Understanding Ethics in NLP Authoring and Reviewing

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Abstract

With NLP research now quickly being transferred into real-world applications, it is important to be aware of and think through the consequences of our scientific investigation. Such ethical considerations are important in both authoring and reviewing. This tutorial will equip participants with basic guidelines for thinking deeply about ethical issues and review common considerations that recur in NLP research. The methodology is interactive and participatory, including case studies and working in groups. Importantly, the participants will be co-building the tutorial outcomes and will be working to create further tutorial materials to share as public outcomes.

1 Motivation and structure

In late 2021, the Association for Computational Linguistics' executive committee appointed an Ethics Committee to investigate long-term ethical issues of the community's research and legislate any policy and workflow changes to the authoring, reviewing and other processes. The committee surveyed the constituency's opinions, wants and needs, finding that the majority of respondents felt that clear guidelines on acceptable practices regarding authoring and reviewing were needed. Specifically, in response to the question "What do you think are the most urgent tasks for the global *CL ethics committee?", 50% of respondents highlighted the need for more resources and discussion forums to raise awareness in the community about ethical issues in research and to clarify ethical review policies, 36% specifically mentioned the importance of creating dedicated training materials for authors and reviewers, and 26% encouraged more outreach initiatives to facilitate discussion about ethical research in the community.

This tutorial proposal thus follows from the mandate from the survey, such that more interactive opportunities exist to best communicate and train our membership on ethical guidelines and research practices.

The tutorial also draws on related, successful past tutorials on NLP reviewing and socially responsible NLP ($\approx$100 participants) (Cohen et al., 2021; Tsvetkov et al., 2018), where some of the proposed tutorial instructors have been involved.

We propose a hybrid tutorial to best allow equitable access to the topic of this tutorial, especially to familiarize new community members and those who cannot afford access to attend physically. We plan to have dedicated presenters that can coordinate activities for the expected online participants. We may plan to use specific e-resources that can help facilitate virtual group discussions (e.g., Padlet, PollEverywhere, Google Docs, Slack).

We intend to make the tutorial presentation materials publicly available, in alignment with the stated goals of the tutorials. As an example, annotated presentation slides (with presenter notes) will be made available, such that tutorial participants can bring exercises of different lengths into classroom settings for research groups as well as undergraduate and graduate classes. We will organize a separate website via a Github repository[1] (to be owned by the ACL) to centralize our tutorial resources for long-term and public access.

However, due to the sensitive and formative nature of the small-group discussions, we will not record the small-group discussions so that participants can speak freely and off-the-record. The plenary, lecture-styled sessions (Sessions 1 and 7) may be recorded live, or pre-recorded offline.

This proposal tutorial aligns with the theme track "Reality Check" of ACL 2023. Most of the challenges addressed by the theme track, including out-of-domain generalization, adversarial attacks, spurious patterns (both linguistic and social), insensitivity to basic linguistic perturbations such as

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[1] `https://github.com/acl-org/ethics-tutorial`, or similar (not yet published).

Segment Topic	Led by
1. Introduction and Foundations for Ethics	Presenters
2. Case Studies: Problematic Ethical Research — First reading	Participants
3. Structured Interaction / Dialogue	Presenters, Participants
4. Case studies — Second reading (Rotation)	Participants
5. Group Presentations	Group Leads
6. Summary and Common Issues	Presenters
7. Discussing and Troubleshooting Ethics and Further Resources	Presenters

Table 1: Tutorial Outline. Each segments' duration is ∼30 minutes, but 3 hours in total. Segments 2–6 will be conducted in small-group interaction.

negation, sensitivity to perturbations that should not matter (e.g., order and wording of prompts), are deeply related to ethical considerations of NLP research. In particular, proper discussion of risks (e.g., failure modes and vulnerabilities to adversarial attacks) and limitations (the scope of your claims, not overselling) is an integral to the theme and also for ethics authoring and reviewing. Finally, the theme track raises the question "what is an improvement in the real-world?", which is directly related to the social impact issues addressed by ethics reviewing.

2 Tutorial Content

Type: 1/2 day, Introductory
Expected Attendees: 100
Audience: Authors and reviewers, interested parties
Desired Location: Preferably ACL (Toronto, Canada)
Prerequisites: Introductory background in natural language processing and deep learning, including a basic familiarity of commonly-used approaches to text classification and generation, and standard NLP tasks. Fluent command of English.

