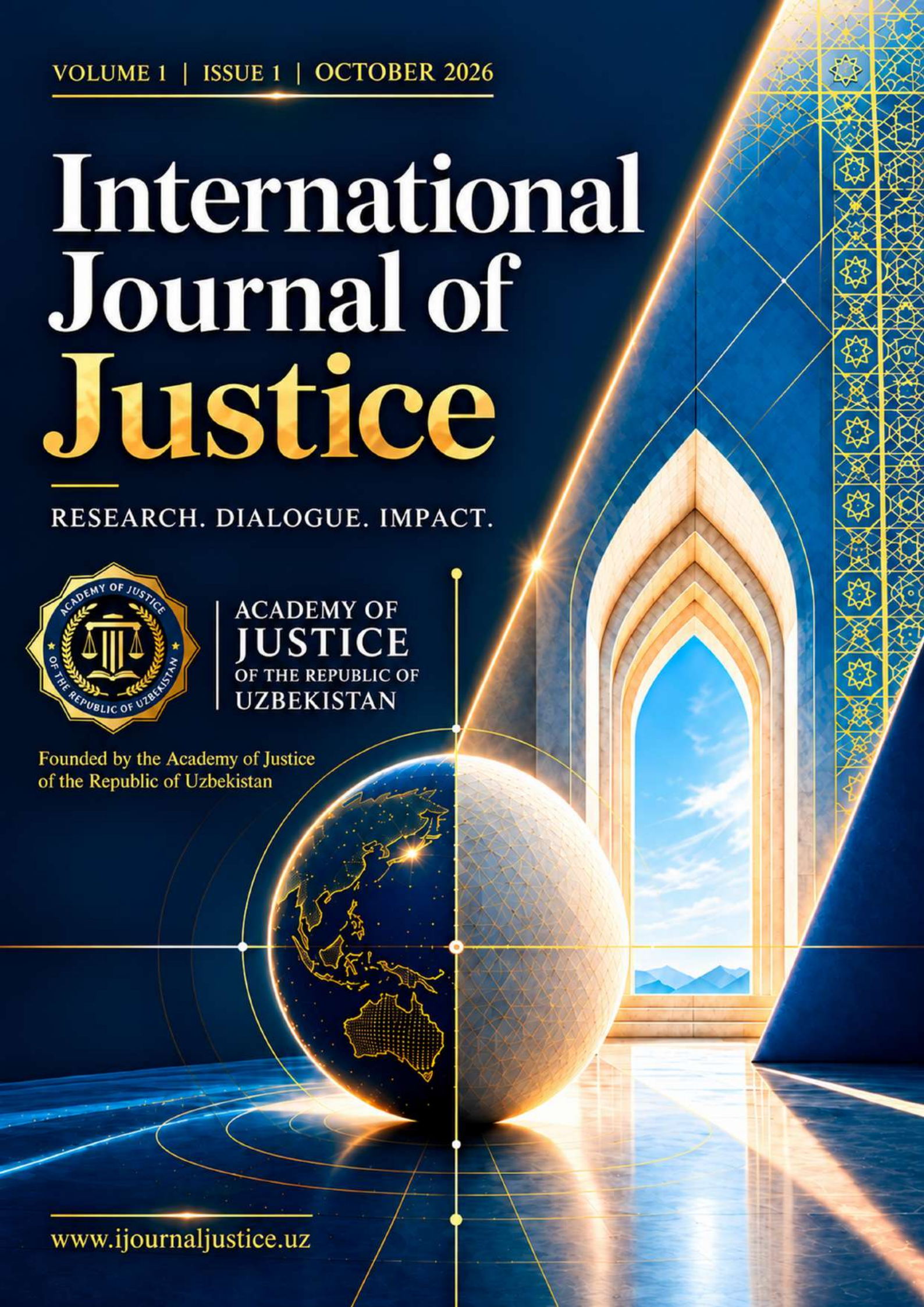
VOLUME 1 | ISSUE 1 | OCTOBER 2026

International Journal of Justice

RESEARCH. DIALOGUE. IMPACT.

