MAVEN's project logo

Management and Authenticity Verification of multimedia contENts

Illustration of MAVEN's key concept: "search and verify", used in project presentations

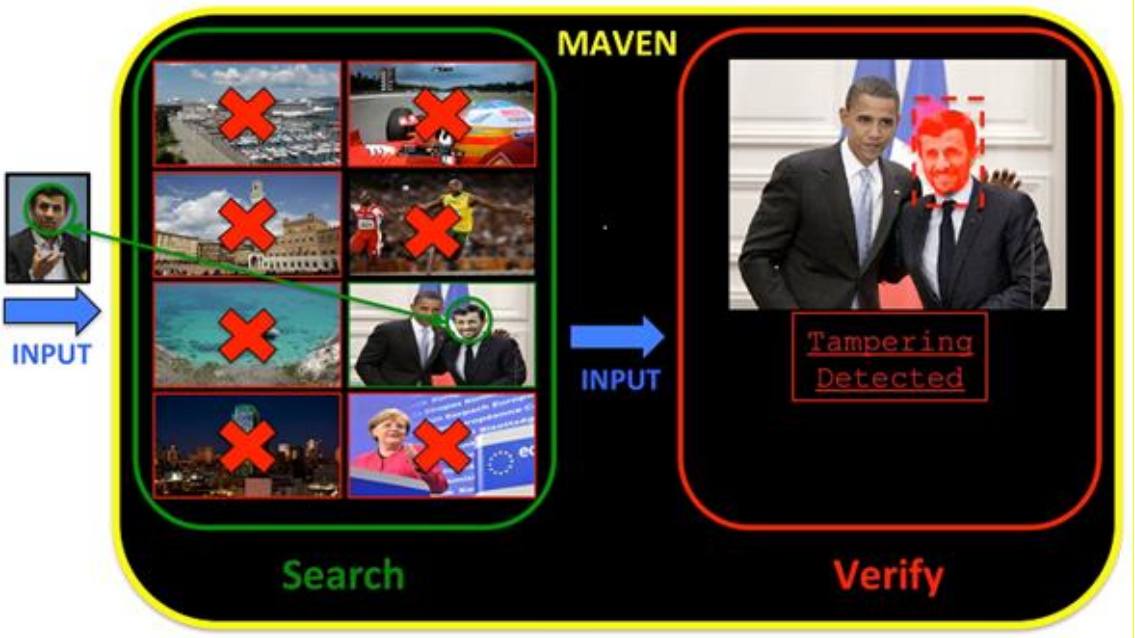
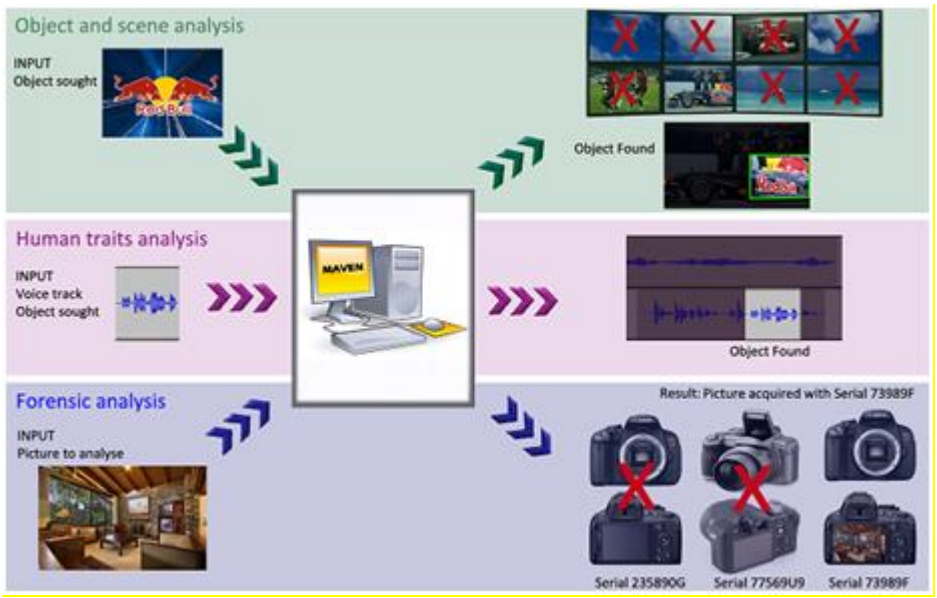