Ethical consideration overarch our duties as researchers and scientists. As members of our community, and representatives of our works to both the general public and practitioners, we need to consider the ramifications of our work. The need for a better understanding of ethics is reflected in both authoring and reviewing, key functions of our community's peer review process.

Unintended and harmful ethical lapses and consequences can be largely avoided through contin-

uing communication. Rather than assume that research is purely an intellectual pursuit, our tutorial invites participants to consider ethics as an integral component of the holistic framework of impactful research work. Table 1 presents our proposed tutorial's outline. Our aim is to provide hands-on experience with ethical issues through a small-group activity, both at the physical conference and in breakout rooms for online participants.

Ethics requires healthy debate and deep thought, and for these reasons, our structure incorporates a Socratic exercise, where participants spend a large part of the session discussing a concrete case of problematic research. A Community of Inquiry[2] approach will be taken such that participants engage in role-playing and discussing about ethical issues through reading 1–2 problematic hypothetical research abstracts from a curated set (§ 2.1). Using Socratic-style questioning, presenters guide the participants to engender discussion and realise ethical issues in the works.

Importantly, the participants will be co-building the tutorial outcomes and will be working to create further tutorial materials to share as public outcomes of the exercises. For many issues in ethics, the evolving discussion creates more value than the actual conclusions. This is why we propose such a dialectic approach.

To encapsulate the exercise, the presenters will first introduce the key ways that ethics impacts authoring and reviewing (Segment 1), summarise the group discussions' key points (Segment 6) and conclude with pointers to references and other training materials (Segment 7), including best practices for authoring ethical consideration sections (Benotti and Blackburn, 2022) and reviewing.

Due to the necessary interactivity of the session, we plan to limit the registrations for the tutorial to 100. This is to cater to having approximately a 25:1 ratio for presenters to participants. A larger volume than this jeopardizes the necessary interactive nature of the tutorial, which requires input from all participants.

2.1 Case studies

In the interactive portion of the tutorial, we will discuss research abstracts and will facilitate group discussions guided by critical questions about the proposed technology. Participants will be encour-

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[2]https://en.wikipedia.org/wiki/Community_of_inquiry

aged to discuss the following questions:

- Ethics of the research question: Would answering this research question advance science without violating social contracts? What are potentials for misuse?

- Social impact of the proposed technology and its potential dual use: Who could benefit from such a technology? Who can be harmed by such a technology? Could sharing data and models have major effects on people's lives?

- Privacy: Who owns the data? Understanding the differences between published versus publicized data, understanding the concept of user consent, and thinking about implicit assumptions of users on how their data will be used.

- Bias in data: What are possible artifacts in data, given population-specific distributions? How representative is this data to address the target task?

- Social bias and unfairness in models: Is there sufficient control for confounding variables and corner cases? Does the system optimize for the "right" objective? Could the system amplify data bias?

- Is the proposed evaluation sufficient? Is there a utility-based evaluation beyond accuracy; e.g., measurements of false positive and false negative rates as measurements of fairness? What is "the cost" of misclassification and fault (in)tolerance?

Our case studies will be hypothetical; i.e., we will not use abstracts from existing studies but will create abstracts that will allow us to highlight potential ethical issues covering multiple, diverse ethics-related topics, including human subjects research and institutional review board (IRB) approval, bias and fairness, privacy, misinformation, toxicity/content moderation, energy considerations/green AI. We will develop several representative case studies for participants to choose from; we show an example below that illustrates multiple problematic aspects within one study, which was adapted from an actual problematic recent study.

The following abstract introduces an unethical research question, a demographically biased data set, a data collection procedure that violates user privacy, a problematic evaluation procedure, and claims/potential applications that can lead to significant harms to individuals.

Abstract: Faces contain more information about sexual orientation than can be perceived by the human brain. We used deep neural networks to extract features from over 35 thousand facial images. Given a single facial image, a classifier could correctly distinguish between gay and heterosexual men in 80% of cases, and in 70% of cases for women. Accuracy increased to 90% and 80%, respectively, given five facial images per person. Facial features employed by the classifier included both fixed (e.g., nose shape) and transient facial features (e.g., grooming style). Consistent with the prenatal hormone theory of sexual orientation, gay men and women tended to have gender-atypical facial morphology, expression, and grooming styles. Prediction models aimed at gender alone detected with 55% and 53% accuracy for gay males and gay females, respectively. Such findings advance our understanding of the origins of sexual orientation and the limits of human perception. Given that organizations are using computer vision algorithms to detect people's intimate traits, our findings expose a threat to the privacy and safety of gay men and women.