ACADEMY OF JUSTICE OF THE REPUBLIC OF UZBEKISTAN

Founded by the Academy of Justice of the Republic of Uzbekistan



www.ijournaljustice.uz

EDITORIAL BOARD

International Journal of Justice



EDITOR-IN-CHIEF

Sherzod Yoqubjonovich Abduqodirov

Rector of the Academy of Justice of the Republic of Uzbekistan

Doctor of Sciences in Law (DSc), Associate Professor



DEPUTY EDITOR-IN-CHIEF

Nodirbek Saparbaevich Salaev

Vice-Rector of the Academy of Justice of the Republic of Uzbekistan

Doctor of Sciences in Law (DSc), Professor

MEMBERS OF THE EDITORIAL BOARD



Anselmo Reyes

Doctor of Philosophy (PhD) in Law, Professor

Judge of the Singapore International Commercial Court



Dilshod Urinbaevich Aripov

Doctor of Sciences in Law (DSc), Professor

Vice-Rector of the Academy of Justice of the Republic of Uzbekistan



Akrom Ikromovich Toshpulatov

Doctor of Sciences in Law (DSc), Professor

Director of the Parliamentary Research Institute under the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan



Shakhriyor Bakhtiyorovich Bakaev

Doctor of Philosophy (PhD) in Law

Responsible Official of the Administration of the President of the Republic of Uzbekistan



Borzu Sabahi

Doctor of Sciences in Law (DSc), Professor

International Arbitrator



Dilshod Shavkatovich Israilov

Doctor of Philosophy (PhD), Associate Professor

Head Specialist of the Department for Coordination of Research Activities of the Academy of Justice of the Republic of Uzbekistan



Yesemurat Sultamuratovich Kanyazov

Candidate of Legal Sciences in Law (PhD)

Director of the Institute for Retraining and Advanced Training of Legal Personnel under the Ministry of Justice of the Republic of Uzbekistan



Yevgeniy Vyacheslavovich Kolenko

Doctor of Philosophy (PhD), Professor

First Deputy Head of the Law Enforcement Academy of the Republic of Uzbekistan



Krisztina Karsai
Doctor of Sciences in Law (DSc), Professor
Head of the Institute of Criminal Law and Criminal Sciences at the University of Szeged



Lorenzo Mateo Bujosa Vadell
Doctor of Philosophy (PhD) in Law, Professor
Professor at the University of Salamanca



Maged Mamdouh Kamel Shebaita
Doctor of Philosophy (PhD), Professor
International Arbitrator, Doctoral Candidate at the University of London



Ivan Georgievich Nikonov
Doctor of Philosophy (PhD) in Law
Responsible Official of the Administration of the President of the Republic of Uzbekistan



Malikakhon Pirnazarovna Kalandarova
Doctor of Philosophy (PhD), Associate Professor
Deputy Chairperson of the Supreme Court of the Republic of Uzbekistan



Islambek Rustambekovich Rustambekov
Doctor of Sciences in Law (DSc), Professor
Vice-Rector of Tashkent State University of Law



Sakari Kristian Melander
Doctor of Sciences in Law (DSc), Professor
Professor at the University of Helsinki



Khurshid Primkulovich Sadikov
Judge of the Supreme Judicial Council of the Republic of Uzbekistan



Sławomir Marek Redo
Doctor of Sciences in Law (DSc), Professor
Chairperson of the Expert Council for the Development of Scientific Research at the Faculty of Law and Administration



Vigita Vėbraitė
Doctor of Philosophy (PhD) in Law, Professor
Professor at Vilnius University



MANAGING EDITOR
Azamjon Rasuljon ugli Kambaraliev
Head Specialist at the Academy of Justice of the Republic of Uzbekistan

CONTENTS

IMPROVING THE INSTITUTION OF APPEALS: TIME LIMITS, RESPONSE QUALITY, MONITORING **10**
Achilova Liliya Ilkhomovna; Rozmetova Asal Anvarzoda

LEGAL ASPECTS OF INVESTIGATIVE JOURNALISM **18**
Jahonov Shohruh Shuhrat ugli

LEGAL BASIS OF CIVIL SOCIETY INSTITUTIONS IN THE LEGISLATION OF THE REPUBLIC OF UZBEKISTAN **25**
Sharipov Asrorjon Safar ugli

DIGITAL TRANSFORMATION OF INTERNATIONAL COMMERCIAL ARBITRATION IN UZBEKISTAN: LEGAL AND INSTITUTIONAL PROSPECTS **30**
Otakhonov Foziljon Khaydarovich

THE LEGAL NATURE OF SUBSIDIARY LIABILITY IN INSOLVENCY PROCEEDINGS INVOLVING AGRICULTURAL BUSINESS ENTITIES **39**
Rakhmatjon Tojinorovich Berdiyarov

CIVIL LAW ASPECTS OF GOODS DELIVERY BY SELF-EMPLOYED COURIERS **49**
Ruzinazarov Shukhrat Nuralievich

NATIONAL AND INTERNATIONAL EXPERIENCE IN LEGAL PROTECTION OF A COMPANY NAME: IMPROVING THE LEGISLATION OF UZBEKISTAN **63**
Allayarova Maftuna Almardanovna