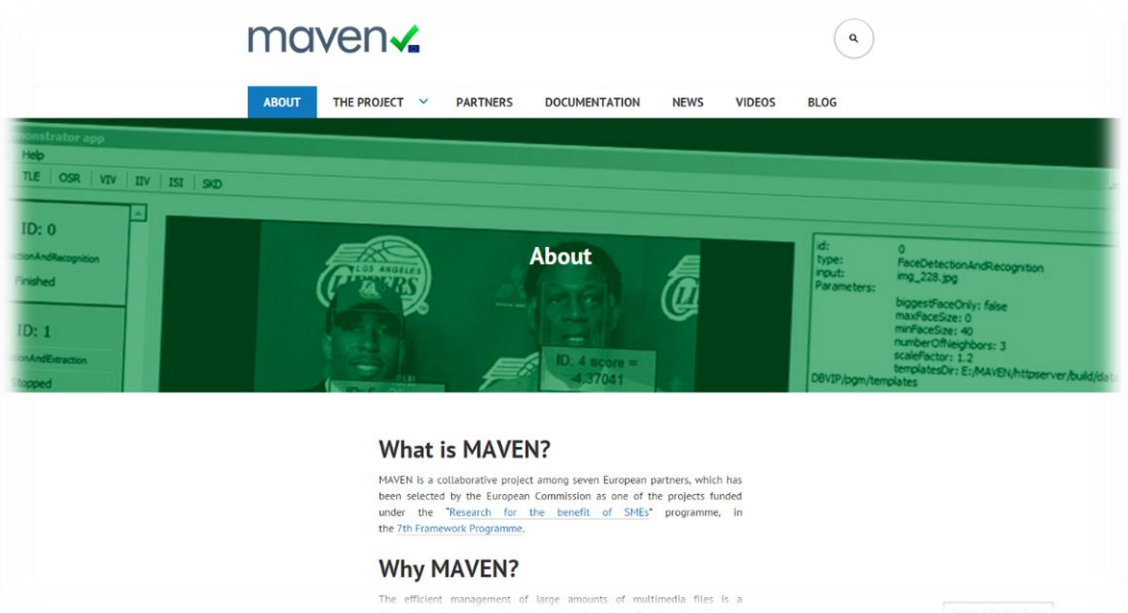
Illustration of a set of MAVEN's functionalities at a glance.

