

MAUAJAMA FIRDAUS

Curriculum Vitae

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Experience

Department of Computing Science, University of Alberta, Canada

March, 2022 – **PostDoctoral Research Associate.**

Present Natural Language processing, Text Generation

Advisor : **Dr. Lili Mou**, Assistant Professor, Department of Computing Science, University of Alberta

Accenture Global Solutions Ltd., Bangalore, India

August, 2017 – **Research Intern.**

January, 2018 Natural Language Understanding

Advisor : **Dr. Harshawardhan Madhukar Wabgaonkar**, and **Dr. Shubhashis Sengupta**

Education

2016–2021 **PhD, Computer Science & Engineering**, Indian Institute of Technology, Patna.

Natural Language Processing, Dialogue Systems, Natural language Understanding, Natural Language Generation, Multimodality, Machine Learning and Deep Learning

2014–2016: **Master of Engineering, Computer Science and Engineering**, National Institute of Technology, Durgapur.

2010–2014: **Bachelor of Engineering, Computer Science and Engineering**, Narula Institute of Technology, Kolkata.

Publications & Tutorial

Patent

2020 Harshawardhan Madhukar Wabgaonkar, Shubhashis Sengupta, Tirupal Rao Ravilla, Sumitraj Ganapat Patil, Poulami Debnath, GM Sushravya, Roshni Ramesh Ramnani, Gurudatta Mishra, Moushumi Mahato, **Mauajama Firdaus**, et al. Spoken language understanding system and method using recurrent neural networks, June 9 2020. US Patent 10,679,613.

Tutorial

2023 **Priyanshu Priya, Mauajama Firdaus, Kshitij Mishra and Asif Ekbal**, Empathetic Conversational Artificial Intelligence Systems: Recent Advance and New Frontiers, In The 32nd International Joint Conference on Artificial Intelligence (IJCAI), 2023.

2023 **Priyanshu Priya, Mauajama Firdaus, Gopendra Vikram Singh and Asif Ekbal**, Navigating the Landscape of Empathetic Dialogue Systems: Current Innovations and Future Developments, In The 20th International Conference on Natural Language Processing (ICON), 2023.

2024 **Priyanshu Priya, Mauajama Firdaus, Gopendra Vikram Singh and Asif Ekbal**, Affective Computing for Social Good Applications: Current Advances, Gaps and Opportunities in Conversational Setting, In The 46th European Conference on Information Retrieval (ECIR), 2024.

2024 **Priyanshu Priya, Deeksha Varshney, Mauajama Firdaus and Asif Ekbal**, Knowledge-enhanced Response Generation in Dialogue Systems: Current Advancements and Emerging Horizons, In the Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024), 2024.