ORGANIZATIONAL AND LEGAL MECHANISMS FOR COMPENSATION OF CONSTRUCTION CONTRACT DAMAGES **69**
Donayev Abduqodir Haydarovich

JURISDICTION AND VENUE OF CIVIL CASES ARISING FROM INHERITANCE RELATIONS: A NATIONAL AND FOREIGN ANALYSIS **76**
Soliyeva Kamola Rustamjon-qizi

ISSUES OF USING COURT NOTICES IN ENSURING THE OPENNESS OF CIVIL PROCEEDINGS IN COURTS **84**
Sabirov Erkinjon Kuchkarbaevich

DIGITAL EVIDENCE IN SUPPLY-CONTRACT DISPUTES BEFORE ECONOMIC COURTS: AUTHENTICATION, INTEGRITY AND EVIDENTIARY RISK IN UZBEKISTAN **91**
Mahmudova Saida Rayimjonovna

CONTENTS

FROM HUMAN CAPITAL TO INSTITUTIONAL TRANSFORMATION: A NEW STAGE IN THE STRATEGIC DEVELOPMENT OF THE JUDICIAL PERSONNEL TRAINING SYSTEM 104
Aripov Dilshod Urinbaevich

THE ROLE OF INTERNATIONAL STANDARDS IN GOVERNING ARTIFICIAL INTELLIGENCE IN JUDICIAL SYSTEMS: A COMPARATIVE AND CRITICAL ANALYSIS 109
Sadikov Khurshid Primkulovich

INDEPENDENCE — A SOLID FOUNDATION OF JUSTICE AND HUMAN DIGNITY (35 years of the evolution of the judicial and legal system of the Republic of Uzbekistan) 117
Israilov Dilshod Shavkatovich

INSTITUTIONAL MODELS OF JUDICIAL QUALIFICATION BOARDS: INTERNATIONAL STANDARDS AND FOREIGN EXPERIENCE 128
Jamolov Azizjon Nodir ugli

THE DEATH OF FREE WILL. WHO BEARS CULPABILITY WHEN ARTIFICIAL INTELLIGENCE INDUCES A PERSON TO COMMIT A CRIME? 140
Salaev Nodirbek Saparbaevich

ON EUROPEAN CRIMINAL-LAW INTEGRATION – FROM MUTUAL RECOGNITION TO LIMITED SUPRANATIONAL CRIMINAL POWER 148
Krisztina Karsai

CRIMINAL LIABILITY OF OFFICIALS OF NON-GOVERNMENTAL COMMERCIAL ORGANIZATIONS: PROBLEMS OF THEORY AND PRACTICE 158
Akramova Muazzam Turdikul qizi

DISTINGUISHING OFFENCES AGAINST SEXUAL FREEDOM FROM RELATED OFFENCES IN UZBEKISTAN 162
Achilov Izzat Tulkinovich

CRIMINAL-LAW MEASURES AGAINST THE LEGALIZATION OF PROCEEDS OBTAINED THROUGH MISAPPROPRIATION OR EMBEZZLEMENT: QUALIFICATION, EVIDENCE AND ASSET RECOVERY 170
Sadullaev Bokhodir Oybekovich

CONCEPT OF HELPLESSNESS AND ITS SIGNIFICANCE IN THE QUALIFICATION OF CRIMES 178
Khalilova Zarnigor Zafar qizi

LEGAL SIGNIFICANCE OF THE INSTITUTION OF CRIMINAL RECORDS IN PROTECTING HUMAN RIGHTS 182
Yoqubjonov Omonjon Burkhonjon ugli

CONTENTS

THE APPLICATION OF CRIMES WITH BLANKET NORMS: CURRENT STATUS AND ISSUES 189
Pulatov Bekzod Adilbaevich

THE FORMATION AND DEVELOPMENT OF THE INSTITUTION OF CRIMINAL LIABILITY IN THE FIELD OF PUBLIC PROCUREMENT: A HISTORICAL-LEGAL ANALYSIS 202
Shukurova Shahnoza Mukumjonovna

ATTORNEY'S PARTICIPATION IN THE PRE-TRIAL STAGE OF CRIMINAL PROCEEDINGS: LEGAL AND PRACTICAL ASPECTS 214
Medetbaeva Aksungul Sharapatdin kizi

INTERNATIONAL COOPERATION IN OBTAINING ELECTRONIC EVIDENCE: THE EUROPEAN PRODUCTION AND PRESERVATION ORDERS 221
Bujosa Vadell, Lorenzo Mateo

