



# ImageCLEF 2022:

## Multimedia Retrieval in Medical, Nature, Fusion, and Internet Applications

Alba G. Seco de Herrera<sup>1</sup>, Bogdan Ionescu<sup>2</sup>, Henning Müller<sup>3</sup>, Renaud Péteri<sup>4</sup>, Asma Ben Abacha<sup>5</sup>, Christoph M. Friedrich<sup>6</sup>, Johannes Rückert<sup>6</sup>, Louise Bloch<sup>6</sup>, Raphael Brüngel<sup>6</sup>, Ahmad Idrissi-Yaghir<sup>6</sup>, Henning Schäfer<sup>6</sup>, Serge Kozlovski<sup>7</sup>, Vitali Liauchuk<sup>7</sup>, Yashin Dicente Cid<sup>8</sup>, Vassili Kovalev<sup>7</sup>, Jon Chamberlain<sup>1</sup>, Adrian Clark<sup>1</sup>, Antonio Campello<sup>9</sup>, Hugo Schindler<sup>10</sup>, Jérôme Deshayes<sup>10</sup>, Adrian Popescu<sup>10</sup>, Liviu-Daniel Ștefan<sup>2</sup>, Mihai Gabriel Constantin<sup>2</sup>, and Mihai Dogariu<sup>2</sup>

<sup>1</sup> University of Essex, UK; <sup>2</sup> University Politehnica of Bucharest, Romania; <sup>3</sup> University of Applied Sciences Western Switzerland (HES-SO), Switzerland; <sup>4</sup> University of La Rochelle, France; <sup>5</sup> National Library of Medicine, USA; <sup>6</sup> University of Applied Sciences and Arts Dortmund (FH Dortmund), Germany; <sup>7</sup> Belarussian Academy of Sciences, Belarus; <sup>8</sup> University of Warwick, UK; <sup>9</sup> Wellcome Trust, UK; <sup>10</sup> CEA LIST, France

### Introduction

**ImageCLEF** is an evaluation campaign of the **Conference and Labs of the Evaluation Forum (CLEF)**. ImageCLEF, ongoing since 2003, rolls out research tasks promoting technology and method evaluation for annotation, indexing, and retrieval from visual data. A focus lies on **multi-modality, multi-linguality, and interactive search**. Targeted fields comprise **information retrieval, machine learning, deep learning, data mining, natural language processing, image/video processing, and computer vision**. In its 20<sup>th</sup> anniversary edition, ImageCLEF 2022 features four tasks – **ImageCLEFcoral**, **ImageCLEFmedical**, **ImageCLEFaware**, and **ImageCLEFfusion** – that, together, comprise nine individual subtasks.



### ImageCLEFcoral (4<sup>th</sup> edition)

The increasing use of structure-from-motion photogrammetry for modelling large-scale environments from action cameras attached to drones has driven the next-generation of visualisation techniques that can be used in augmented and virtual reality headsets. The task addresses this particular issue for monitoring coral reef structure and composition, in support of their conservation.

**Subtasks: Annotation and Localisation, Pixel-Wise Parsing**

### ImageCLEFmedical (6<sup>th</sup> edition)

Medical images can be used in a variety of scenarios and this task will combine the most popular medical tasks of ImageCLEF and continue the idea of 2020 by mixing various applications, namely automatic image captioning with medical visual question answering (Caption), and analysis of tuberculosis patients by finding cavities where the disease possibly remains even after a first treatment (Tuberculosis).

**Subtasks (Caption): Concept Detection, Caption Prediction**

**Subtasks (Tuberculosis): Caverns Detection, Caverns Report**

### ImageCLEFaware (2<sup>nd</sup> edition)

The images available on social networks can be exploited in ways users are unaware of when initially shared, including situations that have serious consequences for the users' real lives. For instance, it is common practice for prospective employers to search online for information about their future employees. This task addresses the development of algorithms which raise the users' awareness about real-life impact of online image sharing.

**Subtasks: Raising Awareness**

### ImageCLEFfusion (1<sup>st</sup> edition) **NEW!**

Despite the current advances in knowledge discovery, single learners do not produce satisfactory performance when dealing with complex data, such as class imbalance, high-dimensionality, concept drift, noisy data, multimodal data, etc. The task aims to fill this gap by exploiting novel and innovative late fusion techniques for producing a powerful learner based on the expertise of the pool of classifiers it integrates. The task requires participants to develop aggregation mechanisms of the outputs of the supplied systems and generate ensemble predictions with significantly higher performance than the individual systems.

