KnowledgeNLP'25 2025

The 4th International Workshop on Knowledge-Augmented Methods for Natural Language Processing

Proceedings of the Workshop

May 3, 2025

©2025 Association for Computational Linguistics

Order copies of this and other ACL proceedings from:

Association for Computational Linguistics (ACL) 317 Sidney Baker St. S Suite 400 - 134 Kerrville, TX 78028 USA Tel: +1-855-225-1962 acl@aclweb.org

ISBN 979-8-89176-229-9

Introduction

Welcome to the 4th International Workshop on Knowledge-Augmented Methods for Natural Language Processing (KnowledgeNLP'25), held in conjunction with NAACL 2025. KnowledgeNLP will take place on May 3rd, 2025, allowing for both virtual and in-person attendance in New Mexico, USA.

Recent progress in large-scale models like ChatGPT has significantly advanced NLP capabilities. However, these models face limitations in memorizing rare information, are prone to hallucinations, and cannot access up-to-date information. Additionally, their fixed parameter size prevents them from fully encapsulating the continuously evolving world knowledge.

The field of knowledge-augmented NLP spans a wide array of techniques and applications. Acquiring relevant knowledge is challenging due to its diversity and distribution across numerous sources. Once acquired, effectively representing and utilizing this knowledge to support model predictions presents another major challenge. This workshop seeks to bring researchers together to share their insights and progress in this domain, aiming to highlight the importance of knowledge-augmented NLP.

In response to our call for papers, we received 48 submissions. Each submission was rigorously reviewed by at least three Program Committee members selected for their expertise. Based on the reviewers' feedback, we accepted 28 papers, including 6 oral presentations and 22 poster presentations. We are honored to invite five keynote speakers: Prof. Doug Downey (Allen Institute for AI and Professor Northwestern University), Prof. Graham Neubig (Carnegie Mellon University), Dr. Yunyao Li (Adobe), Prof. Yu Su (Ohio State University), Prof. Manling Li (Northwestern University).

We hope you find the workshop papers insightful and inspiring. We express our gratitude to the keynote speakers for their engaging talks, the authors for their valuable contributions, and the Program Committee members for their thorough reviews. Special thanks to the emergency reviewers for their expertise and to the NAACL 2025 workshop chairs for their support during the organization process.

Organizing Committee

Program Chairs

Weijia Shi, University of Washington Wenhao Yu, Tencent AI Seattle Lab Akari Asai, University of Washington Meng Jiang, University of Notre Dame Greg Durrett, University of Texas at Austin Hannaneh Hajishirzi, University of Washington Luke Zettlemoyer, University of Washington

Program Committee

Reviewers

Amit Agarwal, Oracle Neelima Agarwal, Microsoft Ashutosh Ahuja, Starbucks Abhinav Balasubramanian, NVIDIA Mithil Bangera, University Of New Haven Yeshil Bangera Vibha Belavadi, Adobe Systems Zeyi Chen, University of Washington Shristi Drolia, Novocure Ritam Dutt, Carnegie Mellon University Krupa Galiya Mohammad Hasan, Indiana University Indianapolis Yebowen Hu, University of Central Florida Chao-Wei Huang, National Taiwan University Zhehui Huang, University of Southern California Shruti Jalan, Amazon Amit Jaspal, Facebook Bhargava Kumar, TD Securities Yoonsang Lee, Seoul National University Pengwei Li, Meta Bryan Li, University of Pennsylvania Su Liu, Amazon Zefang Liu, J.P. Morgan Chase and Georgia Institute of Technology Xiao Liu, University of California, Davis Maochuan Lu, University of California, Berkeley Elan Sopher Markowitz, University of Southern California Bang Nguyen, University of Notre Dame Garima Panwar, Amazon Hitesh Laxmichand Patel, Oracle Priyaranjan Pattnayak, Oracle Meghana Puvvadi, NVIDIA Yinzhu Quan, Georgia Institute of Technology Arina Razmyslovich, DNI Aaditya Shukla, NVIDIA Ishneet Sukhvinder Singh, Algoverse AI Research Dewang Sultania, Adobe Systems Shounak Sural, Adobe Suhas Suresha, Adobe Systems Jiaxiang Tang, HKUST Van-Hien Tran, NICT Takehito Utsuro, University of Tsukuba Ishita Verma, Adobe Systems Qingyun Wang, University of Illinois, Urbana Champaign Di Wu, University of California, Los Angeles Zhenyu Wu, Xi'an Jiaotong University Paul Youssef, Marburg University

Mengxia Yu, University of Notre Dame Yuwei Zhang, University of California, San Diego Andrea Zugarini, Expert.ai Srl