COOPERATION BETWEEN THE SUBJECTS OF INVESTIGATION IN CROSS-BORDER INTERNET FRAUD CASES 230
Khabibiddinov Nodirjon Musinjon ugli

PROBLEMS OF PROCEDURAL REALITY IN CRIMINAL PROCEEDINGS 238
Aykhan Khankishi Rustamzade, Matanat Pasha Asgarova

DETENTION OF FOREIGN NATIONAL PRISONERS IN PENITENTIARY INSTITUTIONS: A COMPARATIVE ANALYSIS OF INTERNATIONAL PRACTICES AND NATIONAL LEGISLATION 246
Rikhsimov Komron Abrorovich

CRIMINALISTIC FOUNDATIONS FOR INTEGRATING GAIT IDENTIFICATION WITH FORENSIC PORTRAIT EXAMINATION 249
Nizomova Shahrigul Karimboy qizi

INTERNATIONAL LAW CRISIS: UN PEACE OPERATIONS AND INSTITUTIONAL REFORM 258
Kudaybergenov Bakhtiyar Abdumajit-ugli

ARTIFICIAL INTELLIGENCE AND CHILDREN'S RIGHTS: PROTECTION OPPORTUNITIES AND EMERGING LEGAL RISKS 267
Ergashev Gayrat Shavkatovich

ACTIVITIES OF INTERNATIONAL NON-GOVERNMENTAL ORGANIZATIONS IN THE FIELD OF HUMAN RIGHTS 276
Nosirova Marjona Negmat kizi

Academy of Justice of the Republic of Uzbekistan
International Journal of Justice

CRIMINALISTIC FOUNDATIONS FOR INTEGRATING GAIT IDENTIFICATION WITH FORENSIC PORTRAIT EXAMINATION

Nizomova Shahrigul Karimboy qizi
PhD student at Tashkent State University of Law
E-mail: shahrigulnizomova12@gmail.com
ORCID ID: 0009-0006-7661-9178



Abstract. *The article appraises the capabilities of gait identification technologies for establishing identity from video surveillance imagery and elaborates the criminalistic and procedural foundations for integrating them with forensic portrait examination. The topicality of the study is dictated by the widespread resort of offenders to techniques of concealing and altering their appearance and by the steady expansion of video surveillance infrastructure in the republic. The research rests upon the comparative-legal, systemic-structural, formal-legal and statistical methods, and draws upon peer-reviewed studies indexed in Web of Science and Scopus, benchmark results obtained under a unified protocol, the guidance of international expert organisations and the criminal-procedure legislation of Uzbekistan. It is established that gait yields its greatest effect not as an autonomous means of identification, but as a modality complementing portrait examination where appearance has been concealed or altered, the strengths and weaknesses of the two modalities being mutually compensatory. A seven-stage methodological model, a procedural order for obtaining samples for comparative examination and minimum requirements for video material are proposed for application in national conditions.*

Keywords**:** *gait identification, forensic portrait examination, habitoscopy, complex forensic examination, video surveillance, alteration of external appearance, forensic gait analysis, likelihood ratio.*

Introduction

Imagery obtained from video surveillance systems has become one of the principal instruments of investigative practice worldwide. Video recordings, once peripheral to a discipline concerned chiefly with static objects, are now among the objects most frequently retrieved during the inspection of the scene of an incident. Meanwhile, the deliberate resort by offenders to methods of concealing their appearance has grown into a systemic problem: masks, headgear, hoods and spectacles — and, in certain instances, cosmetic surgery — have drastically curtailed the scope for facial identification. Where the subject is recorded tens of metres from the camera, the facial region may be rendered by no more than a few dozen pixels and thereby become unfit for comparative examination.

It is precisely in such circumstances that gait — the aggregate of habitual, automated movements performed by a person while walking — becomes a significant source of identification-relevant information. It is captured at a distance, in low-quality imagery, contactlessly and without the subject's consent; it cannot be covered by a mask, and it withstands the conventional techniques of altering appearance. Gait identification begins at the very point at which facial identification ceases to be feasible.

Research on the subject has developed along three lines. The first is bound up with habitoscopy, within which the elements of external appearance are divided into principal (complex, anatomical and functional) and auxiliary groups; this classification, formalised by V.A. Snetkov, remains the prevailing theoretical framework in contemporary

textbooks [1, pp. 42–45]. The second consists in a critical appraisal of the scientific foundations of forensic gait analysis: N.M. van Mastrigt and co-authors, having substantiated the requirement that an identification feature be measurable, stable and discriminating, showed that gait occupies a problematic position by reference to those criteria [2], and the Royal Society primer likewise records that gait evidence presently holds the status of a class characteristic [3, p. 15]. The third is automated recognition, which, as I. Macoveciuc and co-authors emphasise, has appreciably outstripped traditional gait analysis in data volume and statistical evaluation [4]; the systematic review by Y. Liu and co-authors shows that gait analysis yields its greatest effect in conjunction with other identification methods [5].