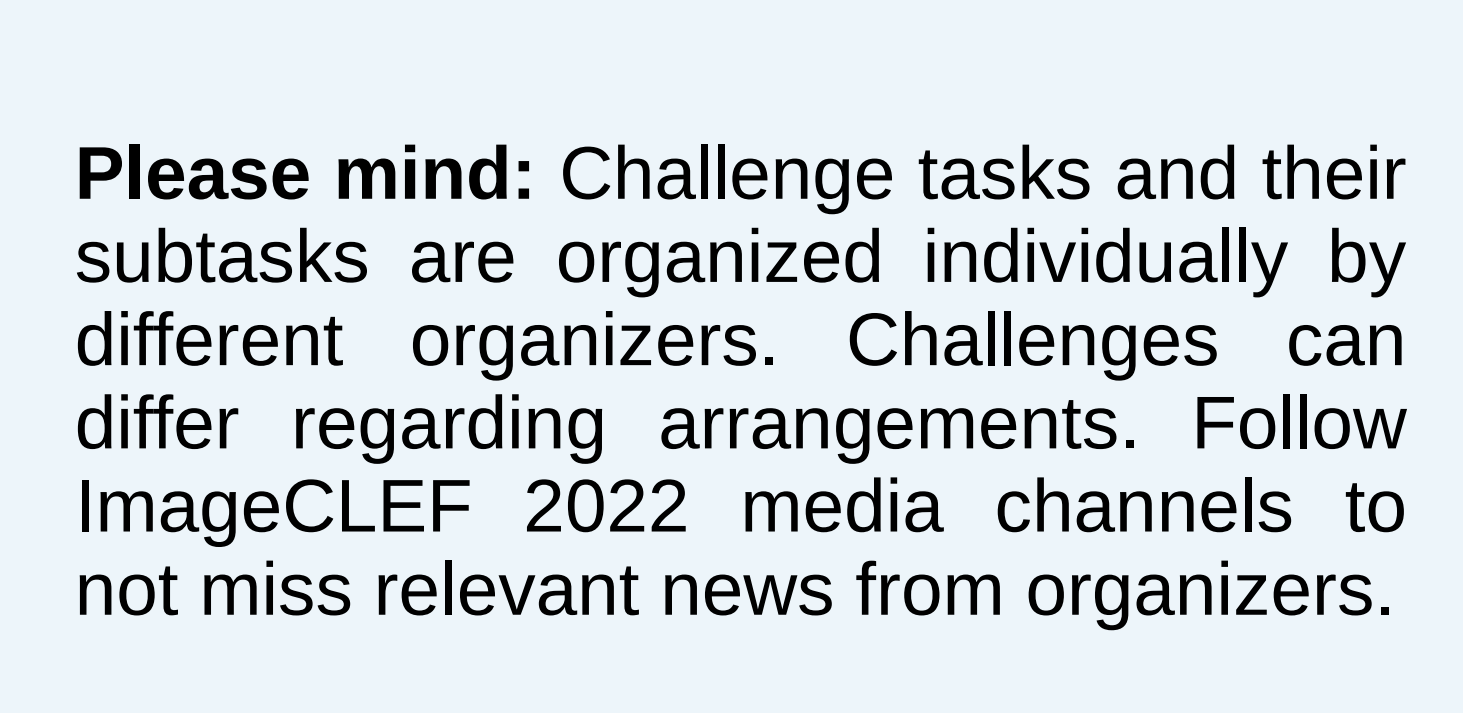
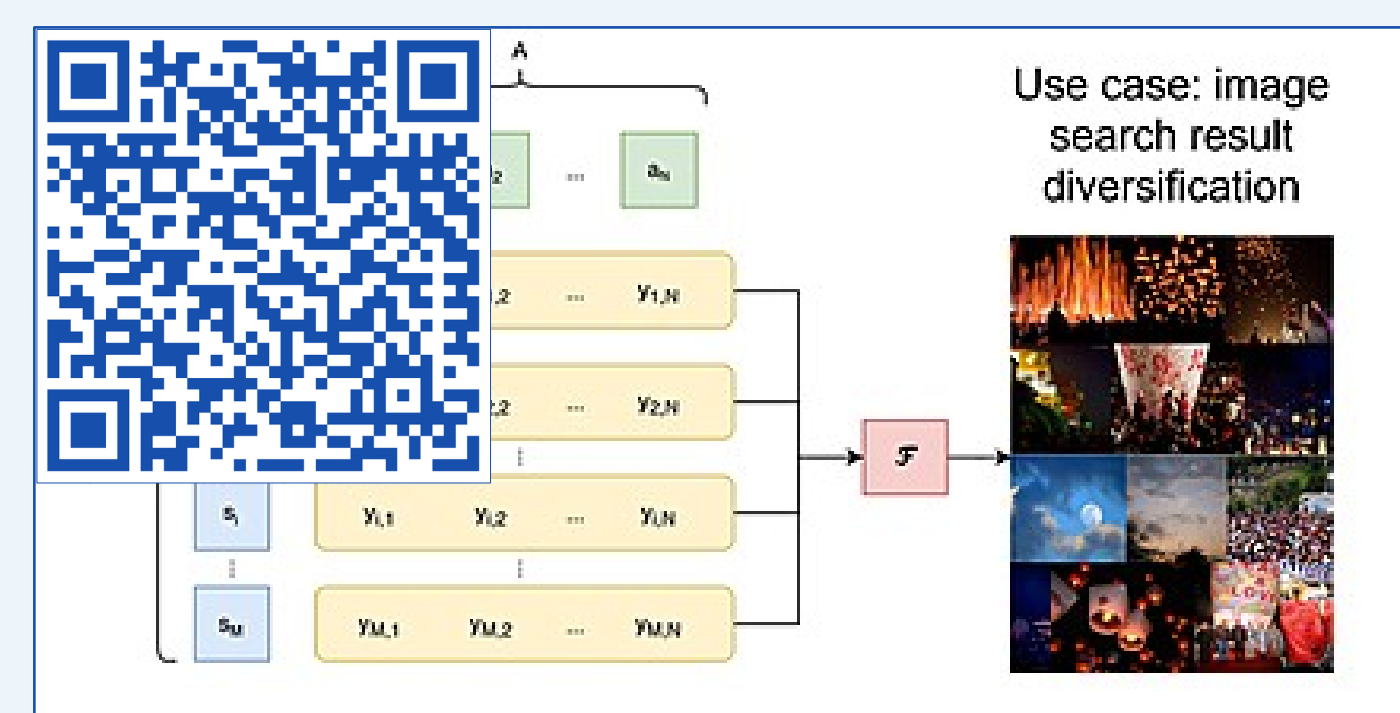
