

Artificial Intelligence in Swiss Criminal Law

Efficiency Potential and Rule-of-Law Constraints

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ABSTRACT

This paper examines whether and to what extent artificial intelligence can improve efficiency in Swiss criminal justice without undermining core rule-of-law guarantees. It distinguishes investigative, sanctioning and judicial functions and analyses explainability, bias, automation bias, individual culpability, fair-trial guarantees and responsibility. The paper argues for a hybrid model in which AI remains a decision-support tool while legally accountable human decision-makers retain ultimate responsibility.

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1 Introduction

Artificial intelligence (AI) is increasingly used in governmental decision-making, particularly in areas involving large volumes of data and complex predictive tasks. Criminal law, traditionally characterised by individual attribution of guilt, judicial independence, and strict rule-of-law guarantees, is likewise affected by this development. In several jurisdictions, AI systems are already employed to support police investigations, risk assessments, or the prioritisation of criminal proceedings.

In assessing the efficiency potential of AI in criminal justice, it is essential to distinguish between the functions of different state actors, as the use of AI by investigative authorities primarily serves rapid and effective fact-finding, while its use by adjudicating authorities is subject to stricter legal standards. In the investigative phase, efficiency gains may therefore constitute a legitimate objective, provided they remain subject to rule-of-law constraints and effective oversight.

A particular feature of Swiss criminal procedure lies in the fact that sanctioning decisions are not exclusively reserved for courts. In summary penalty proceedings (Strafbefehl), the public prosecutor may itself determine guilt and impose a sentence, thereby exercising a function that

is materially adjudicative in nature. In such cases, irrespective of the formal status of the authority involved, the same rule-of-law requirements apply as in judicial proceedings, rendering considerations of efficiency significantly less weighty.

This must be distinguished from minor offences dealt with under the administrative fine procedure, which is based on a standardised catalogue of fines. In these cases, an individualised procedure is deliberately not provided for. The use of automated or AI-assisted systems is therefore less problematic, provided that the possibility of lodging an objection — and thus transferring the case to ordinary criminal proceedings — remains guaranteed.

By contrast, the activity of the courts is directed towards the individual determination of culpability and sentencing. In this context, speed does not carry the same importance as rule-of-law guarantees.

This paper addresses these issues through a doctrinal legal analysis. It examines whether, and to what extent, the use of AI in Swiss criminal law may generate legally permissible procedural efficiency without undermining fundamental principles of criminal law or constitutional and human-rights guarantees.^{7 6 3}

2 Facts and Technology: AI in the Criminal-Law Context

The use of artificial intelligence in criminal justice encompasses a range of technical applications with different legal implications. In Switzerland, AI does not autonomously make criminal-law decisions but may support human decision-making and thereby influence investigative or prioritisation choices.^{7 6}

2.1 Technical Forms of AI Systems Relevant to Criminal Law

AI systems relevant to criminal justice include analytical and predictive systems, classification tools, search systems and prioritisation mechanisms. Machine-learning systems derive patterns or decision functions from data rather than solely from explicitly coded rules; they do not necessarily continue adapting after deployment.

A central concern is limited explainability. Where the basis of an algorithmic output cannot be reconstructed sufficiently by human decision-makers, duties to give reasons and the right to be heard may be affected.^{7 8}

2.2 Use by Investigative Authorities in Switzerland

Within criminal prosecution, AI may support investigative work, for example by analysing large data sets or image and video material. In the investigative phase, such systems are primarily preparatory, but they may nevertheless create de facto pre-determinations by influencing the subsequent course of an investigation.⁶

2.3 Use by Courts and Sanctioning Authorities

The use of AI by courts in Switzerland remains comparatively limited. Autonomous decision-making by AI with regard to guilt or sentencing is neither envisaged nor compatible with the legal structure of individual criminal responsibility. Algorithmic systems may, however, support administrative processes, legal research or the structuring of extensive case files.

