Sahisnu Mazumder

✉ Contact Information

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✎ Research Interests

Natural Language Processing, Deep Learning, Lifelong Learning, Reasoning Problems in AI.
- **Current Research Topics**: Knowledge Base Reasoning, Dialogue Systems, Sentiment Analysis, Deep Reinforcement Learning.
- **Past Research Experiences**: *News data analytics* (studying temporal dynamics of news concepts on Web, focused news search, news-casters discovery in social media); *Location-aware Review Mining* (location-specific activity mining from Yelp Reviews, activity knowledge base construction using graph databases for location-aware recommendations).

🎓 Education

University of Illinois at Chicago (UIC), Chicago, IL, USA.
PhD Candidate, Computer Science   **Aug, 2015 - present**
- *GPA*: **4.0/4.0**   • Advisor: Prof. Bing Liu.

Indian Institute of Technology (IIT), Roorkee, Uttarakhand, India.
M. Tech. in Computer Science and Engineering   **Jul, 2012 - Jun, 2014**
- *GPA*: **8.803/10.0**   • Advisor: Dr. Dhaval Patel.

Indian Institute of Engineering Science and Technology, Shibpur, Howrah, INDIA
B. E. in Computer Science and Technology   **Jul, 2008 - May, 2012**
- *GPA*: **85.11/100.0**

💼 Work Experience

Research Intern @ Microsoft Research Redmond, USA   **May, 2020 - Aug, 2020**
- Worked on automated bootstrapping of Natural Language Interfaces for software applications.

Research Intern @ Microsoft Research Redmond, USA   **May, 2019 - Aug, 2019**
- Built "FLIN", a flexible Natural Language Interface for Web Navigation [paper under submission].

AI Research Intern @ Huawei R&D USA, Boston, USA   **May, 2018 - Aug, 2018**
- Developed deep learning based solutions (worked on Android application development and designing machine learning model with Tensorflow) for enhancing user experience for mobile devices.

Graduate Research & Teaching Assistant @ UIC   **Aug, 2015 - present**
- Working on knowledge base reasoning, conversation modeling and guided reinforcement learning.
- Worked as TA for Data Mining and Text Mining, Object Oriented Languages and Environments, Programming Practicum and Program Design courses.

Junior Research Fellow @ IIT Roorkee   **July, 2014 - April, 2015**
- Appointed under the scheme of "CUDA Teaching Center" sponsored by NVIDIA Corp., Pune.
- Worked on large scale news data analytics and published 2 research papers [10, 11].

Software Developer Intern @ Siemens VAI, Kolkata, India   **June, 2011 - July, 2011**
- Developed an application software which aids various units of an automated steel plant to communicate among themselves through dedicated links to support process automation.

📖 Selected Publications

[1] Bing Liu, **Sahisnu Mazumder**. **Lifelong Learning Dialogue Systems: Chatbots that Self-Learn On the Job.** *appear in AAAI Conference on Artificial Intelligence* (**AAAI-2021**).

[2] Jiahua Chen, Shuai Wang, **Sahisnu Mazumder**, Bing Liu. **A Knowledge-Driven Approach to Classifying Object and Attribute Co-references in Opinion Mining.** *appear in Findings of Empirical Methods in Natural Language Processing* (**EMNLP-2020, findings**).

[3] Nianzu Ma, **Sahisnu Mazumder**, Hao Wang, Bing Liu. **Entity-Aware Dependency-based Deep Graph Attention Network for Comparative Preference Classification.** *In Annual Meeting of the Association for Computational Linguistics* (**ACL 2020**), *Seattle, USA.*

[4] **Sahisnu Mazumder**, Bing Liu, Shuai Wang and Nianzu Ma. **Lifelong and Interactive Learning of Factual Knowledge in Dialogues.** *In Annual Meeting of the Special Interest Group on Discourse and Dialogue* (**SIGDIAL 2019**), *Stockholm, Sweden.*

[5] **Sahisnu Mazumder**, Nianzu Ma and Bing Liu. **Towards a Continuous Knowledge Learning Engine for Chatbots.** *arXiv:1802.06024 [cs.CL], 16 Feb. 2018.* [***Featured at Data Science Central on March 5, 2018.***]

[6] Shuai Wang, Guangyi Lv, **Sahisnu Mazumder**, Geli Fei and Bing Liu. **Lifelong Learning Memory Networks for Aspect Sentiment Classification.** *In IEEE International Conference on Big Data* (**IEEE BigData 2018**), *Seattle, USA.*

[7] **Sahisnu Mazumder**, Bing Liu, Shuai Wang, Yingxuan Zhu, Lifeng Liu and Jian Li. **Action Permissibility in Deep Reinforcement Learning and Application to Autonomous Driving.** *In Deep Learning Day of ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (**KDD DLDay 2018**), *London, UK.* [***Spotlight Presentation***]

[8] Shuai Wang, **Sahisnu Mazumder**, Bing Liu, Mianwei Zhou and Yi Chang. **Target-Sensitive Memory Networks for Aspect Sentiment Classification.** *In Annual Meeting of the Association for Computational Linguistics* (**ACL 2018**), *Melbourne, Australia.*

