PrivateNLP 2024

The Fifth Workshop on Privacy in Natural Language Processing

Proceedings of the Workshop

August 15, 2024

©2024 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 979-8-89176-139-1

Introduction

Welcome to the Fifth Workshop on Privacy in Natural Language Processing. Co-located with ACL 2024 in Bangkok, Thailand, the workshop is scheduled for August 15, 2024. To facilitate the participation of the global NLP community, we continue running the workshop in a hybrid format.

Privacy-preserving language data processing has become essential in the age of Large Language Models (LLMs) where access to vast amounts of data can provide gains over tuned algorithms. A large proportion of user-contributed data comes from natural language e.g., text transcriptions from voice assistants. It is therefore important to curate NLP datasets while preserving the privacy of the users whose data is collected, and train ML models that only retain non-identifying user data. The workshop brings together practitioners and researchers from academia and industry to discuss the challenges and approaches to designing, building, verifying, and testing privacy preserving systems in the context of Natural Language Processing.

Our agenda features a keynote speech, hybrid talk sessions both for long and short papers, and a poster session. This year we received 29 submissions. We accepted 23 submissions after a thorough peer-review. Five accepted submissions preferred the non-archival option and thus are not included in this proceedings. Moreover, our poster session features additional four ACL-Findings papers.

We would like to deeply thank to all the authors, committee members, keynote speaker, and participants to help us make this research community grow both in quantity and quality.

Workshop Chairs

Organizing Committee

Program Chairs

Ivan Habernal, Ruhr-University Bochum, Germany Sepideh Ghanavati, University of Maine, United States Abhilasha Ravichander, Allen Institute for AI, United States Vijayanta Jain, University of Maine, United States Patricia Thaine, Private AI, Canada Timour Igamberdiev, Technical University of Darmstadt, Germany Niloofar Mireshghallah, University of Washington, United States Oluwaseyi Feyisetan, Amazon, United States

Program Committee

Program Committee

Andrea Atzeni, Polytechnic Institute of Turin Asma Aloufi, Taif University Eleftheria Makri, Leiden University Erion Cano, Universität Paderborn Eugenio Martínez-Cámara, Universidad de Jaén Gergely Acs, Technical University of Budapest Isar Nejadgholi, National Research Council Canada Jaydeep Borkar, Northeastern University Kambiz Ghazinour, SUNY Canton Lizhen Qu, Monash University Mattia Salnitri, Polytechnic Institute of Milan Mousumi Akter, Technische Universität Dortmund Natasha Fernandes, Macquarie University Pengwei Li, Meta Peter Story, Clark University Pierre Lison, Norwegian Computing Center Rocky Slavin, University of Texas at San Antonio Ruyu Zhou, University of Notre Dame Sai Peddinti, Google Sebastian Ochs, Technische Universität Darmstadt Shomir Wilson, Pennsylvania State University Timour Igamberdiev, Technische Universität Darmstadt Travis Breaux, Carnegie Mellon University

Table of Contents

Noisy Neighbors: Efficient membership inference attacks against LLMs Filippo Galli, Luca Melis and Tommaso Cucinotta 1
<i>Don't forget private retrieval: distributed private similarity search for large language models</i> Guy Zyskind, Tobin South and Alex 'Sandy' Pentland7
Characterizing Stereotypical Bias from Privacy-preserving Pre-Training Stefan Arnold, Rene Gröbner and Annika Schreiner
Protecting Privacy in Classifiers by Token ManipulationRe'em Harel, Yair Elboher and Yuval Pinter29
A Collocation-based Method for Addressing Challenges in Word-level Metric Differential Privacy Stephen Meisenbacher, Maulik Chevli and Florian Matthes
Preset-Voice Matching for Privacy Regulated Speech-to-Speech Translation Systems Daniel Platnick, Bishoy Abdelnour, Eamon Earl, Rahul Kumar, Zahra Rezaei, Thomas Tsangaris and Faraj Lagum
PII-Compass: Guiding LLM training data extraction prompts towards the target PII via grounding Krishna Kanth Nakka, Ahmed Frikha, Ricardo Mendes, Xue Jiang and Xuebing Zhou 63
Unlocking the Potential of Large Language Models for Clinical Text Anonymization: A Comparative Study David Pissarra, Isabel Curioso, João Alveira, Duarte Pereira, Bruno Ribeiro, Tomás Souper, Vasco Gomes, André V. Carreiro and Vitor Rolla
Anonymization Through Substitution: Words vs Sentences Vasco Alves, Vitor Rolla, João Alveira, David Pissarra, Duarte Pereira, Isabel Curioso, André V. Carreiro and Henrique Lopes Cardoso
PocketLLM: Enabling On-Device Fine-Tuning for Personalized LLMsDan Peng, Zhihui Fu and Jun Wang
Smart Lexical Search for Label Flipping Adversial Attack Alberto José Gutiérrez-Megías, Salud María Jiménez-Zafra, L. Alfonso Ureña and Eugenio Martínez- Cámara
<i>Can LLMs get help from other LLMs without revealing private information?</i> Florian Hartmann, Duc-Hieu Tran, Peter Kairouz, Victor Cărbune and Blaise Aguera Y Arcas107
Cloaked Classifiers: Pseudonymization Strategies on Sensitive Classification Tasks Arij Riabi, Menel Mahamdi, Virginie Mouilleron and Djamé Seddah
<i>Improving Authorship Privacy: Adaptive Obfuscation with the Dynamic Selection of Techniques</i> Hemanth Kandula, Damianos Karakos, Haoling Qiu and Brian Ulicny
Deconstructing Classifiers: Towards A Data Reconstruction Attack Against Text Classification Models Adel Elmahdy and Ahmed Salem
<i>PrivaT5: A Generative Language Model for Privacy Policies</i> Mohammad Al Zoubi, Santosh T.y.s.s, Edgar Ricardo Chavez Rosas and Matthias Grabmair. 159

Reinforcement Learning-Driven LLM Agent for Automated Attacks on LLMs	
Xiangwen Wang, Jie Peng, Kaidi Xu, Huaxiu Yao and Tianlong Chen	. 170
A Privacy-preserving Approach to Ingest Knowledge from Proprietary Web-based to Locally Run	Mo-
dels for Medical Progress Note Generation	
Sarvesh Soni and Dina Demner-Fushman	.178