

# Sabit Hassan | Curriculum Vitae

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## EDUCATION

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

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## HONORS AND AWARDS

<b>Alexa Prize Taskbot Challenge 3rd Place Award</b>	<i>Amazon</i>	Sep 2023
<b>Computer Science Dept. Fellowship</b>	<i>University of Pittsburgh</i>	Aug 2023
<b>Alexa Prize Taskbot Challenge Grant</b>	<i>Amazon</i>	Jan 2023
<b>Outstanding Academic Achievement</b>	<i>Carnegie Mellon University Qatar</i>	May 2018
<b>University Honors</b>	<i>Carnegie Mellon University</i>	May 2018
<b>SCS College Honors</b>	<i>Carnegie Mellon University</i>	May 2018
<b>History Honors</b>	<i>Phi Alpha Theta</i>	May 2018
<b>Carnegie Mellon Dean's List</b>	<i>Carnegie Mellon University</i>	Apr 2015–Apr 2018

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## RESEARCH

<b><u>Doctoral Research</u></b>	<i>University of Pittsburgh, Pittsburgh, PA</i>	Aug 2021–
<i>Computer Science Department, Supervised by: Dr. Malihe Alikhani</i>		

### **ISABEL: IncluSive And collaBORative Alexa**

- Developed safety framework and dataset with knowledge distillation and social media data
- Proposed a novel search algorithm leveraging knowledge distillation and clustering
- Constructed a dataset of article rewrites that are concise and engaging

### **AI Moderation for Safer Online Space [Funded by DARPA]**

- Proposed a discourse-aware framework for counterspeech generation
- Integrated RST and PDTB frameworks with LLMs for better content preservation during style-transfer
- Curated a large-scale multilingual dataset from Reddit for AI moderation

### **Mitigating Bias of Large Language Models**

- Proposed a novel dynamic clustering-based active learning algorithm which is robust against bias

### **Other Projects:**

- Improved prosody in sign language generation by incorporating intensity-enhanced GLOSS representations within a novel Progressive Transformer model.
- Modeled socio-affective and cognitive engagement in patient-nurse conversation

<b><u>Research Assistant</u></b>	<i>Qatar Computing Research Institute, Doha, Qatar</i>	Oct 2019–Jun 2021
<i>Arabic Language Technologies Group, Supervised by: Dr. Kareem Darwish</i>		

- Trained SOTA ML/transformer models and collected datasets for Arabic dialect identification, offensive language, adult content, spam, and hate-speech detection..
- Studied efficacy of cross-lingual approaches for Spanish, Arabic, and English emotion detection
- Studied the role of data diversity and segmentation for pretraining a SOTA Arabic BERT model

**Research Associate** *Carnegie Mellon University Qatar, Doha, Qatar* May 2018–Aug 2019  
*MADAR Project, Supervised by: Prof. Nizar Habash and Asst. Teach. Prof. Houda Bouamor*  
• Co-organized MADAR Shared Task on fine-grained Arabic Dialect Identification

*Minicomplexity Project, Supervised by: Assoc. Teach. Prof. Christos Kapoutsis*  
• 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 of levels of the hierarchy.

**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 a clustering-based method that reduces training time for *Active Learning*.  
• Proposed a novel clustering-based algorithm for interactive evaluation of classifiers.

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## TEACHING

**Graduate Teaching Assistant** *University of Pittsburgh, Pittsburgh, PA* Aug 2021–  
• Algorithms and Data Structures 2 (CS 1501)

**Course Assistant** *Carnegie Mellon University Qatar, Doha, Qatar* Jan 2016–May 2018  
• 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

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## SERVICES

- **Co-organizer**, MADAR Shared Task on Fine-Grained Arabic Dialect Identification, 2019
- **Program Committee/Reviewer**: ACL 2023, EACL 2022, EMNLP 2022, AAAI-22 Special Track on AI for Social Impact, SemEval 2020
- **Member**, Student Academic Committee, Academic Review Board, Carnegie Mellon University Qatar

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## 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

**ASAD** *Qatar Computing Research Institute, Doha, Qatar* 2020–2021  
*Arabic Language Technologies Group, Supervised by: Dr. Kareem Darwish*

- Deployed SVM/BERT models for text classification within the social media analysis toolkit ASAD (<https://asad.qcri.org/>)
- Developed initial frontend and backend for ASAD.