2.2 Readings

We will cover a diversity of primary research on ethics, sourced beyond the presenters' own works, in the plenary sessions of the tutorial. Also, due to the abbreviated length of the 1/2-day format, our tutorial will cross reference sources from the list, rather than specifically require participants to do readings before the tutorial.

A full reading list of over 200 works has been cross-compiled by the full ACL Ethics Committee, sourced from university courses on NLP Ethics and related topics. The list available on Github[3]. The list can be updated by pull requests and is sortable by both topic and publication type. Topics and readings include the following among others: data usage (Drugan and Babych, 2010; Couillault et al., 2014; Mieskes, 2017; Bender and Friedman, 2018; Kann et al., 2019; Rogers et al., 2021; Gebru et al., 2021), crowdsourcing (Bederson and Quinn, 2011; Fort et al., 2011; Callison-Burch, 2014; Fort et al., 2014; Hara et al., 2018; Toxtli et al., 2021), biases (Blodgett et al., 2020), language diversity (Tatman, 2017; Jurgens et al., 2017; Zmigrod et al., 2019; Tan et al., 2020; Koenecke et al., 2020; Bird, 2020), rigorous and meaningful evaluation (Caglayan et al., 2020; Ethayarajh and Jurafsky, 2020; Antoniak and Mimno, 2021; Tan et al., 2021), environmental impact (Strubell et al., 2019; Zhou et al., 2020; Henderson et al.,

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[3] https://github.com/acl-org/ethics-reading-list

2020; Schwartz et al., 2020; Bannour et al., 2021; Przybyła and Shardlow, 2022), and human harms and values (Winner, 1980; Hovy and Spruit, 2016; Leidner and Plachouras, 2017).

3 Presenters (listed in alphabetical order)

Luciana Benotti (*luciana.benotti@unc.edu.ar*, she/her) is an Associate Professor at the Universidad Nacional de Córdoba, in Argentina. Her research interests cover many aspects of situated and grounded language, including the study of misunderstandings, bias, stereotypes, and clarification requests. She is the elected chair of the NAACL executive board and is also serving as a member at large of the ACL Ethics committee.

Karën Fort (*karen.fort@sorbonne-universite.fr*, she/her) is an Associate Professor at Sorbonne Université and does her research at LORIA in Nancy, France. She has been working on ethics in NLP since 2014. She was co-chair of the first two ethics committees in the field (EMNLP 2020 and NAACL 2021) and is co-chair of the ACL ethics committee. She has been a member of the Sorbonne IRB between 2019 and 2022 and she teaches ethics at undergraduate and graduate level in Paris, Nancy, and the University of Malta.

Min-Yen Kan (*kanmy@comp.nus.edu.sg*, he/him): Associate Professor at the National University of Singapore and a co-chair of the ACL Ethics Committee. He has taught over 5,000 graduate and undergraduate students on his research interests in digital libraries, information retrieval and natural language processing.

Yulia Tsvetkov (*yuliats@cs.washington.edu*, she/her) is an Assistant Professor at the Paul G. Allen School of Computer Science and Engineering at the University of Washington, USA. Her research focuses on computational ethics, multilingual NLP, and machine learning for NLP. She developed a course on Computational Ethics in NLP and is teaching it at both undergraduate and graduate levels since 2017, and she is a co-chair of the ACL Ethics Committee.

4 Diversity considerations

The instructors of this tutorial are affiliated in different geographic regions. Luciana Benotti is in Latin America, Kären Fort in Europe, Min-Yen Kan in Asia and Yulia Tsvetkov in North America. Three of them identify with the female gender and one with the male gender. All of them are part of the ACL Ethics committee. We will promote this tutorial to all the ACL members but in particular to affinity groups such as Masakane, LatinX, North Africans, disabled in AI, indigenous in AI, Khipu and similar groups with the help of EquiCL. EquiCL is the only Big Interest Group in the ACL, its scope is equity and diversity and its current officers are Marine Carpuat (chair), Aline Villavicencio (secretary), Zeerak Waseem (communication with workshops and affinity groups). We think it is crucial to reach a diverse audience for this tutorial.