In other legal systems, risk-assessment tools have been used to support decisions on detention, probation or sentencing. These examples illustrate the legal tensions that arise when algorithmic predictions move close to adjudicative decision-making.

From a legal perspective, such use is particularly sensitive because it can directly affect fundamental rights, judicial independence and the principle of culpability.^{6 11}

2.4 Technical Risks and Structural Limitations

AI systems used in criminal-justice contexts may reproduce biases in data, create discriminatory effects and limit the traceability of decisions. In addition, automation bias may lead human decision-makers to accord disproportionate weight to automated recommendations.

These characteristics are central to the legal assessment of AI systems because they affect whether meaningful review, contestation and human responsibility remain possible.^{8 9 10}

3 Legal Analysis: Challenges Posed by AI in Criminal Law

3.1 Fundamental Principles of Swiss Criminal Law

Swiss criminal law is founded on individual culpability (Schuldprinzip). Article 47 of the Swiss Criminal Code requires an individualised determination of sentence, taking into account the offender's personal circumstances and the circumstances of the offence.

AI systems, by contrast, often operate through statistical correlations and probabilities. They can identify patterns or assign risk scores, but they cannot themselves assess moral blameworthiness or bear legal responsibility. This creates a structural tension when statistical inference approaches the adjudication of individual guilt.²

3.2 Fair-Trial Guarantees and Transparency

Core rule-of-law guarantees arise from Article 29 of the Swiss Federal Constitution and Article 6 of the European Convention on Human Rights, including fair procedure, the right to be heard and effective access to legal remedies.

Where a criminally relevant decision is materially influenced by an opaque algorithmic process, the affected person may struggle to understand or contest the underlying reasoning. Explainability and documentation therefore become procedural, not merely technical, concerns.^{1 4 8}

3.3 Equality Before the Law and Discrimination

Article 8 of the Swiss Federal Constitution guarantees equality before the law. AI systems may jeopardise this principle where training or operational data reflect existing social inequalities and produce indirect discriminatory effects.

Algorithmic discrimination can be difficult to detect because it may arise through statistically mediated effects rather than explicit distinctions, complicating judicial review and effective legal protection.^{1 9}

3.4 Responsibility and Attribution

A further issue concerns the attribution of responsibility. AI-assisted decision-making distributes technical and organisational contributions across developers, authorities, operators and decision-makers. Public power, however, must remain attributable to identifiable and accountable authorities.

If responsibility for an AI-supported interference with liberty becomes unclear, a core rule-of-law requirement is weakened. Governance must therefore make responsibility visible rather than allowing it to dissolve across the system.^{6 13}

4 Discussion: Efficiency versus the Rule of Law

AI can analyse large volumes of data quickly, support consistency and relieve overburdened processes. These potential benefits are relevant, particularly in investigative and administrative functions.

They must, however, be weighed against rule-of-law risks. Decisions involving serious interferences with fundamental rights — such as detention, determinations of guilt or sentencing — require human judgement, transparency and clear responsibility. In such contexts, AI may

serve at most as a support tool.

A possible way forward lies in a hybrid model: AI can support analysis and preparation, while ultimate responsibility remains with a human decision-maker. Such a model requires clear rules on transparency, documentation, reviewability and human oversight. The EU Artificial Intelligence Act similarly treats a range of law-enforcement and justice uses as high-risk and imposes governance and oversight requirements.^{5 6 10}

5 Conclusion

The use of artificial intelligence in Swiss criminal law offers potential for procedural efficiency while posing significant challenges to principles of criminal law and the rule of law.

A complete delegation of criminal-law decisions to AI is incompatible with individual culpability, fair-trial guarantees and accountable adjudication. AI can therefore only be justified as an auxiliary tool, embedded in clear legal frameworks and subject to effective human oversight.

The central conclusion is therefore not that AI has no place in criminal justice, but that efficiency cannot be purchased at the expense of accountability. Individual rights, transparency, reviewability and responsibility must remain intact when digital systems enter consequential state decision-making.^{1 3 4 5}

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