**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

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## PUBLICATIONS

### Published/Accepted:

\* denotes equal contribution

- [1] Sicilia, A., Asano, Y., Atwell, K., Cheng, Q., Gupta, D., **Hassan, S.** Inan, M., Nwogu, J., Sharma, P., Alikhani, M. *ISABEL: An Inclusive and Collaborative Task-Oriented Dialogue System*. **Amazon Science, 2023**. [3rd place award in Alexa Prize Taskbot Challenge]
- [2] **Hassan, S.** & Alikhani, M. DisCGen: A Framework for Discourse-Aware Counterspeech Generation. **IJCNLP-AACL, 2023**
- [3] **Hassan, S.** & Alikhani, M. D-CALM: A Dynamic Clustering-based Active Learning Approach for Mitigating Bias. **ACL FINDINGS, 2023**
- [4] Wang, Y., Donovan, H.A.S., **Hassan, S.**, Alikhani, M. MedNgage: A Dataset for Understanding Engagement in Patient-Nurse Conversations. **ACL FINDINGS, 2023**
- [5] Ye, M., Sikka, K., Atwell, K., **Hassan, S.**, Divakaran, A., Alikhani, M. Multilingual Content Moderation and Challenges: A Case Study of Reddit. **EACL, 2023**
- [6] Mubarak, H., **Hassan, S.**, & Chowdhury, S. Emojis as Anchors to Detect Arabic Offensive Language and Hate Speech. **NLE, 2023**.
- [7] Atwell, K.\*, **Hassan, S.\***, Alikhani, M. APPDIA: A Discourse-aware Transformer-based Style Transfer Model for Offensive Social Media Conversations. **COLING, 2022**
- [8] Inan, M.\*, Yang, Z.\*, **Hassan, S.\***, Quandt, L., & Alikhani, M. Modeling Intensification for Signed Language Generation: A Computational Approach. **ACL FINDINGS, 2022**
- [9] **Hassan, S.**, Shaar, S., & Darwish, K. Cross-lingual Emotion Detection. **LREC, 2022**
- [10] Mubarak, H., **Hassan, S.**, Chowdhury, S. A., & Alam, F. ArCovidVac: Analyzing Arabic Tweets About COVID-19 Vaccination. **LREC, 2022**.
- [11] **Hassan, S.**, Mubarak, H., Abdelali, A., & Darwish, K. ASAD: Arabic Social Media Analytics and unDerstanding. **EACL 2021**
- [12] Mubarak, H., **Hassan, S.**, & Abdealali, A. Adult Content Detection on Arabic Twitter: Analysis and Experiments. **WANLP 2021**
- [13] Abdelali, A., Mubarak, H., Samih, Y., **Hassan, S.**, & Darwish, K. QADI: Arabic Dialect Identification in the Wild. **WANLP 2021**
- [14] Mubarak, H., & **Hassan, S.** (2021, April). ArCorona: Analyzing Arabic Tweets in the Early Days of Coronavirus (COVID-19) Pandemic. **LOUHI, 2021**
- [15] Mubarak, H., Abdelali, A., **Hassan, S.**, & Darwish, K. Spam Detection on Arabic Twitter. **SocInfo, 2020**
- [16] **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**
- [17] **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** [Ranked 1st in subtask A]
- [18] Mubarak, H., **Hassan, S.**, & Abdelali, A. Constructing a bilingual corpus of parallel tweets. **BUCC, 2020**
- [19] Bouamor, H., **Hassan, S.**, & Habash, N. The MADAR Shared task on Arabic Fine-Grained Dialect Identification. **WANLP, 2019**. [co-organizer]
- [20] Anabtawi, M., **Hassan, S.**, Kapoutsis, C., & Zakzok, M. An Oracle Hierarchy for Small One-way Finite Automata. **LATA, 2019**
- [21] **Hassan, S.**, Shaar, S., Raj, B., & Razak, S. (2018, December). Interactive Evaluation of Classifiers Under Limited Resources. **IEEE ICMLA, 2018**

### Pre-prints:

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

### Abstracts:

- [23] **Hassan, S.\***, Atwell, KJ.\*, Alikhani, M. Studying the Effect of Moderator Biases on the Diversity of Online Discussions: A Computational Cross-linguistic Study. **CogSci, 2022**
- [24] Inan, M.\*, Zhong, Y.\*, **Hassan, S.\***, Quandt, L., Alikhani, M. Learning cognitive and linguistic prosodic categories for automatic cross-lingual sign language understanding. **CogSci, 2022**