Notwithstanding the foregoing, the research to date has not elaborated a procedural form for uniting the two modalities within a single examination, while at the national level the status of gait identification remains undetermined and no methodology has been approved. The topicality of the problem for Uzbekistan is compounded by the expansion of the "Safe City" hardware-and-software complex: pursuant to Resolution of the President of the Republic of Uzbekistan No. PD-1 of 3 January 2025 "On measures to further enhance the effectiveness of the system for creating a safe environment in the mahallas of the republic and for the early prevention of offences in 2025", mahallas assigned to the "red" category are being covered by cameras under a unified technological approach, so that a vast corpus of video material is accumulating at the disposal of the investigative authorities.

The aim of the study is to appraise the present capabilities of gait identification technologies on empirical data, to elaborate the criminalistic and procedural foundations for their integration with forensic portrait examination, and to propose a model of complex identification applicable in national conditions.

Materials and methods

The methodological basis of the study is the dialectical method of cognition. Recourse was had to the comparative-legal method (juxtaposing foreign practice and standardisation instruments with national legislation), the systemic-structural method (constructing the model of complex examination), the formal-legal method (interpreting normative instruments) and the statistical method.

The empirical basis comprises peer-reviewed publications on forensic gait analysis and automated recognition indexed in Web of Science and Scopus; the results of comparative testing under the unified OpenGait protocol on the GREW and Gait3D benchmark datasets; the methodological instruments of international expert organisations — the FISWG guidelines, the ENFSI guideline for evaluative reporting and the Royal Society primer; the NIST reports on recognition accuracy where masks are worn; standard ISO/IEC 30137-1:2024; and the criminal-procedure legislation of Uzbekistan.

Results

In habitoscopy, gait belongs to the system of functional characteristics. Its criminalistic significance rests upon three properties: it is a stable motor stereotype formed in the course of ontogeny; it is directly conditioned by the person's anatomical structure, the state of the musculoskeletal apparatus and occupational skills; and it may be recorded at a distance, without the participation of the object of observation. Traditional doctrine accorded identification significance to functional

characteristics at the level of an "individual characteristic"; absent empirical data as to their frequency within the population, the conclusion rested upon the expert's personal experience.

Contemporary empirical data refine this picture. The evidence as to inter-individual discriminability is comparatively robust: statistically significant differences have been confirmed in joint angles, in plantar pressure distribution and in spatiotemporal parameters. Intra-individual stability is a more complex matter. In a joint study by Saarland University and the forensic science institute of the Federal Criminal Police Office of Germany (BKA), the variability induced by experimental conditions — differing footwear, muscular fatigue and a restricted field of vision — exceeded inter-individual variability [6]. Where the questioned and the reference recordings have been obtained under dissimilar conditions, the differences detected may be attributable to those conditions rather than to the distinctness of the persons; hence the principle of "comparing like with like" is mandatory.

All the factors enumerated are in principle controllable; they do not negate the identification potential of gait but define the requirements to be imposed upon the conditions of comparison. In our view, owing to the paucity of population reference data, gait features retain for the time being the status of class characteristics [3, p. 15]. A change in that status is a question of data rather than of methodology.

The advent of deep learning supplied the impetus for a fundamental transformation of the field [7]. The methodological turning point was the open OpenGait platform: ablation experiments were re-run, a number of conclusions drawn from laboratory data were shown not to transfer to real-world conditions, and a common basis of comparison was established [8]. The most objective means of appraising the state of the technology is, in our view, to trace the dynamics of the results obtained under that unified protocol.

Table 1

Dynamics of recognition accuracy in unconstrained environments (%)

Model	Year	GREW	Gait3D
GaitSet [9]	2019	46.3	36.7
GaitPart	2020	44.0	28.2
GaitGL	2021	50.8	29.7
GaitBase [8]	2023	60.1	64.6
DeepGaitV2 [8]	2023	77.4–79.4	74.4
SwinGait [8]	2023	79.3	75.0
SkeletonGait++ [10]	2024	85.8	77.6

Source: compiled by the author on the basis of the data reported in [8].

All the values in the table result from retrospective re-evaluation: GREW was created in 2021 [11] and Gait3D in 2022 [12], so that the authors of the earlier models did not report these indicators at the material time. The growth is not uniform, and it is precisely that non-uniformity which is the most informative. GaitPart and GaitGL, developed in 2019–2021, performed less well on Gait3D than GaitSet, having been optimised for laboratory datasets and not adapted to the noise of genuine surveillance footage or to incomplete silhouettes.

