

Hitesh Golchha

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Github, Google Scholar, YouTube Channel

Experience

- Apr '19–Apr '21 **Software Dev Engineer (Data Science)**, *Flipkart (Walmart)* , India, .
May 18–Dec 18 **Junior Research Fellow**, *AI-NLP-ML Lab*, IIT Patna, India, .
May–July 17 **Research Internship**, *NLP Lab - Bar Ilan University, Israel*, Ramat Gan, Israel, .
May 16–Jun 18 **Undergraduate Research**, *AI-NLP-ML Lab*, IIT Patna, India, .

Education

- Sep 2021 – **MS in Computer Science**, *University of Massachusetts Amherst*, Amherst, MA, .
present Coursework: Adv Machine Learning, Reinforcement Learning, Neural Networks (all 600 level)
July 2014– **B.Tech. Computer Science and Engineering**, *Indian Institute of Technology Patna*, Patna, .
May 2018 Relevant coursework: AI, NLP, Intro to DL, Intelligent Visual Surveillance Systems

Publications

- Courteously yours: Inducing courteous behavior in customer care responses using reinforced pointer generator network. **NAACL-HLT 2019** . **Golchha H.**, Firdaus M., Ekbal A., Bhattacharyya P.
- Helping each Other: A Framework for Customer-to-Customer Suggestion Mining using a Semi-supervised Deep Neural Network. **ICON 2018**. **Golchha H.**, Gupta D., Ekbal A., Bhattacharyya P.
- A Deep Multi-task Model for Dialogue Act Classification, Intent Detection and Slot Filling. **Cognitive Computation 2020**. Firdaus M., **Golchha H.**, Ekbal A., Bhattacharyya P.

Academic and Industrial Research

- April 2019 - **NLU Research: Bilingual Voice Assistants** , Flipkart (Walmart).
April 2021
 - Assistant deployed and used by millions of Indian Users in Hindi and English.
 - Worked on enhancing the Natural Language Understanding of the assistant:
 - *Entity Extraction*: Trained Domain pretrained BERT, CharCNN, Word Bi-LSTM models. Improved accuracy by 3.5% to 90%
 - *Intent detection*: Made improvements to handle class imbalance, miscalibration (Focal Loss), Robustness (Noisy augmentation, translation, backtranslation), Misprediction between unrelated classes: (Hierarchical cross entropy using intent class taxonomy). Achieved 93% accuracy.
 - *Multi-intent sentence segmentation*: Clause boundary prediction using Bi-LSTM models with over 90% accuracy
 - Experimented on improving Speech to Text output using re-scoring of beams.
- Oct 2018 - **Style Transfer on Response Generation (NAACL-HLT'19)** , *Junior Research Fellow* , IIT
Dec 2018 Patna, India.
 - Generates courteous version of generic responses while being coherent with the conversation.
 - Attention based seq2seq model, with Pointer Generator. Decoder conditioned on conversation history
 - Trained using MLE + RL.
 - Large scale Parallel data prepared by filtering courteous sentences from real Twitter conversations
 - under Dr. Asif Ekbal and Prof. Pushpak Bhattacharyya

Aug-Sep 2018 **Multi-Task Learning for NLU (Cognitive computing, 2020)** , *Junior Research Fellow* , IIT Patna, India.

- Multi-task model to identify the intent, dialog act and slot values on three benchmark datasets.
- Tried Character embeddings, self-attention, linguistic embeddings, and different encoders
- Tried alternating training methods for multi-domain training
- under Dr. Asif Ekbal and Prof. Pushpak Bhattacharyya

Aug 2017 - **Customer-to-Customer Suggestion Mining (ICON'18)** , *B. Tech. Thesis* , IIT Patna, India.

May 2018

- Extract customer to customer suggestions from online reviews
- Semi-supervised learning approach using self-training over a Deep classifier
- Features from : LSTM - attention, CNN Encoder, Linguistic features
- advised by Prof. Pushpak Bhattacharyya and Dr. Asif Ekbal

May 2017 – **Proposition coreference resolution for NLKG** , *Research Internship*, Bar Ilan University, Israel.

July 2017

- Developed an online clustering algorithm based of pairwise comparison of propositions.
- Used fuzzy string matching, wordnet synset overlap, and presence of entity coreference between arguments.(improvement CONLL 0.56 to 0.65)
- Used as a part of a pipeline of extraction and semantic tools for generating Natural language knowledge graphs
- advised by Prof. Ido Dagan

August 2016 - **Question Answering from Wikipedia articles** , *Undergraduate Research*, IIT Patna, India.

April 2017

- Detect answer spans (using sentence classification) from Wikipedia articles on the WikiQA dataset.
- MLP over the question and potential answer features encoded by LSTM network.
- advised by Dr. Asif Ekbal

Undergrad Academic Projects

○ **Short survey on Deep reinforcement learning** 'Coursework Project for CS702 Advances in Algorithms'

We as a team of two, first reviewed the formalisms of reinforcement learning, and the basic algorithms of RL. We then presented the algorithms of Deep Reinforcement learning through case studies of three papers

○ **RFID and Cloud based entry exit system** 'Coursework Project for CS421 Computer Peripherals and Interfacing'

We as a team of two members developed an RFID based entry exit system, proposing an alternative to the current security system in the University. The server and database was hosted on cloud9 and we interfaced the RFID card sensors, LCD display and keypad matrix with Raspberry Pi.

○ **Ed Tech Website** 'Coursework Project for CS203: Software Engg Course'

We as a team of six members developed an educational website. It allows anyone to design and host their own course with assignments, projects and online coding problems. Lead the team, implemented the search, participated in design.

Technical skills

○ **Programming Languages:**

Proficient in Python, C.

Familiar with Java, C++, Matlab, HTML, CSS, PHP, SQL

○ **Libraries:** Proficient in PyTorch, Tensorflow, Keras, Numpy, Scikit-Learn, Matplotlib, Spacy.