Swarnadeep Saha

CS PhD Candidate, UNC Chapel Hill, NC, USA

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RESEARCH INTERESTS

Natural Language Processing, Deep Learning, Interpretability, Graphs, Structured Prediction.

EDUCATION

UNC Chapel Hill   **North Carolina, USA**
Ph.D. in Computer Science, Advisor: [Prof. Mohit Bansal](#)   *2019 - Present*
Munroe and Rebecca Cobey Fellowship

Indian Institute of Technology, Delhi   **Delhi, India**
M.Tech. in Computer Science, Advisor: [Prof. Mausam](#), GPA: 9.01/10.0   *2015 - 2017*
Thesis: Open Information Extraction from Numerical and Conjunctive Sentences
Best M.Tech Thesis Award in Computer Science

Jadavpur University   **Kolkata, India**
B.E. in Computer Science, GPA: 8.72/10.0   *2010 - 2014*

PUBLICATIONS

1. **Explanation Graph Generation via Pre-trained Language Models: An Empirical Study with Contrastive Learning**
   Swarnadeep Saha, Prateek Yadav, and Mohit Bansal
   ACL 2022 [Long][Poster][[pdf]](#)

2. **ExplaGraphs: An Explanation Graph Generation Task for Structured Commonsense Reasoning**
   Swarnadeep Saha, Prateek Yadav, Lisa Bauer, and Mohit Bansal
   EMNLP 2021 [Long][Oral][Acceptance Rate: 23%][[pdf]](#)

3. **multiPRover: Generating a Set of Proofs for Improved Interpretability in Rule Reasoning**
   Swarnadeep Saha, Prateek Yadav, and Mohit Bansal
   NAACL 2021 [Long][Oral+Poster][Acceptance Rate: 26%][[pdf]](#)

4. **PRover: Proof Generation for Interpretable Reasoning over Rules**
   Swarnadeep Saha, Sayan Ghosh, Shashank Srivastava, and Mohit Bansal
   EMNLP 2020 [Long][Oral][Acceptance Rate: 24%][[pdf]](#)

5. **ConjNLI: Natural Language Inference over Conjunctive Sentences**
   Swarnadeep Saha, Yixin Nie, and Mohit Bansal
   EMNLP 2020 [Long][Poster][Acceptance Rate: 24%][[pdf]](#)

6. **Pre-Training BERT on Domain Resources for Short Answer Grading**
   Chul Sung, Tejas Dhamecha, **Swarnadeep Saha**, Tengfei Ma, Vinay Reddy, and Rishi Arora
   EMNLP 2019 [Short][Poster][Acceptance Rate: 23%][[pdf]](#)

7. **Aligning Learning Objectives to Learning Resources: A Lexico-Semantic Spatial Approach**
Swarnadeep Saha, Malolan Chetlur, Tejas I. Dhamecha, Shantanu Godbole and others
IJCAI 2019 [Long][Oral+Poster][Acceptance Rate: 17%][pdf]

8. **Creating Scoring Rubric from Representative Student Answers for Improved Short Answer Grading**
Smit Marvaniya, **Swarnadeep Saha**, Tejas I. Dhamecha, Peter Foltz, Renuka Sindhgatta and Bikram Sengupta
CIKM 2018 [Long][Oral][Acceptance Rate: 17%][pdf]

9. **Joint Multi-Domain Learning for Automatic Short Answer Grading**
Swarnadeep Saha, Tejas I. Dhamecha, Smit Marvaniya, Peter Foltz, Renuka Sindhgatta and Bikram Sengupta
arXiv 1902.09183 [Long][pdf]

10. **Open Information Extraction from Conjunctive Sentences**
Swarnadeep Saha and Mausam
COLING 2018 [Long][Oral][Acceptance Rate: 37%][pdf]