[9] **Sahisnu Mazumder** and Bing Liu. **Context-aware Path Ranking for Knowledge Base Completion.** *In International Joint Conference on Artificial Intelligence* (**IJCAI 2017**), *Melbourne, Australia.*

[10] **Sahisnu Mazumder**, Sameep Mehta and Dhaval Patel. **Identifying Top-k Consistent News-Casters on Twitter.** *In ACM International Conference on Information and Knowledge Management* (**CIKM 2015**), *Melbourne, Australia.*

[11] **Sahisnu Mazumder**, Bazir Bishnoi and Dhaval Patel. **News Headlines: What They Can Tell Us?** *In ACM IBM Collaborative Academia Research Exchange Conference* (**IBM I-CARE 2014**), *Bangalore, India.* [**2nd Best Poster Award**]

[12] **Sahisnu Mazumder**, Dhaval Patel and Sameep Mehta. **ActMiner: Discovering Location-Specific Activities from Community-Authored Reviews.** *In International Conference on Data Warehousing and Knowledge Discovery* (**DaWaK 2014**), *Munich, Germany.*

💬 INVITED TALKS AND TUTORIALS

[1] **Sahisnu Mazumder. Machine Learning Paradigms and Recent Trends.** *In Storage Research Group's Weekly Meeting at Huawei R&D USA, July 2018, Boston, MA, USA.*

[2] Dhaval Patel and **Sahisnu Mazumder. Location-aware Review Analytics: A Big Data Perspective.** *In International Conference on Big Data Analytics* (**BDA 2014**), *December 2014, New Delhi, India.*

🖥 ACADEMIC/ COURSE PROJECTS

REALM: A collaborative project funded by Northrop Grumman Feb, 2019 - present
- Working as member of UIC REALM team to build an NL interface for human-robot Interaction.

Other Course Projects

- Implemented and evaluated deep recurrent network-based QA model and Memory Network models for a comparative analysis of Reading Comprehension Task in natural language Question-Answering [**Graduate Deep Learning Course Project**].

- Developed *TG-Annotator*, an annotation system that automatically annotates text with Thought Group markers (/ and //) and explores the notion of (latent) effective pauses found while reading a text [**Graduate NLP Course Project**].

- Built sentiment classifier for predicting entity-centric sentiments of political tweets posted on Twitter [**Graduate Text Mining Course Project**].
- Developed an application program for accessing remote file system of a UNIX m/c using shell commands from a local UNIX m/c implemented by RPC [**Network Programming in UNIX course during Masters**].

♛ AWARDS AND HONORS

- Wexler Award at University of Illinois at Chicago, 2015 (*3% of the students*).
- 2nd Best Paper/Poster Award at IBM I-CARE, 2014.
- Junior Research Fellowship at IIT Roorkee, 2014.
- MHRD Scholarship from Govt. of India, 2012.

♟ PROFESSIONAL SERVICES

- **Reviewer / Program Committee Member**
  - AAAI Conference on Artificial Intelligence (**AAAI - 2021, 2020, 2019, 2018**).
  - International Joint Conference on Artificial Intelligence (**IJCAI -2020, 2019, 2018**).
  - Annual Meeting of the Association for Computational Linguistics (**ACL - 2020**).
  - Conference on Empirical Methods in Natural Language Processing (**EMNLP - 2020**).
  - European Chapter of the Association for Computational Linguistics (**EACL - 2021**).
  - Asia-Pacific Chapter of Association for Computational Linguistics (**AACL-IJCNLP -2020**).
  - IEEE Transactions on Neural Networks and Learning Systems (**IEEE TNNLS - 2019**).
  - ACM Transactions on Asian and Low-Resource Language Information Processing (**ACM TALLIP - 2019**).
- **Secondary Reviewer**
  - Conference on Empirical Methods in Natural Language Processing (**EMNLP - 2017**).

🛡 SCHOLASTIC ACHIEVEMENTS

- Ranked 3rd (out of 55 students) in the department **during graduate (M. Tech.)** course.
- Ranked 5th (out of 60 students) in the department **during undergraduate (B.E.)** course.
- Ranked AIR (**All India Rank) 215 (99.86 %ile)** among **156k candidates** in **Graduate Aptitude Test in Engineering (GATE) Examination**, 2012.
- Ranked **402** among **50k candidates** in **West Bengal Joint Entrance Examination (WB-JEE)**, 2008.
- Ranked 55th **in the state** in **Madhyamik (10th) Examination**, 2006.

🖹 TECHNICAL SKILLS

- **Programming**: C, C++, Java, Python, Android, R, Matlab (familiar).
- **Web Development**: HTML, PHP, Javascript.
- **Software Packages / Libraries Used**: Weka, MySql, NLP libraries (NLTK, spaCy, Stanford CoreNLP), Graph Database (Neo4j, Titan), Visualization (Gephi, Matplotlib), Scikit-learn, Pandas, Deep learning libraries (Tensorflow, Keras).
- **PhD Course Works**: Data Mining and Text Mining, Machine Learning, Numerical Optimization with Deep Learning, Artificial Intelligence, Statistical Natural Language Processing, Information Retrieval, Algorithms.

❝ REFERENCES

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Dr. Dhaval Patel
Research Staff Member,
IBM TJ Watson Research Center, NY, USA
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Senior Researcher and Manager,
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