In *Proceedings of the 13th Workshop on Building and Using Comparable Corpora* (pp. 14–21).
- [10] Bouamor, H., **Hassan, S.**, & Habash, N. (2019, August). The MADAR Shared task on Arabic Fine-Grained Dialect Identification. In *Proceedings of the Fourth Arabic Natural Language Processing Workshop* (pp. 199–207). [co-organizer]

- [11] Anabtawi, M., **Hassan, S.**, Kapoutsis, C., & Zakzok, M. (2019, March). An Oracle Hierarchy for Small One-way Finite Automata. In *International Conference on Language and Automata Theory and Applications* (pp. 57-69). Springer, Cham.
- [12] **Hassan, S.**, Shaar, S., Raj, B., & Razak, S. (2018, December). Interactive Evaluation of Classifiers Under Limited Resources. In *2018 17th IEEE International Conference on Machine Learning and Applications (ICMLA)* (pp. 173-180). IEEE.

Pre-prints:

- [13] **Hassan, S.**, Shaar, S., & Darwish, K. (2021). Cross-lingual Emotion Detection. *arXiv preprint arXiv:2106.06017*
- [14] Abdelali, A., **Hassan, S.**, Mubarak, H., Darwish, K., & Samih, Y. (2021) Pre-Training BERT on Arabic Tweets: Practical Considerations. *arXiv preprint arxiv:2102.10684*
- [15] Mubarak, H., **Hassan, S.**, & Chowdhury, S.(2021) Emojis as Anchors to Detect Arabic Offensive Language and Hate Speech <https://arxiv.org/abs/2201.06723>