The qualitative leap commenced in 2023 and was secured by three factors. First, in architectures founded upon residual learning, the positive correlation between model depth and accuracy was confirmed precisely on data from unconstrained environments [8]. Secondly, the fusion of modalities — jointly processing silhouette and skeleton representations — attained a new state of the art among multimodal methods [10], while three-dimensional point clouds rendered recognition feasible under night-time and occlusion conditions and were further developed in 2025 [13]. Thirdly, large pre-trained vision models were put into practice [14].

The significance of this trajectory for the expert is twofold. Automated systems are now mature enough to filter extensive video arrays and narrow the pool of candidates; yet these indicators, obtained on closed sets under a defined protocol, do not transfer to the reliability of an expert's opinion.

Portrait examination remains the principal method of identifying a person by the features of external appearance, its methodological foundations being systematised in international guidance on facial comparison [15, p. 5]. Its scope is, however, strictly delimited by the presence of the facial region within the image and the sufficiency of its quality. That limit may be exceeded in three situations: deliberate concealment of the face; purposive alteration of appearance; and the technical constraint arising from distance. Large-scale testing records that the error rates of recognition algorithms rise appreciably where a mask is worn [16].

What is material is that in all three situations the recording preserves information as to the person's gait. A mask covers the face but conceals neither stride length, nor trunk inclination, nor the amplitude of arm swing; cosmetic surgery alters anatomical features but leaves the motor stereotype unchanged; distance destroys facial detail but preserves the contour of the body and its movement dynamics. The asymmetry is corroborated experimentally: in a system integrating face, body morphology and gait, the highest performance was attained through the fusion of modalities, and where the facial region was occluded or degraded the system was sustained by gait and body morphology [17].

Table 2

Comparative capabilities of identification modalities

Criterion	Face	Body morphology	Gait	Complex approach
Long distance	low	Moderate	high	high
Low-quality imagery	low	Moderate	high	high
Mask, headgear	very low	High	high	high

Criterion	Face	Body morphology	Gait	Complex approach
Change of clothing	high	Low	moderate	high
Cosmetic surgery	low	High	high	high
Methodological maturity	high	Low	moderate	moderate
Probative value	high	Low	moderate	high

Source: developed by the author.

As the table demonstrates, facial identification is resilient to a change of clothing yet vulnerable to a mask, whereas gait exhibits the converse pattern; the strengths and weaknesses of the modalities are mutually compensatory, and this complementarity constitutes the scientific foundation of the complex approach. Habitoscopy has always regarded appearance as an integral system, yet because photography failed to record functional characteristics, examination remained historically confined to anatomical features.

Taking into account international experience and the requirements of national legislation, we propose the following seven-stage model of forensic examination.

Stage one — assessment of the suitability of the object: the technical parameters of the video material are verified, the number of complete gait cycles is established, the suitability of the facial region for portrait examination is assessed, and the composition of the complex examination is determined.

Stage two — independent analysis of the questioned object: without access to the reference material or to the circumstances of the case, the expert records, in accordance with a standardised checklist, only the features present in the recording of the incident.

Stage three — obtaining samples for comparative examination. Stage four — analysis of the reference object by the same checklist.

Stage five — comparative examination: each difference is assessed for whether it may be explained by a change in conditions, and the correlation between features is taken into account.

Stage six — synthesis of the results and formulation of the conclusion. Stage seven — independent "blind" verification by a second expert.

Automated recognition systems are deployed before the examination, within the framework of operational-search activity, in order to filter video arrays, and they occupy a discrete place within the model. The output of an algorithm cannot serve as the foundation of an expert's opinion, and the examination must be conducted independently of the indicators it produces.

Table 3

Minimum requirements for video material for the purposes of gait analysis

Parameter	Recommended value	Rationale
Frame rate	25 fps and above	Differentiation of cycle phases
Height of the subject in frame	not less than 120 pixels	Localisation of joint points

Parameter	Recommended value	Rationale
Complete gait cycles	not fewer than three	Mean value and dispersion
Camera viewing angle	close to the sagittal plane	Reduction of angular error
Camera mounting height	1.8–3.0 m	Reduction of perspective distortion
Compression level	no visible artefacts	Accurate contour segmentation
Continuity of the recording	no dropped frames	Computation of temporal parameters

Source: developed by the author.

These values are not definitive: they follow the general approaches of the international standard on biometric modalities in video surveillance systems [18] and require refinement through validation studies in national conditions.

