

# Hardik Chauhan

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## Education

June '14– May '18 **IIT, Roorkee, B.Tech in Electrical Engineering.**

## Industrial Experience

- Jan '20– ongoing **Exawizards, Tokyo, Machine Learning Engineer.**
- Proposed benchmarking of deployed model for Qontextual FAQ search engine and developed script for the evaluation and improved hit score by 12.8%.
  - Built distilled version of Japanese BERT using 8.8 million documents and improved inference speed by 60%.
  - Implemented and trained ColBERT for Japanese document search engine and built in-house dataset for document ranking.
  - Stretched myself, taught myself Elasticsearch and built various prototypes for document search engine by combining neural and non-neural methods.
  - Proposed and implemented in-house annotation tool using LabelStudio to improve collaboration/communication between NLP engineers and business teams.
- June '19– **Aira, California, Research Engineer.**
- Dec '19
- Built speech recognition pipeline and transcribed over 2 million audios.
  - Implemented topic modeling algorithms to identify key topics in the customer conversion and created visualizations for the business team.
  - Proposed and implemented an emotion classifier to identify negative customer reviews using audio transcriptions.

## Research Experience

- Nov '18 **Indian Institue of Technology, Patna, Research Assistant .**
- Nov '19 Various Projects (Advisor :Prof. Pushpak Bhattacharyya and Prof.Asif Ekbal)
- Designed neural architecture employing novel explicit and implicit memory-based mechanisms for the task of multi-emotion controllable response generation. **(AAAI 2021)**
  - Developed first large-scale Multimodal Multi-label Emotion, Intensity, and Sentiment Dialogue dataset (MEISD) and established a baseline setup for further research. **(COLING 2020)**
  - Developed multi-hop question generation network using reinforcement and multi-task learning and achieved state of the art on HotpotQA dataset. **(COLING 2020)**
  - Proposed novel attention mechanism to preserve position and attribute information in multimodal dialogue generation. **(ACL 2019)**
  - Proposed Multimodal Attention based Conditional Variational Autoencoder (M-CVAE) for sentiment and emotion controlled dialogue generation. **(IEEE Trans.)**
- Jul '18 **Naver Clova, South Korea, Research Intern.**
- Oct '19 Machine Reading Comprehension (Advisor : Dr. Jung Woo Ha)
- Implemented and Examined hierarchical co-matching network and Generative Pre-training network (GPT) on multiple-choice reading comprehension dataset.
  - Proposed re-ranking option network to induce robustness and improved baseline model performance by 1.8% on RACE dataset.
- May '18 **École de technologie supérieure ETS, Montreal, Remote Collaboration.**
- Jul '18 Group-level emotion recognition (Advisor : Prof. Marco Pedersoli)
- Developed an end-to-end model to learn scenic and facial features jointly using attention mechanisms.
  - The model was submitted to ICMI 2018 EmotiW Group-Level Emotion Recognition Challenge and achieved **4th rank** among 30+ participants. **(ICMI 2018)**

- May '17 **Microsoft AI & Research, USA, Research Intern.**  
– Jul '17 Video Colorization (Advisor : Anirudh Koul)
  - Implemented spatio-temporal end to end module that effectively exploits temporal redundancies while maintaining real-time speed for video colorization task.
  - Incorporated Spatial Transformer Network to encode optical flow features for motion estimation and motion compensation to reduce flickering noise in the output.
  - Explored Early fusion and Slow fusion for the joint processing of multiple consecutive video frames.

## Publications

- AAAI '21 More the Merrier: Towards Multi-Emotion and Intensity Controllable Response Generation  
Mauzama Firdaus\*, **Hardik Chauhan\***, Asif Ekbal, Pushpak Bhattacharyya
- COLING '20 MEISD: Multimodal Multi-Label Emotion, Intensity and Sentiment Dialogue Dataset for Emotion Recognition and Sentiment Analysis in Conversations  
Mauzama Firdaus\*, **Hardik Chauhan\***, Asif Ekbal, Pushpak Bhattacharyya (**Oral Presentation**)
- COLING '20 Reinforced Multi-task Approach for Multi-hop Question Generation  
Deepak Gupta\*, **Hardik Chauhan\***, Asif Ekbal, Pushpak Bhattacharyya
- ACL '19 Ordinal and Attribute Aware Response Generation in Multimodal Dialogue System  
**Hardik Chauhan\***, Mauzama Firdaus\*, Asif Ekbal, Pushpak Bhattacharyya
- IEEE Trans. EmoSen: Generating Sentiment and Emotion Controlled Responses in Multimodal Dialogue  
Mauzama Firdaus\*, **Hardik Chauhan\***, Asif Ekbal, Pushpak Bhattacharyya
- ICMI '18 An Attention Model for Group-Level Emotion Recognition  
Aarush Gupta\*, Dakshit Agrawal\*, **Hardik Chauhan**, Jose Dolz, and Marco Pedersoli
- Under Review Interpretable Fusion Mechanisms for Multimodal Representation Learning  
Akella Ravi Tej\*, **Hardik Chauhan\***, Arunav Shandeelya\*, Asif Ekbal, and Pushpak Bhattacharyya.

## Achievements

- Dec '17 **Microsoft Garage Hackathon, Microsoft, India.**  
3<sup>rd</sup> rank in AI theme based hackathon among 50 teams coming from all over india.  
Concepts applied : Seq2Seq, Encoder-Decoder Attention, Intradecoder Attention, Beam Search
- Sept '17 **Deep Learning Challenge, Hackerearth.**  
32<sup>th</sup> rank in Deep Learning Challenge (Image Classification) among 2200 teams with 92.64% accuracy.  
Concepts applied : Transfer Learning, Spatial Transformer Network, Test Data Augmentation
- May 2014 **Qualified Joint Entrance Examination .**  
Secured All India Rank 1710 in JEE-Advanced 2014 among 14,00,000 students

## Technical Skills

- Programming Python, C/C++  
Technologies Pytorch, Sklearn, Tensorflow, Torch, OpenCV

## Community

- July '17 **Vision and Language Group .**  
– May '18
  - Founded and managed a student-run group that aims to foster an on-campus research-centric deep learning community.
  - Organized and led 20+ group discussions on various deep learning topics.
  - Currently, 100+ regular participants and 10+ blogs on Medium. [Link]

## Academic Service

- Sub Reviewer EMNLP '19,'20, AAAI '20, ACL '20