Journal Articles

- 2024 Gopendra Vikram Singh, **Mauajama Firdaus**, Dushyant Singh Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. Zero-shot multitask intent and emotion prediction from multimodal data: A benchmark study. *Neurocomputing*, volume 569, page 127128. Elsevier, 2024.
- 2024 Priyanshu Priya, **Mauajama Firdaus**, and Asif Ekbal. Two in one: A multi-task framework for politeness turn identification and phrase extraction in goal-oriented conversations. *Computer Speech & Language*, page 101661. Elsevier, 2024.
- 2024 Priyanshu Priya, **Mauajama Firdaus**, and Asif Ekbal. Computational politeness in natural language processing: A survey. *ACM Computing Surveys*. ACM New York, NY, 2024.
- 2024 Kshitij Mishra, **Mauajama Firdaus**, and Asif Ekbal. Please donate to save a life: Inducing politeness to handle resistance in persuasive dialogue agents. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*. IEEE, 2024.
- 2023 **Mauajama Firdaus**, Gopendra Vikram Singh, Asif Ekbal, and Pushpak Bhattacharyya. Affect-gcn: a multimodal graph convolutional network for multi-emotion with intensity recognition and sentiment analysis in dialogues. *Multimedia Tools and Applications*, pages 1–22. Springer, 2023.
- 2023 **Mauajama Firdaus**, Avinash Madasu, and Asif Ekbal. A unified framework for slot based response generation in a multimodal dialogue system. *Multimedia Tools and Applications*. Springer, 2023.
- 2023 **Mauajama Firdaus**, Asif Ekbal, and Erik Cambria. Multitask learning for multilingual intent detection and slot filling in dialogue systems. *Information Fusion*, volume 91, pages 299–315. Elsevier, 2023.
- 2023 Gopendra Vikram Singh, **Mauajama Firdaus**, Dushyant Singh Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. Zero-shot multitask intent and emotion prediction from multimodal data: A benchmark study. *Neurocomputing*, page 127128. Elsevier, 2023.
- 2023 Priyanshu Priya, **Mauajama Firdaus**, and Asif Ekbal. A multi-task learning framework for politeness and emotion detection in dialogues for mental health counseling and legal aid. *Expert Systems with Applications*, page 120025. Elsevier, 2023.
- 2023 Kshitij Mishra, **Mauajama Firdaus**, and Asif Ekbal. Genpads: Reinforcing politeness in an end-to-end dialogue system. *Plos One*, volume 18, page e0278323. Public Library of Science San Francisco, CA USA, 2023.
- 2022 **Mauajama Firdaus**, Naveen Thangavelu, Asif Ekbal, and Pushpak Bhattacharyya. I enjoy writing and playing, do you: A personalized and emotion grounded dialogue agent using generative adversarial network. *IEEE Transactions on Affective Computing*. IEEE, 2022.
- 2022 **Mauajama Firdaus**, Arunav Shandilya, Asif Ekbal, and Pushpak Bhattacharyya. Being polite: Modeling politeness variation in a personalized dialog agent. *IEEE Transactions on Computational Social Systems*. IEEE, 2022.
- 2022 Gopendra Vikram Singh, **Mauajama Firdaus**, Shambhavi, Shruti Mishra, and Asif Ekbal. Knowing what to say: Towards knowledge grounded code-mixed response generation for open-domain conversations. *Knowledge-Based Systems*, volume 249, page 108900. Elsevier, 2022.
- 2022 Gopendra Vikram Singh, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Unity in diversity: Multilabel emoji identification in tweets. *IEEE Transactions on Computational Social Systems*. IEEE, 2022.
- 2022 Gopendra Vikram Singh, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Emoint-trans: A multimodal transformer for identifying emotions and intents in social conversations. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, volume 31, pages 290–300. IEEE, 2022.
- 2022 Kshitij Mishra, **Mauajama Firdaus**, and Asif Ekbal. Predicting politeness variations in goal-oriented conversations. *IEEE Transactions on Computational Social Systems*. IEEE, 2022.

- 2022 Kshitij Mishra, **Mauajama Firdaus**, and Asif Ekbal. Please be polite: Towards building a politeness adaptive dialogue system for goal-oriented conversations. *Neurocomputing*. Elsevier, 2022.
- 2021 **Mauajama Firdaus**, Nidhi Thakur, and Asif Ekbal. Aspect-aware response generation for multimodal dialogue system. *ACM Transactions on Intelligent Systems and Technology (TIST)*, volume 12, pages 1–33. ACM New York, NY, USA, 2021.
- 2020 **Mauajama Firdaus**, Arunav Pratap Shandeelya, and Asif Ekbal. More to diverse: Generating diversified responses in a task oriented multimodal dialog system. *PloS one*, volume 15, page e0241271. Public Library of Science San Francisco, CA USA, 2020.
- 2020 **Mauajama Firdaus**, Hitesh Golchha, Asif Ekbal, and Pushpak Bhattacharyya. A deep multi-task model for dialogue act classification, intent detection and slot filling. *Cognitive Computation*, pages 1–20. Springer, 2020.
- 2020 **Mauajama Firdaus**, Hardik Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. Emosen: Generating sentiment and emotion controlled responses in a multimodal dialogue system. *IEEE Transactions on Affective Computing*. IEEE, 2020.
- 2019 **Mauajama Firdaus**, Ankit Kumar, Asif Ekbal, and Pushpak Bhattacharyya. A multi-task hierarchical approach for intent detection and slot filling. *Knowledge-Based Systems*, volume 183, page 104846. Elsevier, 2019.

