



2nd JPEG Fake Media Workshop

March 25th 2021

13:00-13:10 - Welcome & Introduction

Touradj Ebrahimi, EPFL; Frederik Temmermans, imec-VUB

13:10-13:30 - Credible images: human perspectives and perceptions

Sabrina Caldwell, Australian National University

13:30-13:50 - Deepfake detection: state-of-the-art and future directions

Luisa Verdoliva, University Federico II Naples

13:50-14:10 - Truth, Trust and Technology: Synthetic Media and the Newsroom

Bruce MacCormack, Neural Transform

14:10-15:00 - Questions & Discussion



Welcome and Introduction

2nd JPEG Fake Media Workshop
25th of March 2021

Frederik Temmermans, Touradj Ebrahimi,
Deepayan Bhowmik, Fernando Pereira



1st JPEG Fake Media Workshop

December 15th 2020

13:00-13:20 - The JPEG Fake Media Initiative: Context & Objectives

Touradj Ebrahimi, EPFL; Frederik Temmermans, imec-VUB

13:20-13:40 - Authenticity, integrity, context: the deeper ramifications of the fake media debate

Fred Truyen, KU Leuven

13:40-14:00 - A Proactive Approach to Media Authenticity

Nasir Memon, NYU Tandon

14:00-14:20 - Introduction to the Content Authenticity Initiative

Leonard Rosenthol, Adobe

14:20-15:00 - Questions & Discussion

https://jpeg.org/items/20210127_fake_media_1st_workshop_proceedings.html



JPEG Fake Media: Scope

The scope of JPEG Fake Media is the creation of a standard that can facilitate **secure and reliable annotation** of **media asset generation and modifications**. The standard shall support usage scenarios that are in **good faith** as well as those with **malicious intent**.



Media asset modification & generation

- Camera RAW
- Camera processed JPEG
- Modest modifications
 - Contrast & color enhancements, sharpening, cropping, transcoding, ...
- Extensive modifications, composition
 - Photoshop modifications/manipulations
- Deep fake content modification/manipulation
- Photorealistic artistic creations
- Generated deep fake

Original



Modified



Generated

Content type	Good Faith	Malicious intent
Original	<ul style="list-style-type: none"> • Social media • Traditional media • Artistic creations 	<ul style="list-style-type: none"> • Framing • Staged • Usage out of context
Modified	<ul style="list-style-type: none"> • Creative content production • Old media, enhancement, restoration, colorization • Super resolution 	<ul style="list-style-type: none"> • Content manipulation to spread fake news • Insurance fraud, forgery • Impostoring
Generated	<ul style="list-style-type: none"> • Privacy preservation • Special effects 	<ul style="list-style-type: none"> • Spread fake news • Identity fraud



What is Fake Media in JPEG?

- In JPEG, we define **fake media** as result of any image/video **modification** that **changes content or context** regardless **good** or **bad** **intentions**





Aim and Objectives

- Stakeholders' involvement to better **understand applications and scenarios** relevant to **fake media use cases**.
- **Identification of key requirements** for a standard in fake media.
- Ensuring **interoperability** between a wide range of applications dealing with fake media.
- A set of **standard metadata** to signal authenticity information along with relevant information.
- Standard mechanisms for **security and protection of integrity** both metadata and fake media content are desired.



Some Key Requirements



Modification Description

- The standard shall provide means to describe how the media was generated and/or modified.



Secure signaling of authenticity information

- The standard shall provide means to protect metadata information related to specifics of the modifications.



Some Key Requirements

Modification Description

- Describe how the media was **generated and/or modified**.
- Describe the **type of modification**.
 - *No modifications, recoded, enhanced, restored, colorized, edited, composed, deep fake, ...*
- Describe the **purpose of a modification**.
- Describe (algorithmically or human) the **likelihood of a modification**
- Describe the **region** where the media was modified.
- Attach **provenance information** to media asset.
- Keep **track of the history** of media modifications.