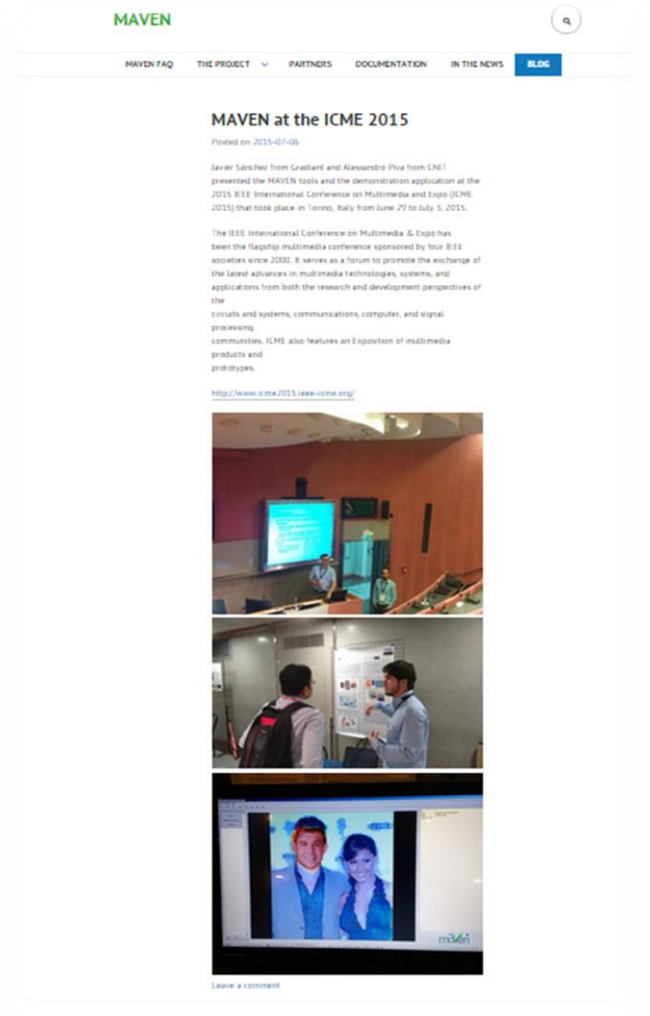


Picture of the kick off meeting, included in the official press release of the project

Rehearsal Meeting (Brussels 8/9/2015)

Updated MAVEN website snapshots





MAVEN presentation at ICME 2015 conference

THE MAVEN PROJECT:

MANAGEMENT AND AUTHENTICITY VERIFICATION OF MULTIMEDIA CONTENTS

Abstract

Forensic Tools:

- Image Source Identification (CNIT)
- Informed Video Integrity Verification (CNIT)
- Blind Image Integrity Verification (CNIT)
- Video Integrity Verification (CNIT)

Search Tools:

- Text Location and Recognition (GRADIANT/UNICA)
- Object and Scene Recognition (UNICA)
- Face Detection and Recognition (GRADIANT/UNICA)
- Spoken Keyword Detection (GRADIANT)

4. The MAVEN toolkit

5. MAVEN demonstrator application

6. Expected Impact

7. Conclusions

MAVEN demo at ICME 2015 conference

ICME's 2015 MAVEN project paper frontpage

THE MAVEN PROJECT: MANAGEMENT AND AUTHENTICITY VERIFICATION OF MULTIMEDIA CONTENTS

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[*]Taiger, [#]Arthaus, [‡]GRADIANT, [″]CNIT, [′]UNICA, [^]XTREAM, [♦]Amped
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ABSTRACT

MAVEN (Management and Authenticity Verification of multimedia contENts) is a European FP7 Project focused on the development of a suite of tools for multimedia data management and security. MAVEN objectives are centered on two key concepts, search and verify, integrated in a coherent manner: the system first searches for digital contents containing objects of interest and then applies advanced forensic analysis tools to verify their integrity and authenticity. These capabilities have been developed as a single software framework, and the project also involves the implementation of a prototype demonstrator application, which brings to the end user the possibility of searching for specific contents in media while *verifying their authenticity.*

Index Terms— media analysis, multimedia search, multimedia forensics, EU project

1. INTRODUCTION

The 21st century society is universally recognized as the information and communication society. Information is continuously generated, acquired, and shared. A large part of this information is stored within multimedia documents generated in a number of different scenarios. It must be also considered that the availability of low-cost, high-capacity storage devices makes easy to quickly accumulate thousands of multimedia files.

Thus, the efficient management of large amounts of multimedia files is indeed a challenging task. In addition, it is common knowledge that digital assets are extremely volatile, in the sense that digital documents can be easily edited, intentionally or unintentionally, so that their content can be modified and the conveyed information can change its meaning. It is incontrovertibly true that digital documents are natively more prone than others to modifications and tampering: thus, in order to make this information valuable, it is fundamental to verify the integrity of the document for assuring the authenticity of the associated information. Governments, national and international associations are aware of the fact that the phenomena may also have legal, ethical, social, and cultural implications.