Discussion

The findings give rise to a number of debatable questions, some methodological and others procedural. First, the distinction between forensic gait analysis and automated recognition must be clarified, since the two are frequently treated as synonyms. Forensic gait analysis is a process of observation, analysis, comparison and evaluation performed by an expert, the outcome of which is an interpretation of evidence; automated recognition yields match scores or a ranking of candidates. The former is an expert examination, the latter an instrument of operational-search activity — a delineation whose necessity is confirmed, inter alia, by the vulnerability of deep neural networks to adversarial attacks.

The second problem concerns the form of the expert's opinion. Contemporary methodology tends to move from the categorical to the probabilistic form, the principal instrument in evaluative reporting being the ENFSI guideline [19, p. 17]. The likelihood ratio model requires components of similarity and typicality; in the field of gait it is precisely population reference data that are wanting. One of the first practical models directed at that lacuna converted gait features into dichotomous variables and applied principal component analysis [20]; it established a high mutual correlation between gait features and demonstrated that correlated features cannot be treated as contributing independently to the weight of the evidence — a proposition applying equally to cross-modality fusion.

The limits of the expert's remit call for separate comment. The likelihood ratio expresses the ratio of the probabilities of the findings under two competing propositions; it does not indicate how probable a proposition itself is, and interchanging the two gives rise to the logical error known as the transposed conditional. The expert does not pronounce upon the sufficiency of the evidence — that falls within the power to evaluate evidence conferred by Article 95 of the Criminal Procedure Code .

The legislation of the Republic of Uzbekistan permits implementation of the approach described. A video recording may be admitted to the case file as one of the types of evidence provided for in Article 81 of the Criminal Procedure Code; an examination may be appointed by a decision or a ruling under

Article 180; the requirements applicable to the opinion of a commission of experts are laid down in Article 184. Joint examination by experts of differing specialisations is regulated by paragraph 29 of the model Regulation approved by Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 73 of 21 February 2023, under which each expert signs only that part of the opinion falling within his or her own competence. That rule reinforces an essential feature of the proposed model: the portrait and gait findings are to be substantiated separately and synthesised only thereafter, their weight being differentiated — a conclusion drawn from gait possesses corroborative significance and cannot displace the result of the portrait examination.

The weakest point of the model is the obtaining of samples for comparative examination, governed by Chapter 23 of the Criminal Procedure Code, the limits of compulsion being indicated in Article 181. A gait sample is an active sample: unlike a fingerprint or a blood sample, it can be obtained only if the person moves independently. Two consequences follow. The first is legal: compulsion applicable to a passive sample does not automatically extend to an active one, which raises a question bound up with Article 181 and with the principle of respect for the honour and dignity of the person enshrined in Article 17 of the Code. The second is methodological: the person furnishing the sample may deliberately distort his or her gait. Recourse to pre-existing recordings as reference samples is therefore preferable, subject to the Law "On Personal Data".

Technological development is running ahead of legal regulation. The technical requirements for video surveillance systems in large markets, laid down by Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 791 of 27 November 2024, were formulated by reference to facial identification; the parameters indispensable for gait analysis — frame rate, capture of a complete gait cycle and camera mounting height — are not established at the normative level at all.

Conclusion

Gait identification technologies have undergone a qualitative leap, uneven in character, the greater part of which falls within the period after 2023. The greatest criminalistic value of gait manifests itself not as an autonomous means of identification but as a modality complementing portrait examination. Habitoscopy has always regarded anatomical and functional features as an integral system, and the proliferation of the video recording as an object of examination makes it possible to overcome the historical disjunction between theory and practice. National legislation already affords a ready procedural form through the institution of complex examination; what is wanting is a methodology, a reference database, requirements for video material and a corresponding expert specialisation. We accordingly propose the following:

first, to include the field of "Identification of persons from video recordings" in the national list of types of forensic examination and expert specialisations;

secondly, to elaborate a methodology of complex examination uniting video-technical and biomechanical research on the basis of the proposed seven-stage model;

thirdly, to compile a reference database reflecting the frequency of occurrence of gait features among the population of Uzbekistan;

fourthly, to incorporate into the normative instruments establishing technical

requirements for video surveillance equipment those parameters which follow from the task of gait analysis;

fifthly, to introduce into Chapter 23 of the Criminal Procedure Code a provision governing the procedure for obtaining active samples;

sixthly, to determine the procedure for the use of automated recognition modules in operational-search activity, the procedural status of the algorithm's output being clearly fixed;

seventhly, to provide clarification at the level of the Plenum of the Supreme Court on the evaluation of expert opinions concerning the identification of persons from video recordings.

