

ISO/IEC 30107-3:2023-01 (E)

Information technology - Biometric presentation attack detection - Part 3: Testing and reporting

| Contents | | Page |
|--------------------|--|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 2 |
| 3.1 | Attack elements | 2 |
| 3.2 | Metrics | 3 |
| 3.3 | Test roles | 5 |
| 4 | Abbreviated terms | 6 |
| 5 | Conformance | 7 |
| 6 | Presentation attack detection (PAD) overview | 7 |
| 7 | Levels of evaluation of PAD mechanisms | 8 |
| 7.1 | Overview | 8 |
| 7.2 | General principles of evaluation of PAD mechanisms | 9 |
| 7.3 | PAD subsystem evaluation | 9 |
| 7.4 | Data capture subsystem evaluation | 10 |
| 7.5 | Full system evaluation | 10 |
| 8 | Artefact properties | 11 |
| 8.1 | Properties of PAIs in biometric impostor attacks | 11 |
| 8.2 | Properties of PAIs in biometric concealer attacks | 12 |
| 8.3 | Properties of synthesized biometric samples with abnormal characteristics | 12 |
| 9 | Considerations in non-conformant capture attempts of biometric characteristics | 13 |
| 9.1 | Methods of presentation | 13 |
| 9.2 | Methods of assessment | 13 |
| 10 | Artefact creation and usage in evaluations of PAD mechanisms | 13 |
| 10.1 | General | 13 |
| 10.2 | Artefact creation and preparation | 13 |
| 10.3 | Artefact usage | 14 |
| 10.4 | Iterative testing to identify effective artefacts | 15 |
| 11 | Process-dependent evaluation factors | 15 |
| 11.1 | Overview | 15 |
| 11.2 | Evaluating the enrolment process | 15 |
| 11.3 | Evaluating the verification process | 16 |
| 11.4 | Evaluating the identification process | 16 |
| 11.5 | Evaluating offline PAD mechanisms | 17 |
| 12 | Evaluation using Common Criteria framework | 17 |
| 12.1 | General | 17 |
| 12.2 | Common Criteria and biometrics | 18 |

| | | |
|--|---|----|
| 12.2.1 | Overview | 18 |
| 12.2.2 | General evaluation aspects | 19 |
| 12.2.3 | Error rates in testing | 19 |
| 12.2.4 | PAD evaluation | 19 |
| 12.2.5 | Vulnerability assessment | 20 |
| 13 | Metrics for the evaluation of biometric systems with PAD mechanisms | 21 |
| 13.1 | General | 21 |
| 13.2 | Metrics for PAD subsystem evaluation | 22 |
| 13.2.1 | General | 22 |
| 13.2.2 | Classification metrics | 22 |
| 13.2.3 | Non-response metrics | 25 |
| 13.2.4 | Efficiency metrics | 25 |
| 13.2.5 | Summary | 25 |
| 13.3 | Metrics for data capture subsystem evaluation | 25 |
| 13.3.1 | General | 25 |
| 13.3.2 | Acquisition metrics | 26 |
| 13.3.3 | Non-response metrics | 26 |
| 13.3.4 | Efficiency metrics | 26 |
| 13.3.5 | Summary | 26 |
| 13.4 | Metrics for full system evaluation | 27 |
| 13.4.1 | General | 27 |
| 13.4.2 | Accuracy metrics | 27 |
| 13.4.3 | Efficiency metrics | 27 |
| 13.4.4 | Generalized full-system evaluation performance | 28 |
| 13.4.5 | Summary | 30 |
| Annex A (informative) Classification of attack types | | 32 |
| Annex B (informative) Examples of artefact species used in a PAD subsystem evaluation for fingerprint capture devices | | 36 |
| Annex C (informative) Roles in PAD testing | | 37 |
| Bibliography | | 38 |