5 Ethical considerations

We are well aware that we do not compose a perfectly diverse committee and commit to pay close attention to ensure all participants' points of views are faithfully acknowledged.

We decided to use synthetic case studies in the form of abstracts, rather than real and complete articles, in order to preserve the anonymity of the authors, to refrain from personal criticism, and to allow the participants to focus more on the discussion than on the reading. We will create a variety of abstracts, with different forms, exemplifying different ethical issues, however, they will not cover all the possible ethical issues in the domain. Finally, the synthetic case studies will be clearly identified as such.

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6 Appendix

Here are examples of other abstracts our team is developing and may field during the actual tutorial.

Abstract: Do people feel better on when on vacation? We study the social media sentiment of families when on vacation and during normal periods. Using a snowball sampling method, we solicited participants active on various social media platforms ($N = 1,337$) to voluntarily disclose when and where they went on vacation. We then crawled our participants social media posts to determine whether specific time periods and destinations for vacations were correlated with higher levels of enjoyment. Initial analysis showed that such features do yield significant prediction performance improvement: for example, vacations taken close-by tended to have markedly higher satisfaction. Our model, VACAY-OK, accounts for such factors in novel gating network architecture, improving joint vacation period and sentiment detection by over 10% F_1. Our analysis validates patterns of interest: vacations with immediate family exhibit a bimodal distribution, and that ones without in-laws have a significantly higher satisfaction and detection rate. For robustness in identification, we collect and study the pattern and text of social media posts by parents, children, extended family members and friends of vacation-goers. To ensure both the accessibility and the reproducibility of our experiments, we have gathered the raw social media data, culled with permission from the original posters, and released it as a zip archive, available without moderation, in the footnote.

The above abstract illustrates challenges with minors giving consent and with individuals releasing confidential data unknowingly (details shared by friends).

Abstract: In this paper, we present the largest existing language model as of today (989 trillion parameters, dataset of 968 Pb), `BigBlue`. We trained it using not only freely available Web content, but also Web archives and publicly-accessible EPub versions of all the books of the commericial Amazonia bookshop web storefront. The best results were attained using reinforcement learning with human feedback (RLHF) coming from crowdworkers. The model improves the state-of-the-art in Natural Language Processing (NLP) in most tasks, including sentiment analysis (+0.02 F-measure), dependency syntax (+0.015 UAS), named-entity recognition (+0.05 F-measure), etc. `BigBlue` is available through an API on our company's website.

The above abstract illustrates some of the many issues around LLM, including carbon footprint.

Abstract: In this paper, we present the first language model developed for Fridonian, a regional language spoken in the South-East of Austrafrancia by more than 500,000 people. We detail the collection of the corpus, the creation of the model and its evaluation on basic NLP tasks. The corpus creation itself is an achievement, as it is well-known and documented (Birdoff, 2020) that Fridonian speakers are reluctant to allow the recording of their language, for fear it will be used against them by the country's Sidonian majority. However, we managed to record 100 hours of speech in different settings: family discussions, local authority meetings, ceremonies and traditional story telling contests. We used this dataset to train a language model which we evaluated on sentiment analysis and named-entity recognition tasks, with impressive results (resp. 0.56 and 0.75 in F-measure). The created language model (`FridoBERT`) and the dataset (`FridoSPEECH`) are freely available on GitHub.

The above abstract illustrates the lack of consideration of the speakers and their needs and context.

Abstract: Is sentiment analysis dependent on culture or only on language? In this paper we describe the collection and annotation of a billion-word dataset over 7 different Spanish dialects spoken in Latin America, annotated with fine-grained sentiment analysis cues. To the best of our knowledge, this is the largest Latin American dataset currently available. We used data from public groups in Telegram where locals talk about products and services. We evaluate the state-of-the-art sentiment analysis models on it, showing that their performance is significantly lower than the state-of-the-art results on well-known benchmark for Spanish. The dataset annotation took three months. We selected crowdworkers after a careful exam to ensure they were fluent in the target dialect. We payed them 4 US dollars per hour, a fair wage considering it was two times the minimum wage in these countries. Our sentiment classifier fine-tuned per dialect outperforms previous models on Spanish by large margins. Our model has been used for 12 months by hundreds of companies in Latin America. To serve the model, we implemented a costing model to provide this service at a uniform price to all regions of the world. We conducted three usability studies in collaboration with three companies, which demonstrated that the integration of our sentiment analysis detector markedly increased users' engagement with their marketing advertisements.