The MAVEN Project[1] addresses these issues by using some of the latest technologies, powering integrity and authenticity verification tools with multimedia analysis algorithms that search for specific contents. In particular, the MAVEN capabilities range from face detection and recognition to image source verification. All the different modules are integrated within the same framework for application development.

2. THE CONSORTIUM

The consortium behind the MAVEN project is formed by a group of four SMEs involved in business areas directly related to the search and verification of multimedia contents: AMPED (Italy), ARTHAUS (Macedonia), TAIGER [2] (Austria and Spain) and XTREAM (Spain). The MAVEN consortium also comprises three RTD performers with complementary expertise and a strong background in the technological areas related to MAVEN: CNIT (Universities of Siena and Florence; Italy), the Pattern Recognition and Applications group from the University of Cagliari (Italy) and GRADIANT (R&D Center, Spain).

3. THE MAVEN PROJECT

Despite the technological advances in the Security and Media sectors, MAVEN arises from the need of providing such industries with a suite of advanced solutions able to operate in a range of realistic scenarios (CCTV, web images, broadcast data, etc). Moreover, the search and verify concept is not supported in an integrated manner by any tool currently available in the market. The MAVEN suite combines state-of-the-art multimedia analysis techniques with verification algorithms for assessing the authenticity of media assets, providing significant benefits:

- Comprehensiveness: MAVEN integrates seven

[1] http://www.maven-project.eu/
[2] Formerly known as playence

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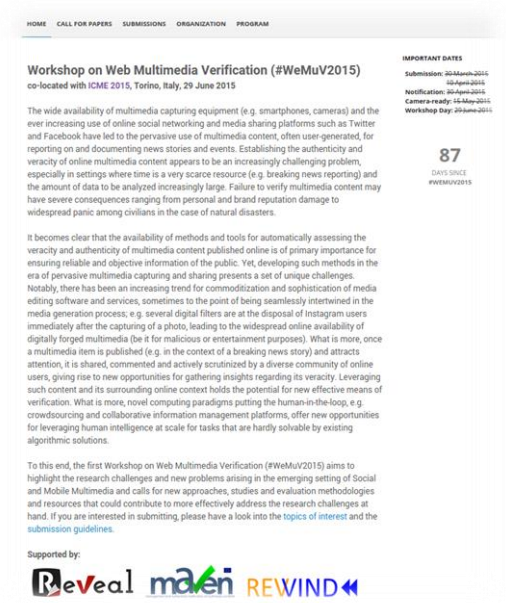
WeMuV 2015 workshop (supported by MAVEN)



HOME CALL FOR PAPERS SUBMISSIONS ORGANIZATION PROGRAM

Workshop on Web Multimedia Verification (#WeMuV2015)

co-located with ICME 2015, Torino, Italy, 29 June 2015

The wide availability of multimedia capturing equipment (e.g. smartphones, cameras) and the ever increasing use of online social networking and media sharing platforms such as Twitter and Facebook have led to the pervasive use of multimedia content, often user-generated, for reporting on and documenting news stories and events. Establishing the authenticity and veracity of online multimedia content appears to be an increasingly challenging problem, especially in settings where time is a very scarce resource (e.g. breaking news reporting) and the amount of data to be analyzed increasingly large. Failure to verify multimedia content may have severe consequences ranging from personal and brand reputation damage to widespread panic among civilians in the case of natural disasters.

It becomes clear that the availability of methods and tools for automatically assessing the veracity and authenticity of multimedia content published online is of primary importance for ensuring reliable and objective information of the public. Yet, developing such methods in the era of pervasive multimedia capturing and sharing presents a set of unique challenges. Notably, there has been an increasing trend for commoditization and sophistication of media editing software and services, sometimes to the point of being seamlessly intertwined in the media generation process; e.g. several digital filters are at the disposal of Instagram users immediately after the capturing of a photo, leading to the widespread online availability of digitally forged multimedia (be it for malicious or entertainment purposes). What is more, once a multimedia item is published (e.g. in the context of a breaking news story) and attracts attention, it is shared, commented and actively scrutinized by a diverse community of online users, giving rise to new opportunities for gathering insights regarding its veracity. Leveraging such content and its surrounding online context holds the potential for new effective means of verification. What is more, novel computing paradigms putting the human-in-the-loop, e.g. crowdsourcing and collaborative information management platforms, offer new opportunities for leveraging human intelligence at scale for tasks that are hardly solvable by existing algorithmic solutions.