11. **Balancing Human Efforts and Performance of Student Response Analyzer in Dialog-based Tutors**
Tejas I. Dhamecha, Smit Marvaniya, **Swarnadeep Saha**, Renuka Sindhgatta and Bikram Sengupta
AIED 2018 [Long][Oral][Acceptance Rate: 25%][pdf]

12. **Sentence Level or Token Level Features for Automatic Short Answer Grading?: Use Both Swarnadeep Saha**, Tejas I. Dhamecha, Smit Marvaniya, Renuka Sindhgatta and Bikram Sengupta
AIED 2018 [Long][Oral][Acceptance Rate: 25%][pdf]

13. **Bootstrapping for Numerical Open IE**
Swarnadeep Saha, Harinder Pal and Mausam
ACL 2017 [Short][Poster][Acceptance Rate: 18%][pdf]

INDUSTRY EXPERIENCE

FAIR Labs, Meta AI Research   **Seattle, USA**
Research Intern, Mentor: Dr. Asli Celikyilmaz   *May 2022-Present*
○ Topics in **reasoning** for **natural language generation**.

Salesforce AI Research   **Palo Alto, USA**
Research Intern, Mentors: Dr. Nazneen Rajani and Dr. Jesse Vig   *June 2021-August 2021*
○ Topics in **interpretability**, **commonsense reasoning** and **active learning**.

IBM Research   **Bangalore, India**
Research Engineer, Manager: Dr. Shantanu Godbole   *July 2017 - June 2019*
○ Designed and implemented large scale **Machine Learning** and **NLP** solutions for **Intelligent Tutoring Systems (Watson Tutor)**, notably in the areas of **Automatic Short Answer Grading** and **Text Segmentation**.
○ *Lab-wide Research Appreciation* award and twice *Manager's Choice* award.

Adobe Systems   **Noida, India**
Member of Technical Staff, Manager: Rajeev Sharma   *June 2014 - July 2015*
○ Worked as a full-stack software developer in the **Acrobat Reader Team** of Adobe.

ACHIEVEMENTS AND AWARDS

- **Munroe and Rebecca Cobey Fellowship** at UNC Chapel Hill.
- **Best M.Tech. Thesis** in Computer Science at IIT Delhi.
- Lab-wide **Research Appreciation Award** at IBM Research.
- Twice **Manager's Choice Award** at IBM Research.
- **All India Rank of 142** in Graduate Aptitude Test in Engineering (GATE), 2014 among 155190 applicants.
- **State Rank of 96** in West Bengal Joint Entrance Examination (WBJEE), 2010 among 127196 applicants.

PROFESSIONAL SERVICE

- Conference Reviewer: ARR 2021, EMNLP 2021, NAACL 2021, AAAI 2020, AIED 2019, NAACL 2019, EMNLP 2018.
- Journal Reviewer: AI Journal (AIJ), Computational Linguistics (CL).

SOFTWARE SKILLS

- Programming Languages: C, C++, Java, Scala, Python, Perl, Assembly Languages.
- Databases: MySQL, PostgreSQL.
- Frameworks and Tools: PyTorch, Keras, Hadoop, Git, Perforce, Maven, SBT.

RELEVANT GRADUATE LEVEL COURSES

- Machine Learning, Advanced Machine Learning, Graphical Models, Generative Models, Advanced NLP, Grounding in NLP, Structured Prediction, Machine Learning and Graphics.

REFERENCES

- **Dr. Mohit Bansal**, John R. & Louise S. Parker Associate Professor of CS, UNC Chapel Hill.
- **Dr. Mausam**, Professor, Jai Gupta Chair of CSE and Founding Head of School of AI, IIT Delhi and Affiliate Professor of CS, University of Washington, Seattle.
- **Dr. Shashank Srivastava**, Assistant Professor of CS, UNC Chapel Hill.
- **Dr. Nazneen Rajani**, Senior Research Scientist, Salesforce Research.
- **Dr. Jesse Vig**, Senior Research Scientist, Salesforce Research.
- **Dr. Shantanu Godbole**, Senior Research Manager, IBM Research.