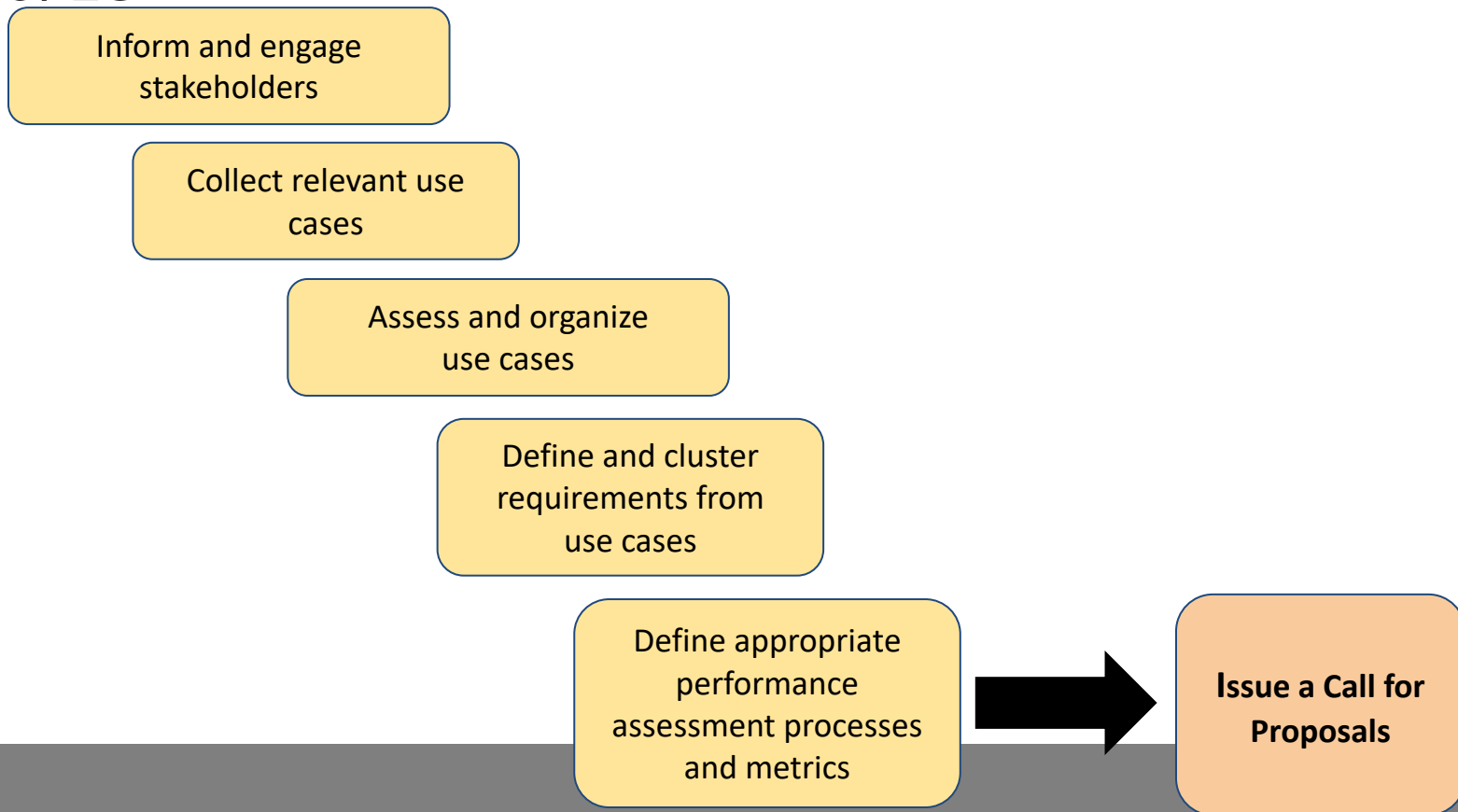
Some Key Requirements

Secure signaling of authenticity information



- **Restrict access** to metadata.
- **Identify** if the media content or associated metadata has been modified.
- Record and protect **IPR and provenance information**.
- **Identify the source** of the media asset.
- **Verify the integrity** of the media asset.

Standardization Roadmap





Next Steps

- Collect fake media **use cases and requirements**.
- Survey on relevant **industry and government initiatives**.
- **Engage with stakeholders** and attract them to contribute.
- Organization of **workshops**



How can you contribute?

- **Spread the word** and encourage participation.
- **Identify use cases** with text descriptions.
- **Identify requirements** with text descriptions.



Thank you!

- **Key contacts**

- Frederik Temmermans, frederik.temmermans@vub.be (AhG Chair)
- Deepayan Bhowmik, d.bhowmik@ieee.org (AhG Co-Chair)
- Fernando Pereira, fp@lx.it.pt (Requirements SG Chair)
- Touradj Ebrahimi, Touradj.Ebrahimi@epfl.ch (Convenor)

- **Email reflector:** jpeg-fake-media@jpeglists.org

- Subscribe via <http://listregistration.jpeg.org>

- **More information and documentation**

- <https://jpeg.org/jpegfakemedia>



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