To this end, the first Workshop on Web Multimedia Verification (#WeMuV2015) aims to highlight the research challenges and new problems arising in the emerging setting of Social and Mobile Multimedia and calls for new approaches, studies and evaluation methodologies and resources that could contribute to more effectively address the research challenges at hand. If you are interested in submitting, please have a look into the topics of interest and the submission guidelines.

Supported by:

REVEAL maven REWIND

IMPORTANT DATES

Submission: ~~30 March 2015~~ ~~10 April 2015~~

Notification: ~~30 April 2015~~

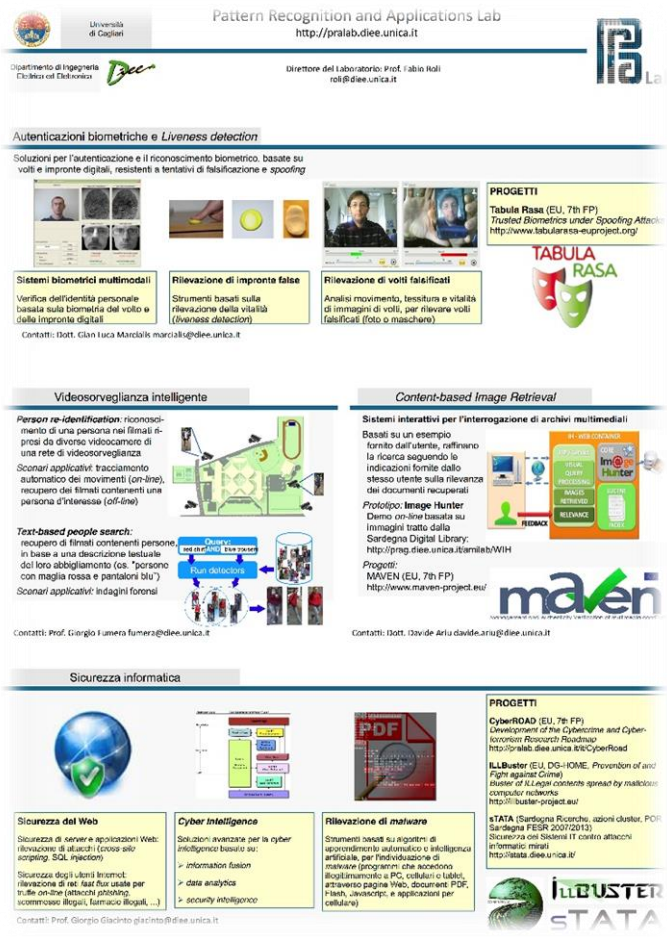
Camera-ready: ~~15 May 2015~~

Workshop Day: ~~29 June 2015~~

87

DAYS SINCE #WEMUV2015

Presentation of MAVEN at the European Researchers Night 2014



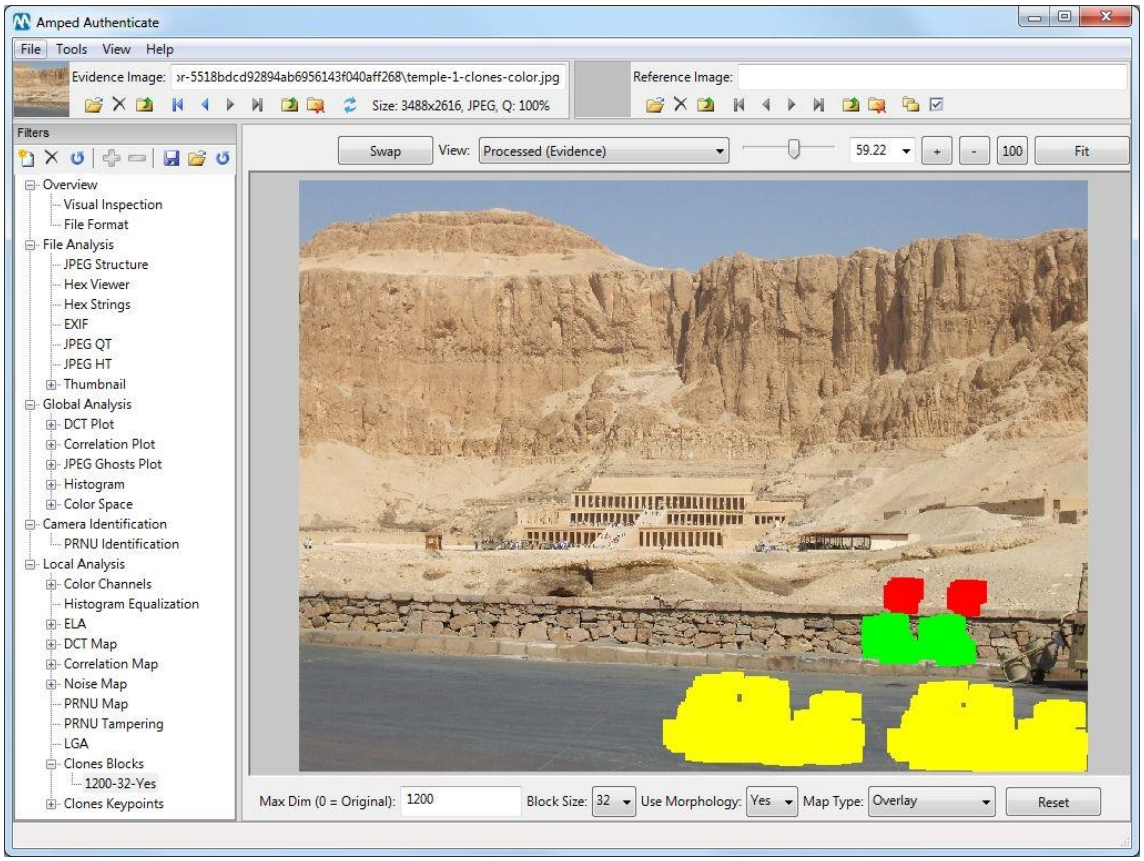
MAVEN presentation at LawTech Europe Congress

