Ethical Questions in NLP Research: The (Mis)-Use of Forensic Linguistics

Akhilesh Sudhakar†, and Anil Kumar Singh∗
†akhileshs.s4@gmail.com
∗Indian Institute of Technology (BHU), India
nlprnd@gmail.com

Abstract
Ideas from forensic linguistics are now being used frequently in Natural Language Processing (NLP), using machine learning techniques. While the role of forensic linguistics was more benign earlier, it is now being used for purposes which are questionable. Certain methods from forensic linguistics are employed, without considering their scientific limitations and ethical concerns. While we take the specific case of forensic linguistics as an example of such trends in NLP and machine learning, the issue is a larger one and present in many other scientific and data-driven domains. We suggest that such trends indicate that some of the applied sciences are exceeding their legal and scientific briefs. We highlight how carelessly implemented practices are serving to short-circuit the due processes of law as well breach ethical codes.

1 Introduction
Quantitative, statistical and machine learning techniques have greatly changed the way applied sciences – and even core sciences (Whiteson and Whiteson 2009) – are being practiced. The extraordinary success of these techniques for many applications has naturally led to their being used more and more for various kinds of purposes. Many of these are quite benign and do not cause any harm or violate ethical principles. However, there are some for which this is not true. At this point in history, we seriously need to rethink the role of these techniques for many purposes.

While this problem may be relatively absent for the case of core sciences (due to their very nature), we argue that they pose a great challenge for the practitioners of applied sciences. In this paper, we study the case of forensic linguistics as an example to demonstrate why we face a great challenge that may radically change the world we live in. The Rule of Law and other principles of legality and ethics, which form the foundation of the modern world (for the collective good), may be at serous risk, due to certain harmful scientific practices. When we propose or take up an NLP or machine learning technique for deploying in real-world situations, it is vital that we understand and appreciate the ramifications it poses.

We mainly focus on legal aspects of NLP research, taking forensic linguistics as a specific example in this paper, but we also briefly mention scientific limitations. We start with considering the ‘due process’ of law as practiced in most countries (section 2). We then discuss the roles of forensic science in general (section 3) and forensic linguistics in particular (section 4). We then point out that the care- less practice of NLP and machine learning techniques, especially when they deal with real-world data and can affect people, are short-circuiting the due process (section 5.1) of law. Thus, they far exceed the legal brief (section 5). Finally, we point out some scientific limitations of the areas on which forensic linguistics relies (section 6).

2 The Due Process
According to Wikipedia, which can be treated today as a resource for commonly held knowledge (with some well-known issues), the Due process is described as follows:

Due process (James, Nordby, and Bell 2014) is the legal requirement that the state must respect all legal rights that are owed to a person. Due process balances the power of law of the land and protects the individual person from it. When a government takes action against a person without following the exact course of the law, this constitutes a Due process violation, which offends the rule of law.

For a more authoritative source, we can refer to the Fifth and Fourteenth Amendments to the United States Constitution, which the Supreme Court of the United States interprets as providing four protections: procedural Due process (in civil and criminal proceedings), substantive Due process, a prohibition against vague laws, and as the vehicle for the incorporation of the Bill of Rights.

The Legal Information Institute of the Cornell University Law School lists the Due process rights, as far as procedural Due process is concerned. There are many variations of the Due process in different countries, but the major steps involved in the Due process (for criminal cases) can be summarized as follows:

- A complaint is made to the legal authorities (e.g. the police)
- A case is registered

https://www.law.cornell.edu/anncon/html/amdt5bfrag1_user.html
https://www.law.cornell.edu/wex/due_process
• The case is investigated first by the police
• Suspects are identified and, in the presence of circumstan-
tial evidence, a trial is started
• Arguments are made and witnesses are called
• The quality of the evidence is evaluated, often by expert
witnesses
• The jury may deliberate (in some countries)
• The case is decided by the judge
• A punishment is awarded, if conviction happens
• The punishment is carried out by a different legal agency

These are fundamental parts of the process which every
individual is familiar with, but are still being ignored very
frequently, especially when using NLP and machine learn-
ing for tasks like crime detection and prediction. There are
different agencies that have been given the mandate of dif-
erent steps of the legal process. The suspect is informed,
not only of the fact of him/her being a suspect and of the
crime having been committed, but also of his/her rights as
per the law. Not only is there a prosecutor, but also a defense
attorney, who is central to the legitimacy of the Due process.

Forensic studies, specifically, play a role in a number of
the above mentioned stages in the Due process. This role is
elaborated in the following section.