In Conference Proceedings

- 2024 Gopendra Vikram Singh, **Mauajama Firdaus**, Dushyant Singh Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. Well, now we know! unveiling sarcasm: Initiating and exploring multimodal conversations with reasoning. In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 38, pages 18981–18989, 2024.
- 2024 Sajad Ramezani, **Mauajama Firdaus**, and Lili Mou. Claim-centric and sentiment guided graph attention network for rumour detection. In *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024)*, pages 3235–3241, 2024.
- 2023 Zijun Wu, Zi Xuan Zhang, Atharva Naik, Zhijian Mei, **Mauajama Firdaus**, and Lili Mou. Weakly supervised explainable phrasal reasoning with neural fuzzy logic. In *Proceedings of the Eleventh International Conference on Learning Representations (ICLR)*, 2023.
- 2023 **Mauajama Firdaus**, Gopendra Singh, Asif Ekbal, and Pushpak Bhattacharyya. Multi-step prompting for few-shot emotion-grounded conversations. In *Proceedings of the 32nd ACM International Conference on Information and Knowledge Management*, pages 3886–3891, 2023.
- 2023 **Mauajama Firdaus**, Priyanshu Priya, and Asif Ekbal. Mixing it up: Inducing empathy and politeness using multiple behaviour-aware generators for conversational systems. In *Findings of the Association for Computational Linguistics: IJCNLP-AACL 2023 (Findings)*, pages 336–347, 2023.
- 2023 Guoqing Luo, Yutong Han, Lili Mou, and **Mauajama Firdaus**. Prompt-based editing for text style transfer. In *Findings of the Association for Computational Linguistics: EMNLP 2023, Singapore, December 6-10, 2023*, pages 5740–5750. Association for Computational Linguistics, 2023.
- 2022 **Mauajama Firdaus**, Nidhi Thakur, and Asif Ekbal. Sentiment guided aspect conditioned dialogue generation in a multimodal system. In *European Conference on Information Retrieval*, pages 199–214. Springer, 2022.
- 2022 **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Polise: Reinforcing politeness using user sentiment for customer care response generation. In *Proceedings of the 29th International Conference on Computational Linguistics (COLING)*, pages 6165–6175, 2022.