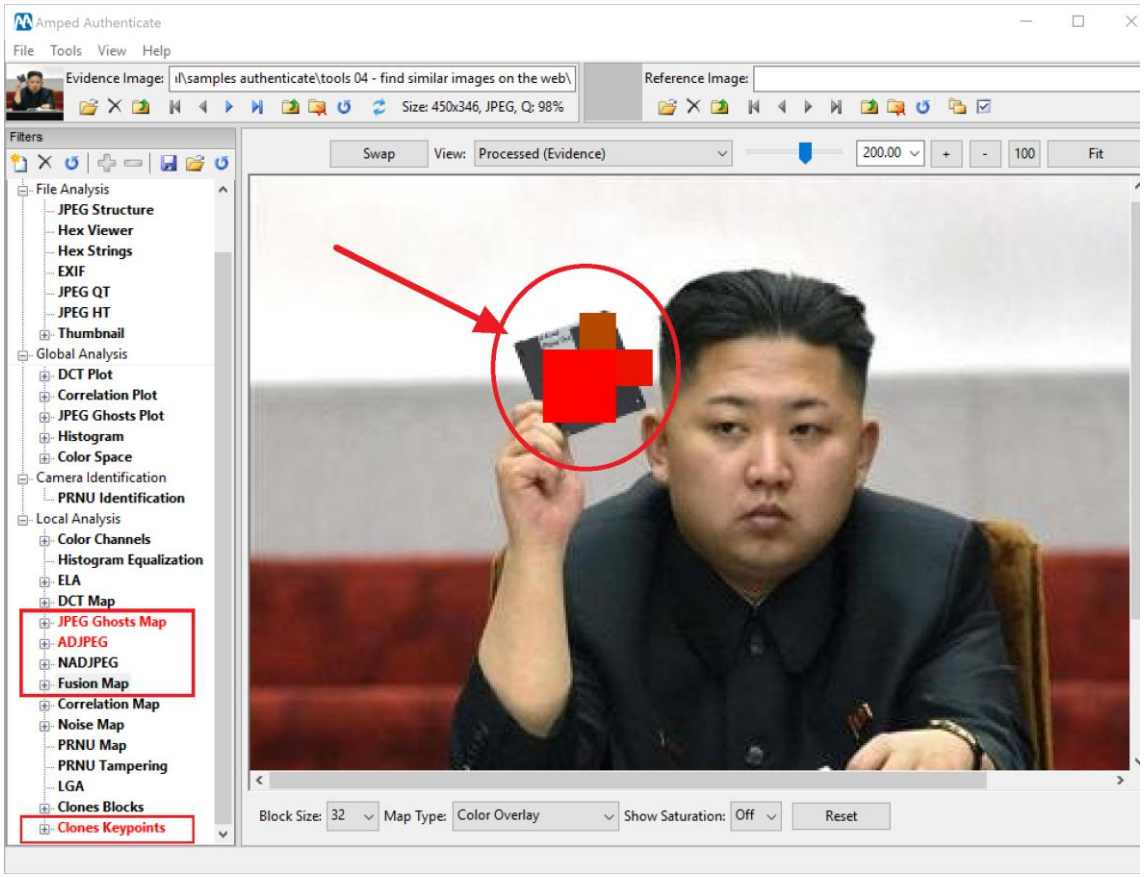
MAVEN presentation at S-Five Workshop

MAVEN presentation at Forensics Europe 2015

MAVEN presentation at the Entrepreneurial panel at the University of Chicago

Snapshots of AMPED's Authenticate product with MAVEN forensics tools integrated





Snapshots from the videos prepared within the MAVEN project

What is Arthaus?

Borjanka Nikolova
Arthaus Manager - Skopje (Macedonia)

What is Taiger?

Carlos Ruiz
R & D Director Taiger - Madrid (Spain)

What is Amped?

Martino Jerian
Ceo Amped Software - Trieste (Italy)

What is Xtream?

Maximino Álvarez
CEO Xtream - Madrid (Spain)