3 The Role of Forensic Science

One definition of forensic science is that it is the application
of scientific knowledge and methodology to legal problems
and criminal investigation. It is the investigation, explana-
tion and evaluation of legal relevance (Fraser 2010). The
most important and frequent role of forensic science, how-
ever, is in the evaluation of evidence presented as part of the
Due process. Two main roles of forensic scientists are:
• In collection, preservation and analysis of scientific
evidence as part of an investigation
• As expert witnesses during the trial, working either for the
prosecution or the defence

However, what concern us the most is that some of the
current practices using forensic sciences exceed the man-
date of forensic sciences itself. The legally mandated role of
forensic science is in fact, far more limited than what current
practices would suggest. Forensic studies are meant to
work within and inside of the Due process, where the sus-
pects are informed of the crime as well as the rights accorded
to them upon being suspects (such as the right to remain
silent and the right not to self-incriminate). The permitted
role of forensic sciences does not extend to taking action
against the suspect, and certainly not before being proven
guilty through the Due process (we address ‘precrime’, an
extreme breach of legal boundaries of forensic sciences, in
ensuing sections). With advancement in data-driven analy-
ses and methods, forensic studies today, are heavily rely-
ing on quantitative, statistical and machine learning tech-
niques (Jackson-Matsushima 2013). We highlight the case
of forensic linguistics in the following section.

4 The Role of Forensic Linguistics

Forensic linguistics is often described as a branch of Applied
Linguistics (Coulthard 2004) or a branch of Sociolinguistics
(Eades 2010; Coulthard, Johnshon, and Wright 2017),
and is also related to Corpus Linguistics. Eades describes
the role of sociolinguistics in the legal process as that of expert
witnesses, through legal education, and through investigat-
ing the role of language in the perpetuation of inequality in
and through the legal process.

(Olsson 2013a) define forensic linguistics as:

Any forensic linguistic inquiry or investigation can draw
upon any branch of theoretical or applied linguistics in
order to analyse the language of some area of human life
which has relevance to the law, whether criminal or civil.

Yet another common definition is:

Forensic linguistics is the analysis of language that re-
lates to the law, either as evidence or as legal discourse.

There is definitely a valid case to be made for forensic lin-
guistics, but the apprehension we put forth is that recently,
it has started overstepping its mandated role, as we discuss
later. Forensic linguistics is also mentioned as the process of
solving word crimes (Olsson 2013b). Even within its valid
role, it can often be misused. The goal of forensic linguis-
tics, as of forensic science in general, is to ‘ferret out the
innocent from the guilty’. However, in practice, recent hap-
penings show otherwise too. It can, in fact, be used to ‘create
language crimes’ (Shuy 2005). A quotation from a review of
this book by Robert A. Leonard is instructive:

‘[t]he temptation to cut corners and get an “obviously”
guilty person convicted is sometimes difficult to over-
come’ ... and leads to creating the ‘illusion of a crime’,
hence the title reference to ‘creating’ language crimes,
that is, crimes ‘accomplished through language alone’.

A related issue is that of ‘adversarial interpret-
ing’ (Kredens 2013), which shows limitations of linguistic
evidence. For instance, the existence of different linguis-
tic varieties of many communities which have difficulty in
communicating in other varieties (for instance, the stan-
dard variety) can also be used against those communities,
as described for Aboriginal communities (Nothen 2007).
The same could be true of other ‘profiled’ communities.
Profiling of a criminal has been a long standing prac-
tice (Campbell and Denevi 2004), but the use of NLP and
machine learning methods can lead to profiling of not just
individual suspects (unaware of being suspected of commit-
ting the crime and also not told of their rights), but to the
profiling of entire communities as well. While on the one
hand statistics can be used for studying racial profiling, for example, on the other it can lead to the profiling itself, if enough care is not taken.

5 Exceeding the Legal Brief

The international forensic linguistics community at large, has started showing concern about the ethical and legal ramifications of the field. The Biennial Conference of the International Association of Forensic Linguists is one of the major conferences for forensic linguistics. The 13th version of this conference is on the theme of ‘New Challenges for Forensic Linguists’. Its call for papers lists language minorities and the legal system, linguistic disadvantage before the law, courtroom interpreting and translation and Human Rights matters, apart from language policy and language rights. All of these relate to the use of forensic linguistics for justice. There is also a code of ethics for this area. Despite such a code of ethics being in existence, there are alarming cases of forensic linguistics being used for purposes such as deception detection (some kinds of which can be harmless, but others not), counter-terrorism (not for crime investigation but to predict crime) as well as intelligence and surveillance. This leads to “the reduction of protective forms of law in the new ‘risk law’.” (Kunz 2013).