- 2022 Gopendra Vikram Singh, Priyanshu Priya, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Emoinhindi: A multi-label emotion and intensity annotated dataset in hindi for emotion recognition in dialogues. *LREC*, 2022.
- 2022 Gopendra Vikram Singh, Dushyant Singh Chauhan, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Are emoji, sentiment, and emotion friends? a multi-task learning for emoji, sentiment, and emotion analysis. In *Proceedings of the 36th Pacific Asia Conference on Language, Information and Computation*, pages 166–174, 2022.
- 2022 Azlaan Mustafa Samad, Kshitij Mishra, **Mauajama Firdaus**, and Asif Ekbal. Empathetic persuasion: Reinforcing empathy and persuasiveness in dialogue systems. In *Findings of the Association for Computational Linguistics: NAACL 2022*, pages 844–856, 2022.
- 2021 **Mauajama Firdaus**, Nidhi Thakur, and Asif Ekbal. Multi-aspect controlled response generation in a multimodal dialogue system using hierarchical transformer network. In *2021 International Joint Conference on Neural Networks (IJCNN)*, pages 1–8. IEEE, 2021.
- 2021 **Mauajama Firdaus**, Arunav Pratap Shandilya, Sthita Pragyan Pujari, and Asif Ekbal. Attribute centered multimodal response generation in a dialogue system. In *2021 International Joint Conference on Neural Networks (IJCNN)*, pages 1–8. IEEE, 2021.
- 2021 **Mauajama Firdaus**, Umang Jain, Asif Ekbal, and Pushpak Bhattacharyya. Seprg: Sentiment aware emotion controlled personalized response generation. In *Proceedings of the 14th International Conference on Natural Language Generation*, pages 353–363, 2021.
- 2021 **Mauajama Firdaus**, Hardik Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. More the merrier: Towards multi-emotion and intensity controllable response generation. In *Proceedings of the AAAI Conference on Artificial Intelligence*, volume 35, pages 12821–12829, 2021.
- 2020 **Mauajama Firdaus**, Naveen Thangavelu, Asif Ekba, and Pushpak Bhattacharyya. Persona aware response generation with emotions. In *2020 International Joint Conference on Neural Networks (IJCNN)*, pages 1–8. IEEE, 2020.
- 2020 **Mauajama Firdaus**, Nidhi Thakur, and Asif Ekbal. Multidm-gcn: Aspect-guided response generation in multi-domain multi-modal dialogue system using graph convolution network. In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings*, pages 2318–2328, 2020.
- 2020 **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Incorporating politeness across languages in customer care responses: Towards building a multi-lingual empathetic dialogue agent. In *Proceedings of The 12th Language Resources and Evaluation Conference*, pages 4172–4182, 2020.
- 2020 **Mauajama Firdaus**, Hardik Chauhan, Asif Ekbal, and Pushpak Bhattacharyya. Meisd: A multimodal multi-label emotion, intensity and sentiment dialogue dataset for emotion recognition and sentiment analysis in conversations. In *Proceedings of the 28th International Conference on Computational Linguistics*, pages 4441–4453, 2020.
- 2019 Tulika Saha, Saurabh Srivastava, **Mauajama Firdaus**, Sriparna Saha, Asif Ekbal, and Pushpak Bhattacharyya. Exploring machine learning and deep learning frameworks for task-oriented dialogue act classification. In *2019 International Joint Conference on Neural Networks (IJCNN)*, pages 1–8. IEEE, 2019.
- 2019 Hitesh Golchha, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Courteously yours: Inducing courteous behavior in customer care responses using reinforced pointer generator network. In *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies, Volume 1 (Long and Short Papers)*, pages 851–860, 2019.
- 2019 Hardik Chauhan, **Mauajama Firdaus**, Asif Ekbal, and Pushpak Bhattacharyya. Ordinal and attribute aware response generation in a multimodal dialogue system. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, pages 5437–5447, 2019.

- 2018 **Mauajama Firdaus**, Shobhit Bhatnagar, Asif Ekbal, and Pushpak Bhattacharyya. Intent detection for spoken language understanding using a deep ensemble model. In *Pacific Rim international conference on artificial intelligence*, pages 629–642. Springer, 2018.
- 2018 **Mauajama Firdaus**, Shobhit Bhatnagar, Asif Ekbal, and Pushpak Bhattacharyya. A deep learning based multi-task ensemble model for intent detection and slot filling in spoken language understanding. In *International Conference on Neural Information Processing*, pages 647–658. Springer, 2018.

Accepted Publications

- 2024 **Priyanshu Priya, Gopendra Vikram Singh, Mauajama Firdaus and Asif Ekbal**, *On the Way to Gentle AI Counselor: Politeness Cause Elicitation and Intensity Tagging in Code-mixed Hinglish Conversations for Social Good.*, In Proceedings of The Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL Findings, 2024).

