

# EmolnHindi: A Multi-label Emotion and Intensity Annotated Dataset in Hindi for Emotion Recognition in Dialogues

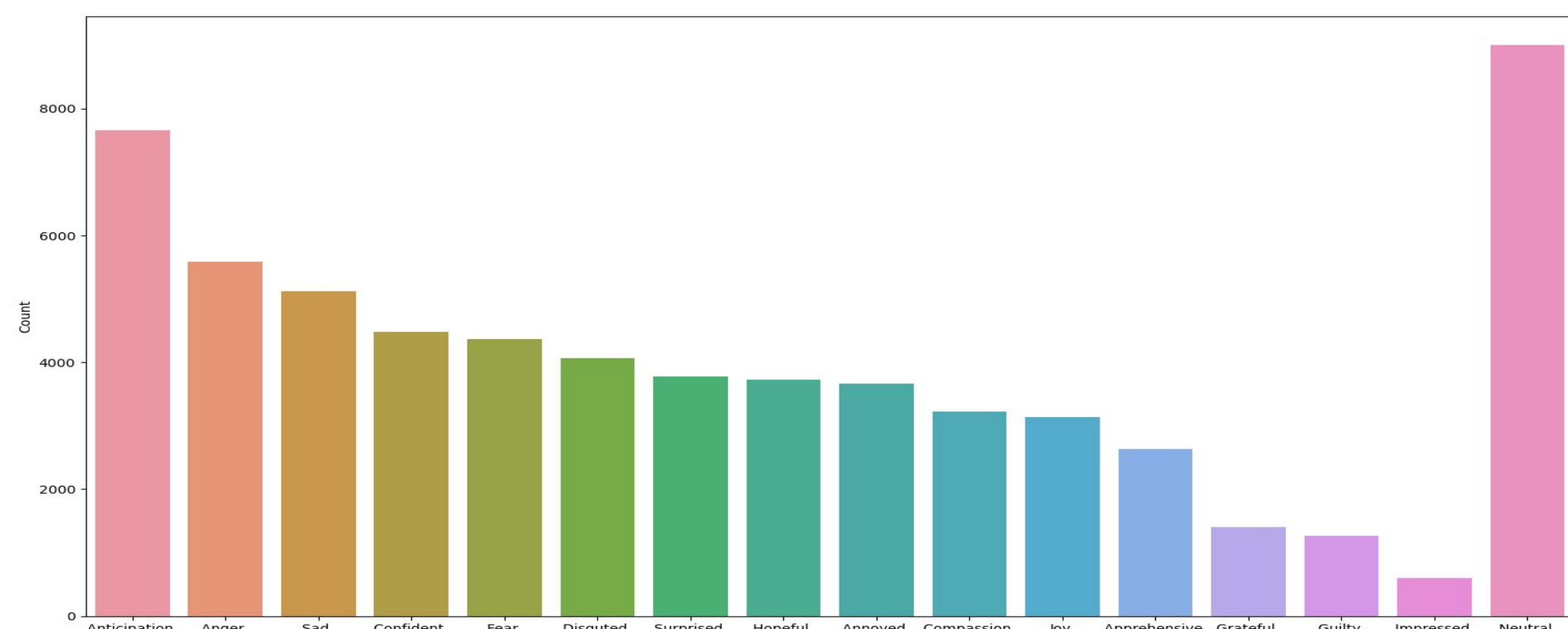
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## Contribution

- ❖ We propose EmolnHindi, the currently largest Hindi conversational dataset labeled with multiple emotions and their corresponding intensity values.
- ❖ We setup strong baselines for utterance-level multiple emotion and intensity detection task and report their results for identifying emotion(s) and the corresponding intensity expressed in an utterance of a dialogue written in Hindi

## Dataset

- ❖ **Domain:** Mental health counseling and legal assistance for women and children victims of crimes
- ❖ **Language:** Hindi
- ❖ **# of dialogues:** 1814
- ❖ **# of utterances:** 44247
- ❖ **Avg. utterances per dialogue:** 24.39
- ❖ **Avg. # of emotions per dialogue:** 1.41
- ❖ **Avg. # of emotions per utterance:** 1.43
- ❖ **Annotation:** Each utterance in every dialogue is annotated with one or more appropriate emotion categories and their corresponding intensity values.

