ARTIFICIAL INTELLIGENCE AND INTEROPERABILITY FOR SOLVING CHALLENGES OF OSINT AND CROSS-BORDER INVESTIGATIONS

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Challenges
• Multiple-Identity, Fraud, Cross-Border Investigation, OSINT Complexity

Artificial Intelligence, Training Essentials, & Person-Centric OSINT
• AI for Fuzzy Name Matching
• AI for Image Recognition vs Facial Recognition
• European UMF Person-Centric Standard (P-O-L-I-C-E)

Cases, Cross-Border Interoperability, & Automated Search
• 3 Cases: Multiple-Identity, Fraud, Cross-Border Spy
• HORUS System for SSI & Cross-Border Interoperability
• Automated Search Scenario: Identifying Unknown Terrorist

Conclusion & Recommendations
• Compliance, Purchasing & Implementing, Capacity Building, Training
Challenges

Multiple-Identity, Fraud, Cross-Border Investigation, OSINT Complexity

**EU Central Systems:**
Multiple-Identity Detection for new enrollment & ETIAS

**Member State:**
Multiple-Identity Detection for national ETIAS & National DBs

**Persons of Interest:**
Visitor TCNs & few EU Citizens in SIS

**Persons of Interest:**
EU Citizens & Resident TCNs

Clause 22 of Interoperability Regulations 2019/817 & 818: Member State Responsibility

**Officer in EU**

Cross-Border DBs

**Fraud**

**Filan Filany**

**Match**

**Eilan Eilany**

**OSINT Complexity:**
Time-Consuming, and requires officers with high IT skills
<table>
<thead>
<tr>
<th>Name 1</th>
<th>Name2</th>
<th>Same Name</th>
<th>Gender</th>
<th>AI Score</th>
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<td>Yes</td>
<td>Same</td>
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<td>Different</td>
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<td>Different</td>
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<td>72.7%</td>
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<tr>
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<td>Yes</td>
<td>Same</td>
<td>99.0%</td>
</tr>
<tr>
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<td>أميرة</td>
<td>No</td>
<td>Different</td>
<td>80.9%</td>
</tr>
<tr>
<td>Amir</td>
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<td>Different</td>
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<td>عمرو</td>
<td>No</td>
<td>Different</td>
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<td>98.2%</td>
</tr>
</tbody>
</table>

Artificial Intelligence, Training Essentials, & Person-Centric OSINT
AI for Fuzzy Name Matching

Wrong Match

Training Essentials & Best Practice

AI is not an absolute source of truth
AI is not 100% Matured & not Well-Trained
**USE:** AI for Detecting Multiple-Identity & Fraud
**Learn:** AI Mechanisms, Limitations, & Evaluation
## AI for Image Recognition vs Facial Recognition

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Image Recognition</th>
<th>Facial Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanism</td>
<td>Analyze full image</td>
<td>Analyze Faces</td>
</tr>
<tr>
<td>Limitations</td>
<td>Image-Related</td>
<td>Facial-Related</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Image Popularity</td>
<td>Important</td>
<td>Not Important</td>
</tr>
<tr>
<td>Background &amp; Colors</td>
<td>Important</td>
<td>Not Important</td>
</tr>
<tr>
<td>Ethnicity Bias</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Facial OSINT

<table>
<thead>
<tr>
<th>Facial OSINT</th>
<th>American</th>
<th>Chinese</th>
<th>Polish</th>
<th>Eastern Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geographic Area</td>
<td>Americas</td>
<td>China</td>
<td>Europe</td>
<td>Eastern Europe</td>
</tr>
<tr>
<td>Identify Sunglasses</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Identify Children</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ethnicity Bias</td>
<td>White, African, Hispanic</td>
<td>Asian</td>
<td>European</td>
<td>European</td>
</tr>
<tr>
<td>Websites Coverage</td>
<td>Criminal Records</td>
<td>Asia</td>
<td>Wide</td>
<td>No</td>
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<tr>
<td>Social Media</td>
<td>Facebook, Instagram, YouTube</td>
<td>No</td>
<td>No</td>
<td>VK, Tik Tok, Clubhouse</td>
</tr>
</tbody>
</table>

## Training Essentials & Best Practice

- **Differentiate between AI for Image Recognition & Facial Recognition**
- **AI is not Accurate, not Well-Trained, Training Data is Biased**
- **Understand:** Person-Centric OSINT Approach & AI Demographics
- **Learn:** AI Mechanisms, Facial Recognition, & Decide on Images & AI Tools
Reference: ISF Universal Message Format (UMF) Information Model v2.0 30/04/2018
Cases, Cross-Border Interoperability, & Automated Search

3 Cases: Multiple-Identity, Fraud, Cross-Border Spy

AI Algorithms for Solving Case 1
- NER “Named Entity Recognition”
- NLP “Natural Language Processing”
- Facial Recognition

AI Algorithms for Solving Case 2
- NLP “Natural Language Processing”
- Facial Recognition
- Facial Recognition OSINT

AI Algorithms for Solving Case 3
- NER “Named Entity Recognition”
- NLP “Natural Language Processing”
- Facial Recognition OSINT

Imposter Spy
- Name: Ivanna Antonova
- Gender: Female
- Age: 29
- Place of Birth: Donetsk
- Nationality: Ukrainian
- Job: Security Expert

Same Name???

Visa System

Amr el Rahwan
عمرو الرهوان
Cases, Cross-Border Interoperability, & Automated Search
HORUS System for SSI & Cross-Border Interoperability

Data Sources

- Interpol
- Non-EU DBs
- National DBs
- EU DBs

Interoperable API: SSI “Single Search Interface”

Enter person, object, location or event

- Persons
- Objects
- Locations
- Events

Person Identity
- ID Document
- Person Description (Face Metadata)

Search
Automated Search Scenario: Identifying Unknown Terrorist

1. Booked a ticket

2. Zando Travel
   - PNR Data: Risk Profile
   - Suspicious Agency
   - High Risk

3. PNR Data: Telephone Number
   - 98 00 000 0000
   - Social Media Profile

4. Eilan Filany
   - PNR Data: Biographic Search
   - Face Image Match

5. Face Search

6. Face Search

7. Face Search

8. Risk Assessment

9. Identified Terrorist

PNR Data: Risk Profile
Unknown Terrorist

Face OSINT
Conclusion & Recommendations
Compliance, Purchasing & Implementing, Capacity Building, Training

Training for Compliance
With EU interoperability standards and EES, ETIAS, & ESP

Support for Purchasing and Implementing
AI, Interoperability, & SSI "Single Search Interface"

Capacity Building
For Technical, Functional, & Operational Officers

Training on
Facial Recognition and Person-Centric OSINT for Cross-Border Investigations