Abstract: With the rise of large language models (LLMs), they have become useful in critical settings such as health-care support, helping reduce administrative burden and improve predictive analytics. However, there is an emerging concern that LLMs encode gender and racial biases, which propagate to healthcare decisions. In this work, we propose a simple and effective approach to controlling for biases in LLMs through data anonymization, specifically focusing on patient names that often reveal gender and race. We introduce a novel and highly granular dataset of over 9.9 million patients' electronic health records annotated with patient demographics, including gender and race. We first fine-tune state-of-the-art LLMs on the raw healthcare data, and establish the presence of harmful biases in standard NLP benchmarks such as coreference resolution (10% lower F1 score for women compared to men) and named entity recognition (7% lower for White compared to Black patients). We also show that naively fine-tuned language models can be used to predict gender and race of the patients in held-out health records with high accuracy. Then, we show that a simple anonymization of the health data, by replacing patient names with generic placeholders, reduces the prediction gap in finetuned LLMs by up to 4% for gender, and up to 2.5% absolute for race. Our findings address important questions for fairness in NLP and algorithmic decision-making. Our code and data are publicly available to facilitate reproducibility.

The above abstract illustrates privacy concerns with using healthcare data, releasing data publicly, the problem with assumptions about privacy – that obfuscating names does not anonymize data since many other features correlate with demographics, annotation issued with binary gender and race, US-centric assumptions about conceptualization of race, evaluation of fairness on intrinsic benchmarks that might not reflect the true use case scenarios. Additional potential discussion is on what constitues "high accuracy" when the harm from misclasification is high (the weight of wrong predictions should be high).

7 One Liners for Videos

$_{Luciana}$[Hi. I am Luciana Benotti from Argentina and I think one of the most important parts about ethics is diversity. Ethics should take into account cultural diversities and promote decolonization.] $_{Min}$[Hi! I'm Min from the U.S. of A, but I live and teach in Singapore. My take is that ethics helps us leave no one behind.] $_{Karen}$[I am Karën Fort, from France, and for me, thinking "ethically" means opening your mind and trying to consider the world in a larger sense in terms of space (what could this do to people elsewhere) and time (what would be the effect in 10 years).] $_{Yulia}$[I am Yulia Tsvetkov from Seattle, U.S. and I do research on computational ethics and teach ethics in NLP. In addition to what others have mentioned, an important aspect of ethics research for me is in finding new ways to integrate exciting scientific questions that our community studies with positive applications of our technologies and making these technologies accessible to very diverse users.]

Meta. *Then we break to a quick recap of the goals, content and intended audience for the tutorial...*

Block 1 @Speaker 1 **Goals.** The first questions we will ask is "What is ethics"? and "Why is it important towards long-term progress for NLP?" This tutorial will engage you in a dialog to co-construct answers to these questions and help you use your knowledge in your authoring and reviewing of scientific studies.

Block 2 @Speaker 2 **Content.** Our 1/2 day tutorial will start with framing these questions but quickly follow into an interactive case study to ground our discussions. To involve all participants in a deep manner, we will initiate small-group discussions to analyze hypothetical paper abstracts for ethical concerns.

With our open-ended dialogue completed, we will be well-equipped to apply our knowledge towards the concrete problem of reporting and reviewing scientific work, such as writing the ethics statement and understanding the process and role of ethical reviewing. We will round out our session with pointers to ethics in NLP resources, such as our community's own reading list and links to how other communities are handling ethics and ethical concerns.

Block 3 @Speaker 3 **Intended Audience.** This tutorial is intended for all parties interested in the ethical aspects of natural language processing and computational linguistics research. We especially welcome authors and reviewers of papers, who will find the materials about ethical authoring and reviewing helpful in shaping the discourse in our community.

@Speaker 1. We hope you will join us for this session, whether in person or virtually. We need your support to spread awareness of this critical aspect in today's accelerated technology adoption. Thank you!