Research Experience

Indian Institute of Technology, Patna

- December,2020 ***Modeling Politeness Variation in a Personalized Dialogue Agent.***
 – 2021 Developing a novel Polite Personalized Dialogue Generation (PoPe-DG) framework that employs a reinforced deliberation network for generating polite personalized dialogue responses in accordance with the user profile and consistent with the conversational history.
 Advisor : **Dr. Asif Ekbal**, Associate Professor, Computer Science & Engineering, IIT Patna & **Prof. Pushpak Bhattacharyya**, Professor, Computer Science & Engineering, IIT Bombay
- July,2019 – ***Aspect-aware Response Generation for Multimodal Dialogue System.***
 October,2020 In our current work, we focus on the task of aspect controlled response generation in a multimodal task-oriented dialog system. As there was no readily available data for building such multimodal systems, we create a Multi-Domain Multi-Modal Dialog (MDMMD++) dataset. The dataset comprises of the conversations having both text and images belonging to the four different domains, such as hotels, restaurants, electronics and furniture.
 Advisor : **Dr. Asif Ekbal**, Associate Professor, Department of Computer Science & Engineering, IIT Patna
- February,2019 ***Emotion and Sentiment controlled Dialogue Systems.***
 – September,2020 Proposed an approach for sentiment and emotion controlled dialogue generation. Creation of large-scale emotion and sentiment controlled dialogue dataset. In addition, we introduce the task of multi-emotion controllable response generation with the ability to express different emotions with varying levels of intensity in an open-domain dialogue system.
 Advisor : **Dr. Asif Ekbal**, Associate Professor, Computer Science & Engineering, IIT Patna & **Prof. Pushpak Bhattacharyya**, Professor, Computer Science & Engineering, IIT Bombay
- June,2018 – ***Inducing courteous phrases in Customer care Responses.***
 December,2018 In this work, we propose an effective deep learning framework for inducing courteous behavior in customer care responses. Our technique is based on a reinforced pointer-generator model for the sequence to sequence task. The model is also conditioned on a hierarchically encoded and emotionally aware conversational context. We use real interactions on Twitter between customer care professionals and aggrieved customers to create a large conversational dataset.
 Advisor : **Dr. Asif Ekbal**, Associate Professor, Computer Science & Engineering, IIT Patna & **Prof. Pushpak Bhattacharyya**, Professor, Computer Science & Engineering, IIT Bombay
- January,2017 ***Multi-task framework for Natural Language Understanding.***
 – May,2018 Proposed an end-to-end hierarchical multi-task framework that can jointly perform both intent detection (ID) and slot filling (SF) tasks for the datasets of varying domains. Besides, we also propose a multi-task network that in addition to ID and SF also performs Dialogue Act Classification (DAC).
 Advisor : **Dr. Asif Ekbal**, Associate Professor, Computer Science & Engineering, IIT Patna & **Prof. Pushpak Bhattacharyya**, Professor, Computer Science & Engineering, IIT Bombay

National Institute of Technology, Durgapur

July, 2015 – **Constraint specification in Multi Agent System.**

May, 2016 This work proposes formal analysis method for defining and specifying properties, resources, knowledge and related constraints of an agent in a Multi Agent System (MAS).

Advisor : **Dr. Rajiv Kumar Chatterjee**, Assistant Professor, Department of Computer Science & Engineering, NIT Durgapur

Fellowships & Awards

2019 Receipt of **Microsoft Travel Grant** to attend the **17th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT), 2019** in Minneapolis, United States.

2019 Receipt of **Microsoft Travel Grant** to attend the **57th Annual Meeting of the Association for Computational Linguistics (ACL), 2019** in Florence, Italy.

2019 Receipt of the **ACM India-IARCS travel grant** to attend **57th Annual Meeting of the Association for Computational Linguistics (ACL), 2020** in Florence, Italy.

Computer skills

Programming Languages Python, PyTorch, Keras, Tensorflow, C, C++, Advanced JAVA

Web Technologies HTML 5, PHP, JSP, Javascript

Database SQL, MySQL, Apache, Neo4j

Teaching Assistantship

Fall, 2020 : **CS571: Artificial Intelligence**, IIT Patna.

Spring, 2020 : **CS563: Natural Language Processing**, IIT Patna.

Fall, 2019 : **CS571: Artificial Intelligence**, IIT Patna.

Spring, 2019 : **CS564: Foundations of Machine Learning**, IIT Patna.

Fall, 2018 : **CS342: Operating System Lab**, IIT Patna.

Spring, 2018 : **CS101: Introduction to Computing**, IIT Patna.

Spring, 2017 : **CS101: Introduction to Computing**, IIT Patna.

Referees

Dr. Asif Ekbal

Associate Professor, Department of
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Indian Institute of Technology Patna

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Accenture Labs, India

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Computing Science

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