MAVEN Project

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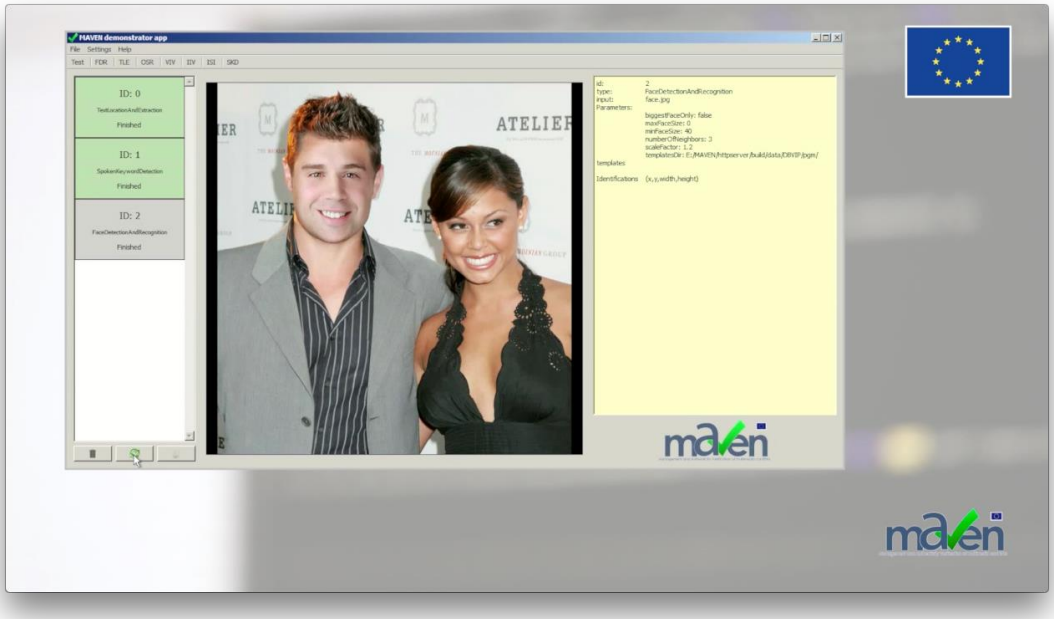
MAVEN demonstrator app
File Settings Help
Test FDR TLE OSR VIV IDV ISI SKD
ID: 0
TextLocationAndExtraction
Finished
ID: 1
SpokenKeywordDetection
Finished
ID: 2
FaceDetectionAndRecognition
Finished
id: 2
type: FaceDetectionAndRecognition
input: face.jpg
Parameters:
biggestFaceOnly: false
maxFaceSize: 0
minFaceSize: 40
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scaleFactor: 1.2
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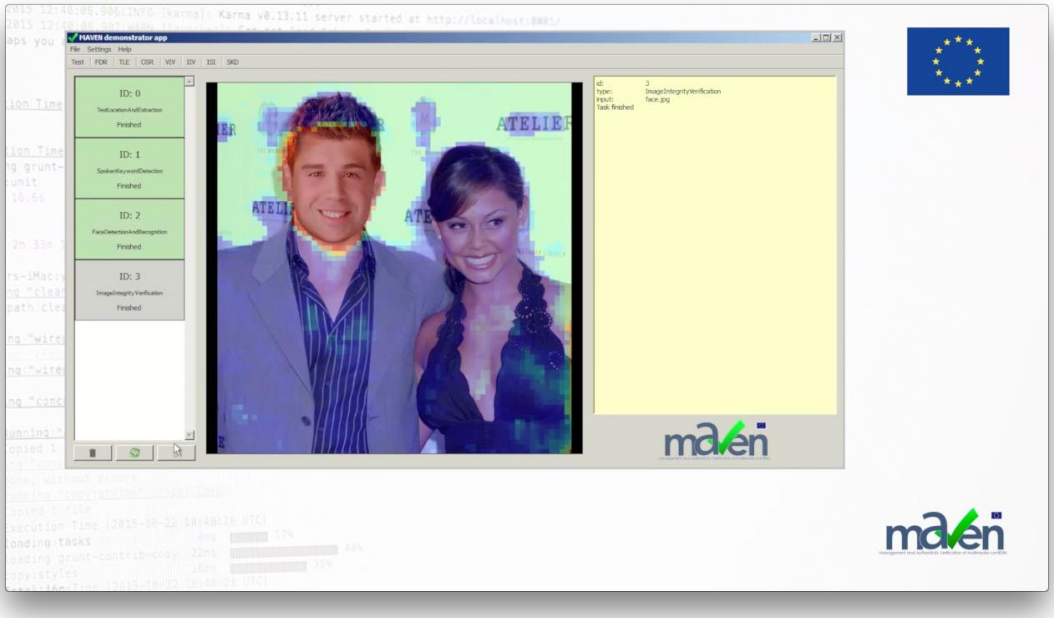
templates
Identifications (x, y, width, height)
maven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ID: 0
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Finished
ID: 2
FaceDetectionAndRecognition
Finished
ID: 3
ImageIntegrityVerification
Finished
id: 3
type: ImageIntegrityVerification
input: face.jpg
Task finished
maven