These measures will serve to realise the criminalistic potential of video surveillance systems, to enhance the detection of crimes committed by persons who have concealed their appearance, and to secure the scientific soundness of expert opinions.

References

1. Zinin A.M., Podvolotskiy I.N. Gabitoskopiya i portretnaya ekspertiza [Habitoscopy and portrait examination]: uchebnik / pod red. E.R. Rossinskoy. Moscow, Norma, INFRA-M, 2025, 288 p.

2. Van Mastrigt N.M., Celie K., Mieremet A.L., Ruifrok A.C.C., Geradts Z. Critical review of the use and scientific basis of forensic gait analysis. Forensic Sciences Research, 2018, vol. 3, no. 3, pp. 183-193. doi: 10.1080/20961790.2018.1503579.

3. Forensic Gait Analysis: A Primer for Courts. Black S., Wall M. (eds.), Abboud R., Baker R., Stebbins J. London, The Royal Society and the Royal Society of Edinburgh, 2017, 33 p.

4. Macoveciuc I., Rando C.J., Borrion H. Forensic gait analysis and recognition: standards of evidence admissibility. Journal of Forensic Sciences, 2019, vol. 64, no. 5, doi: 10.1111/1556-4029.14036.

5. Liu Y., Shan Y., Tang Y., Li S., Li H., Luo Y., Li Z. Research status and future directions of forensic gait analysis and identification: from experience-based practice to an empirically grounded scientific paradigm. Information, 2026, vol. 17, no. 7, art. 657. doi: 10.3390/info17070657.

6. Ludwig O., Dillinger S., Marschall F. Intra-individual gait pattern variability in specific situations: implications for forensic gait analysis. Forensic Science International, 2016, vol. 264, pp. 15-23. doi: 10.1016/j.forsciint.2016.02.043.

7. Sepas-Moghaddam A., Etemad A. Deep gait recognition: a survey. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2023, vol. 45, no. 1, pp. 264-284. doi: 10.1109/TPAMI.2022.3151865.

8. Fan C., Hou S., Liang J., Shen C., Ma J., Jin D., Huang Y., Yu S. OpenGait: a comprehensive benchmark study for gait recognition toward better practicality. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2025, vol. 47, no. 10, doi: 10.1109/TPAMI.2025.3576283.

9. Chao H., He Y., Zhang J., Feng J. GaitSet: regarding gait as a set for cross-view gait recognition. Proceedings of the AAAI Conference on Artificial Intelligence, 2019, pp. 8126-8133.

10. Fan C., Ma J., Jin D., Shen C., Yu S. SkeletonGait: gait recognition using skeleton maps. Proceedings of the AAAI Conference on Artificial Intelligence, 2024, vol. 38, no. 2, pp. 1662-1669. doi: 10.1609/aaai.v38i2.27933.

11. Zhu Z., Guo X., Yang T., Huang J., Deng J., Huang G., Du D., Lu J., Zhou J. Gait recognition in the wild: a benchmark. Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2021.

12. Zheng J., Liu X., Liu W., He L., Yan C., Mei T. Gait recognition in the wild with dense 3D representations and a benchmark. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.

13. Shen C., Wang R., Duan L., Yu S. LidarGait++: learning local features and size awareness from lidar point clouds for 3D gait recognition. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2025.

14. Ye D., Fan C., Ma J., Liu X., Yu S. BigGait: learning gait representation you want by large vision models. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024, pp. 200-210.

15. Facial Identification Scientific Working Group. Section 6: Guidelines for facial comparison methods, version 1.0 (2012.02.02). FISWG, 2012, 14 p.

16. Ngan M., Grother P., Hanaoka K. Ongoing face recognition vendor test (FRVT). Part 6A: Face recognition accuracy with masks using pre-COVID-19 algorithms. NISTIR 8311. Gaithersburg, National Institute of Standards and Technology, 2020, 58 p. doi: 10.6028/NIST.IR.8311.

17. Liu F., Ashbaugh R., Chimitt N., Hassan N., Hassani A., Jaiswal A., Kim M., Mao Z., Perry C., Ren Z. et al. FarSight: a physics-driven whole-body biometric system at large distance and altitude. Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2024.

18. ISO/IEC 30137-1:2024. Information technology — Use of biometrics in video surveillance systems — Part 1: System design and specification. Geneva, ISO/IEC, 2024.

19. ENFSI guideline for evaluative reporting in forensic science. Wiesbaden, European Network of Forensic Science Institutes, 2015, 20 p.

20. Hui R., Wilson A.L., Aitken C., Birch I., Asgeirsdottir N., Jackson G. Evaluating the probative value of forensic gait analysis evidence using empirical data. arXiv:2605.03193, 2026.

