

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		
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 (https://asad.qcri.org/).Collected novel datasets and trained ML/DL models for offensiveness and adult content detection, dialect identification. tweets related to Covid-19, and spam detection.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 (1st place).Automatically collected a corpus of English–Arabic parallel tweets.Trained SOTA Arabic/Spanish emotion detection models using transformers and studied efficacy of different cross-lingual approaches.Trained Arabic BERT model from scratch and performed quantitative analysis of key factors.		
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.		
<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.		

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*.

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. Modeling Intensification for Signed Language Generation: A Computational Approach. *ACL, 2022 (Findings)*
- [2] Mubarak, H., **Hassan, S.**, & Chowdhury, S. (2021) Emojis as Anchors to Detect Arabic Offensive Language and Hate Speech. *NLE, 2022.*
- [3] **Hassan, S.**, Shaar, S., & Darwish, K. Cross-lingual Emotion Detection. *LREC, 2022*
- [4] Mubarak, H., **Hassan, S.**, Chowdhury, S. A., & Alam, F. ArCovidVac: Analyzing Arabic Tweets About COVID-19 Vaccination. *LREC, 2022.*
- [5] **Hassan, S.**, Mubarak, H., Abdelali, A., & Darwish, K. ASAD: Arabic Social Media Analytics and unDerstanding. *EACL 2021*
- [6] Mubarak, H., **Hassan, S.**, & Abdealali, A. Adult Content Detection on Arabic Twitter: Analysis and Experiments. *WANLP 2021*
- [7] Abdelali, A., Mubarak, H., Samih, Y., **Hassan, S.**, & Darwish, K. QADI: Arabic Dialect Identification in the Wild. *WANLP 2021*
- [8] Mubarak, H., & **Hassan, S.** (2021, April). ArCorona: Analyzing Arabic Tweets in the Early Days of Coronavirus (COVID-19) Pandemic. *LOUHI, 2021*
- [9] Mubarak, H., Abdelali, A., **Hassan, S.**, & Darwish, K. Spam Detection on Arabic Twitter. *SocInfo, 2020*
- [10] **Hassan, S.**, Samih, Y., Mubarak, H., & Abdelali, A. ALT at SemEval-2020 task 12: Arabic and English offensive language identification in social media. *SemEval, 2020* [2nd place in Arabic subtask A]
- [11] **Hassan, S.**, Samih, Y., Mubarak, H., Abdelali, A., Rashed, A., & Chowdhury, S. A. ALT submission for OSACT shared task on offensive language detection. *OSACT, 2020* [1st place in subtask A]
- [12] Mubarak, H., **Hassan, S.**, & Abdelali, A. Constructing a bilingual corpus of parallel tweets. *BUCC, 2020*
- [13] Bouamor, H., **Hassan, S.**, & Habash, N. The MADAR Shared task on Arabic Fine-Grained Dialect Identification. *WANLP, 2019. [co-organizer]*
- [14] Anabtawi, M., **Hassan, S.**, Kapoutsis, C., & Zakzok, M. An Oracle Hierarchy for Small One-way Finite Automata. *LATA, 2019*
- [15] **Hassan, S.**, Shaar, S., Raj, B., & Razak, S. (2018, December). Interactive Evaluation of Classifiers Under Limited Resources. *IEEE ICMLA, 2018*

Pre-prints:

- [16] Abdelali, A., **Hassan, S.**, Mubarak, H., Darwish, K., & Samih, Y. (2021) Pre-Training BERT on Arabic Tweets: Practical Considerations. *arXiv preprint arxiv:2102.10684*