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The Ghost in The Machine: Can We Still Tell Who's Writing?

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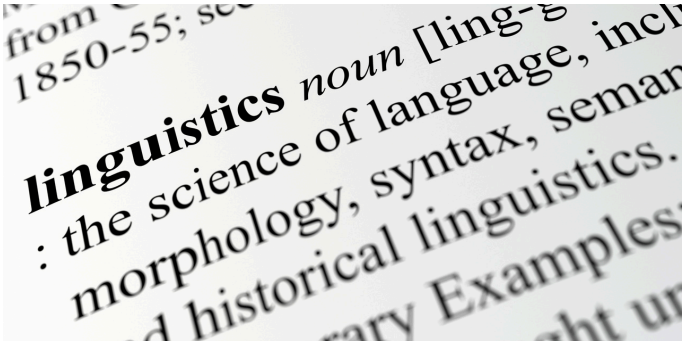
As we navigate 2026, the challenge is not about *'Did a bot write this?'* but more about *'How much of a human touch is left after a bot edited it?'* The line between what people write and what Artificial Intelligence (AI) creates is getting blurry. We are now seeing a mix of both rather than one or the other. In the world of language science, experts are increasingly turning to **stylometry**, which uses math to track a person's unique writing style. Even though AI is built to polish and "beautify" our writing, researchers want to know one thing: Does your personal writing DNA stay visible after an AI has edited your work?

The Hidden Fingerprint: Why AI Can't Hide Your Writing Style

The way we write is much more than just a choice of words. It is a subconscious reflection of our identity. At the core of *forensic stylometry*, the science of identifying authorship through language, lies the idea that every person has a "*linguistic fingerprint*." This fingerprint is made up of unique habits we are not even aware of, such as how we use punctuation, the rhythm of our sentences, and how often we use small, functional words like "and" or "with" (Chaski, 2021). Experts believe these patterns are as distinct as a physical thumbprint.



In the modern world, many people use AI to polish or rewrite their work. When an AI tool edits a draft, it acts as a statistical filter. Its goal is to take a person's unique, sometimes messy writing and pull it toward a communicative mean, essentially making the text sound like a polished, average version of professional English. As AI is trained on massive amounts of data, it tends to smooth out the quirks that make a person's writing stand out.

However, hiding your identity behind an AI is harder than it seems. Recent research suggests that while AI is excellent at changing the surface of a text by improving vocabulary and fixing grammar, it struggles to overwrite the deeper architecture of a person's writing (Tyo et al., 2022). Like a fresh coat of paint on a house, the AI changes the look, but the underlying structure remains the same.

These traits include how a writer embeds clauses within sentences and their error profile, the specific, consistent types of mistakes they tend to make. Even after an AI has finished its rewrite, these structural habits often remain. In legal disputes or cases of academic misconduct, forensic investigators look for these leftover markers. By identifying the persistent DNA of a person's original style within an AI-polished document, experts can still determine who truly wrote the words, proving that our subconscious habits are far more powerful than a digital filter.

The "Smoothing" Effect and the Loss of Burstiness

For advanced readers, AI-generated text often falls into a linguistic "uncanny valley": grammatically impeccable yet eerily monotonous. This phenomenon is largely attributed to a lack of burstiness, the human tendency to fluctuate between various sentence lengths and structures based on cognitive load and emotional intent. As noted by Mitchell et al. (2023), LLMs are trained to predict the "most likely" next token, which inherently favors a balanced, predictable rhythm. Human prose, by contrast, is characterised by its irregularity. This lack of variance has become a primary forensic

indicator; a document that is too perfect in its rhythm often signals a lack of human cognitive spontaneity.

The Socio-Legal Implications of Digital Attribution

The ability to identify a human author behind AI-filtered text is not merely an academic exercise; it has a profound real-world impact. In the legal field, the concept of *intermodal attribution* (identifying a source across different modes of generation) is becoming a cornerstone of digital forensics.

Juola (2021) emphasises that as AI impersonation becomes more sophisticated, the forensic linguist's role shifts from simple detection to *style-crawling*. This involves comparing the suspected AI-hybrid text against a known corpus of the individual's previous human-only writings. If the specific collocational signatures (words that an individual uniquely pairs) remain consistent, the probability of human authorship remains high despite AI intervention. This evidence is crucial in 2026 for verifying whistleblowers' authenticity or protecting intellectual property in an era when style theft via AI is increasingly common.

Conclusion: Embracing Human Imperfection

As we continue to utilise AI to enhance our communication, the field of forensic linguistics reminds us that our flaws are what make us identifiable. From a pedagogical perspective, particularly for those working with multilingual learners, a student's unique L1 interference is not just an obstacle to be clarified by AI; it is evidence of their emerging identity. In the forensic battle between the ghost and the machine, it is our subconscious irregularities that ultimately prove we were there.

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