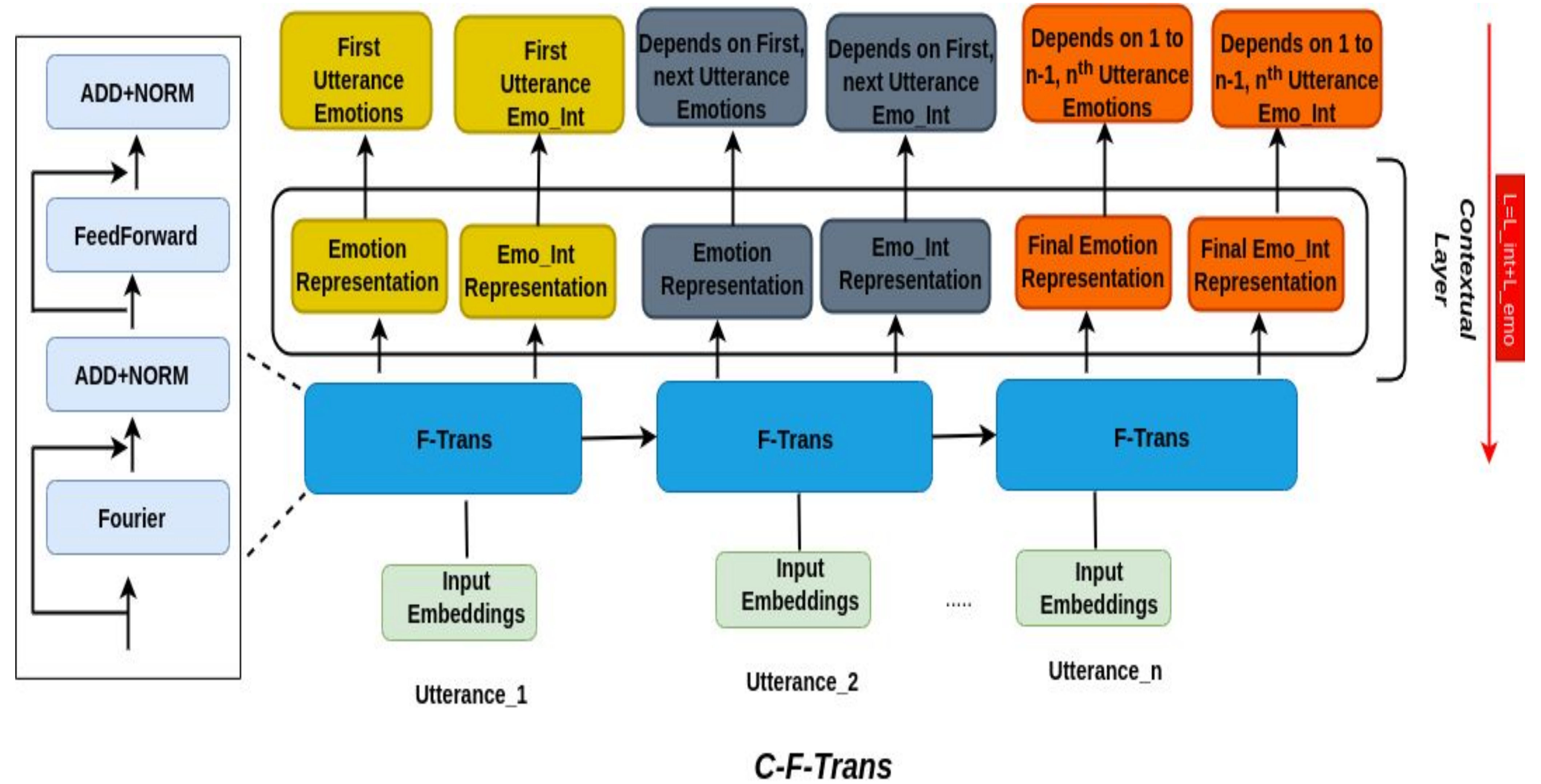


Emotion Distribution in EmolnHindi

A sample Conversation from EmolnHindi

## Context Fourier-Transformer

- ❖ A C-F-Transformer is proposed to capture the deep contextual relationship with input utterance. We use a Transformer-based method to capture the flow of informative triggers across utterances.
- ❖ We employ the Fourier transform instead of self attention, as suggested by F-Net for Context-Fourier-Transformer. 1D Fourier Transforms are used to transform both the sequences and hidden dimensions. Instead self-attention, this trick proved to be effective
- ❖ For textual features, we take the pre-trained 300-dimensional Hindi fastText embedding.
- ❖ Our loss function's primary goal is to instruct the model on how to weigh the task-specific losses.



## Experimental Results

METHODS	TASK-TYPE		ACC	MICRO-F1	HL	JI
	Emotion	Intensity				
bc-LSTM	✓	-	0.60	0.63	0.081	0.57
	✓	✓	0.63	0.65	0.077	0.59
bc-LSTM+ATT	✓	-	0.61	0.63	0.079	0.57
	✓	✓	0.64	0.67	0.075	0.60
CMN	✓	-	0.63	0.66	0.076	0.59
	✓	✓	0.64	0.68	0.073	0.61
C-A-Trans	✓	-	0.67	0.71	0.066	0.64
	✓	✓	0.69	0.73	0.059	0.66
C-F-Trans	✓	-	0.70	0.76	0.057	0.68
	✓	✓	0.72	0.77	0.055	0.69

## Setups

- ❖ **Multi-Label Classification:**
  - **Emotion-class:** 15 Emotions and One Neutral.
  - **Intensity-class:** 0,1,2,3.
  - **Micro-F1 and Acc**
  - **Jl (Jaccard Index) and HL (Hamming Loss)**

## Error Analysis (For the global audience, we also translate these Hindi utterances into English.)

Hindi-Utterance	English-Utterance	Correct-label	Predicted-Label	Predicted Intensity
घिनौना! कोई किसी लड़की के साथ ऐसा कैसे कर सकता है?	Disgusting! How could anyone do this to any girl?	Disgust, Anger	Disgust, Anger	3,2
रक्षक मेरा मकान मालिक मुझे परेशान करने की कोशिश कर रहा है। कृपया मेरी मदद करें	Rakshak my landlord is try to harass me. Please help me	Sad, Annoyed	Sad, Anger	3,1

## Conclusion

- ❖ .Proposed a large-scale task-oriented Hindi conversational dataset, EmolnHindi prepared in Wizard-of-Oz fashion for multi-label emotion classification and intensity prediction in dialogues.
- ❖ We setup strong baselines for utterance-level multiple emotion and intensity detection task in dialogues.

## References

- ❖ Ahmad, Z., Jindal, R., Ekbal, A., and Bhattacharyya, P. (2020). Borrow from rich cousin: transfer learning for emotion detection using cross lingual embedding. Expert Systems with Applications, 139:112851
- ❖ Yu, J., Marujo, L., Jiang, J., Karuturi, P., and Brendel, W. (2018). Improving multi-label emotion classification via sentiment classification with dual attention transfer network. ACL



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