With the advent of multi-modal systems, computer vision and forensics linguistics are now increasingly being linked. The ICMR workshop on Multimedia Forensics and Security has taken cognizance of the prevailing issue and has issued calls for papers on issues which might be problematic from the point of view of justice.

5.1 Short-circuiting the Due Process

A consequence of the ‘risk law’ (and what we might call ‘exception law’) mentioned in the previous section is that the crime investigation role of forensic scientist (and of forensic linguist) leads to direct action in the form of various kinds of black lists or even no-fly list. In many cases (as in the case of no-fly lists), this happens in secret and the suspect, who is not even aware of being a suspect (or of the supposed crime), is subjected to action without the Due process. This results in short-circuiting of the Due process. This means that the roles of the complainant, investigating agency, prosecution, jury, judge and executioner are all eliminated and replaced by the verdicts of a computational system based on statistical operations on raw data. In such an extra-legal process, there is no role for the defense attorney, who is central to the legal system and without whom there can be no legitimacy of the legal system.

5.2 Enemy Penology when Everyone is a Suspect

Susanne Krassman describes the concept of ‘enemy penology’ (Krassman 2007) as developed by Günther Jakobs, a German professor in criminal law. According to this new paradigm:

(N)otorious delinquents, since they are incorrigible, have forfeited their status as citizens: for example, habitual criminals like sexual offenders, professionals involved in the so-called organized crime scene or political criminals including today’s predominant concern, that is internationally operating terrorists.

In the presence of tendencies like racial profiling etc. and the deployment of automatic techniques (often in secrecy), this becomes a threat to the existence of a society based on the Rule of Law as commonly understood. Moreover, when applied on big data and with large scale surveillance, it acquires truly dystopian dimensions, when everyone is a suspect.

5.3 Precrime

The concept of precrime (Mantello 2016, McCulloch and Wilson 2015) is not a new idea, as it originates in science fiction before the advent of modern computers. Quoting Haggerty and Ericson (K and R 2000):

(A) world where social control was no longer exclusively authored by human eyes or security forces but relied on a vast electronic ecosystem of sensors and software.

In the world of precrime, the final obstacle in the practice of the Rule of Law is demolished: that of time. Crime investigation, and forensics, happens before the crime is committed, instead of after it.

The declared norms of, say, forensic linguistics do not argue for precrime, but it is still becoming a practice with various kinds of detection and crime prediction techniques.

6 Scientific Limitations

Added to the dangers to the Rule of Law mentioned above, we finally cannot ignore the limitations of empirical science. Most predictions are not accurate enough to be deployed in situations where they can be used to harm people’s livelihood, social standing and even lives. Can preventing plausible harm become a justification for possibly harming people? This is a matter that needs much more detailed analysis. While we do not dwell on it at length in this work, we do want to point out that in current times, when technologies are being deployed on a global scale, even an error of one percentage point is too huge to be brushed aside. As we know, we are struggling to find solutions to problems which are very simple for human beings, such as shallow discourse parsing (Xue et al. 2016) and to understand the meaning of very simple sentences stories.

References:

-McCulloch and Wilson 2015
-Mantello 2016
-Susanne Krassman describes the concept of ‘enemy penology’ (Krassman 2007) as developed by Günther Jakobs, a German professor in criminal law.
-A world where social control was no longer exclusively authored by human eyes or security forces but relied on a vast electronic ecosystem of sensors and software.
-The declared norms of, say, forensic linguistics do not argue for precrime, but it is still becoming a practice with various kinds of detection and crime prediction techniques.

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7 Conclusion

We discussed the role of forensic science in general and forensic linguistics in particular in the context of the Rule of Law and the Due process. These roles are intended to be pretty limited, but with the increasing use of machine learning and NLP techniques in addition to older qualitative and quantitative methods, these roles are being carelessly expanded. This is happening at such a scale that, as we argue, they are now far exceeding their legal and scientific briefs. This is already causing harm to many unsuspecting people and if this continues, we should not be surprised by alarming developments, as we have been witnessing recently. Another dangerous trend is that we are entering an age of precrime that goes against the very fabric of civilized society as we understand it, or at least did till a decade or two ago. The role of forensic linguistics should be restricted to studying and evaluating evidence (as part of Due process) and to provide expert witnesses. Further, this should happen only when a crime is committed, and not to predict the future as in the case of precrime. Finally, we cannot ignore the fact that we know too little so far about the human brain, human psychology and human languages themselves. We are still struggling to solve some very simple problems in NLP, for example. We plan to study all these issues in more detail in the future.

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