Table of Contents

Entity Retrieval for Answering Entity-Centric Questions Hassan Shavarani and Anoop Sarkar 1
ELECTRA and GPT-40: Cost-Effective Partners for Sentiment Analysis James P. Beno 18
Retrieval of Temporal Event Sequences from Textual Descriptions Zefang Liu and Yinzhu Quan
Generating Tables from the Parametric Knowledge of Language Models Yevgeni Berkovitch, Oren Glickman, Amit Somech and Tomer Wolfson
Investigating Large Language Models for Text-to-SPARQL Generation Jacopo D'Abramo, Andrea Zugarini and Paolo Torroni
GAVEL: Generative Attribute-Value Extraction Using LLMs on LLM-Augmented Datasets Pollawat Hongwimol, Dong Sheng, Li Zhang, Kai Liu and Xiufei Wang
Leveraging Domain Knowledge at Inference Time for LLM Translation: Retrieval versus Generation Bryan Li, Jiaming Luo, Eleftheria Briakou and Colin Cherry
Enhancing Cross-Language Code Translation via Task-Specific Embedding Alignment in Retrieval- Augmented Generation Manish Bhattarai, Minh N. Vu, Javier E. Santos, Ismael Ismael and Daniel O'Malley 107
LLM Reasoning Engine: Specialized Training for Enhanced Mathematical Reasoning Shuguang Chen and Guang Lin
RouteNator: A Router-Based Multi-Modal Architecture for Generating Synthetic Training Data for Function Calling LLMs Dewang Sultania, Vibha Belavadi, Tushar Vatsa, Suhas Suresha, Ishita Verma, Tracy Holloway King, mifriedr@adobe.com mifriedr@adobe.com and Cheng Chen
StoC-TOT: Stochastic Tree-of-Thought with Constrained Decoding for Complex Reasoning in Multi- Hop Question Answering Zhenyu Bi, Daniel Hajialigol, Zhongkai Sun, Jie Hao and Xuan Wang
<i>EKRAG: Benchmark RAG for Enterprise Knowledge Question Answering</i> Tan Yu, Wenfei Zhou, leiyang@nvidia.com leiyang@nvidia.com, Aaditya Shukla, mmadugu- la@nvidia.com mmadugula@nvidia.com, Pritam Gundecha, Nicholas Burnett, Anbang Xu, viseth@nvidia.com viseth@nvidia.com, tbar@nvidia.com tbar@nvidia.com, Rama Akkiraju and Vivienne Zhang152
<i>Towards Effectively Leveraging Execution Traces for Program Repair with Code LLMs</i> Mirazul Haque, Petr Babkin, Farima Farmahinifarahani and Manuela Veloso
A Novel Multi-Document Retrieval Benchmark: Journalist Source-Selection in Newswriting Alexander Spangher, Tenghao Huang, Yiqin Huang, Lucas Spangher, Sewon Min and Mark Dre- dze
 HEAL: Hierarchical Embedding Alignment Loss for Improved Retrieval and Representation Learning Manish Bhattarai, Ryan Barron, Maksim E. Eren, Minh N. Vu, Vesselin Grantcharov, Ismael Ismael, Valentin Stanev, Cynthia Matuszek, Vladimir I Valtchinov, Kim Rasmussen and Boian S. Ale- xandrov

Hybrid AI for Responsive Multi-Turn Online Conversations with Novel Dynamic Routing and Feedback Adaptation
Priyaranjan Pattnayak, Amit Agarwal, Hansa Meghwani, Hitesh Laxmichand Patel and Srikant Panda
Chain of Evidences and Evidence to Generate: Prompting for Context Grounded and Retrieval Aug- mented Reasoning Md Rizwan Parvez
Expertly Informed, Generatively Summarized: A Hybrid RAG Approach to Informed Consent Summa- rization with Auxiliary Expert Knowledge Autumn Toney, rsw66@georgetown.edu rsw66@georgetown.edu and calebs@med.umich.edu ca-
lebs@med.umich.edu
<i>MSR²: A Benchmark for Multi-Source Retrieval and Reasoning in Visual Question Answering</i> Kuo-Han Hung, Hung-Chieh Fang, Chao-Wei Huang and Yun-Nung Chen
PROPEL: Prompt Optimization with Expert Priors for Small and Medium-sized LLMs Kawin Mayilvaghanan, Varun Nathan and Ayush Kumar
ClaimCheck: Automatic Fact-Checking of Textual Claims using Web Evidence Akshith Reddy Putta, Jacob Devasier and Chengkai Li
Can dependency parses facilitate generalization in language models? A case study of cross-lingual relation extraction
Ritam Dutt, Shounak Sural and Carolyn Rose
Can dependency parses facilitate generalization in language models? A case study of cross-lingual relation extraction
Ritam Dutt, Shounak Sural and Carolyn Rose
DocBench: A Benchmark for Evaluating LLM-based Document Reading Systems Anni Zou, Wenhao Yu, Hongming Zhang, Kaixin Ma, Deng Cai, Zhuosheng Zhang, Hai Zhao and Dong Yu