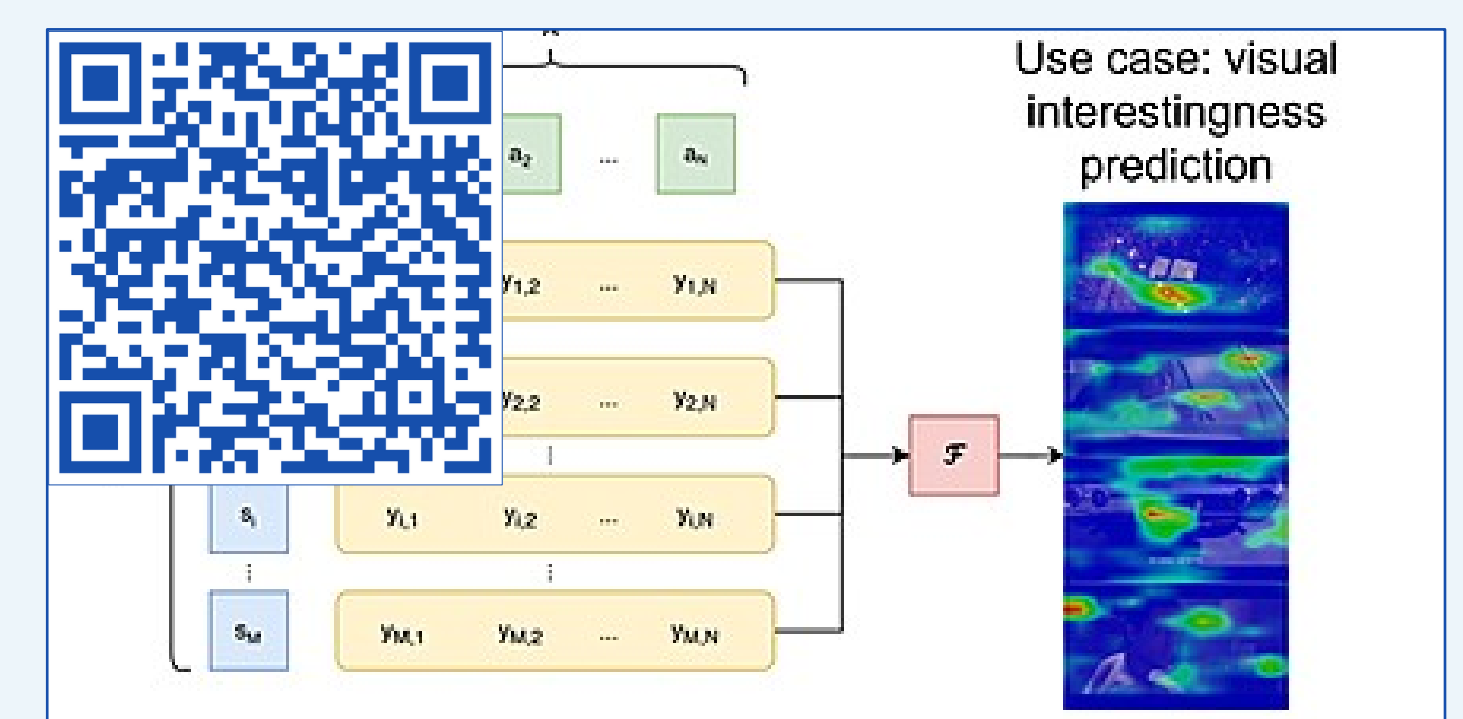
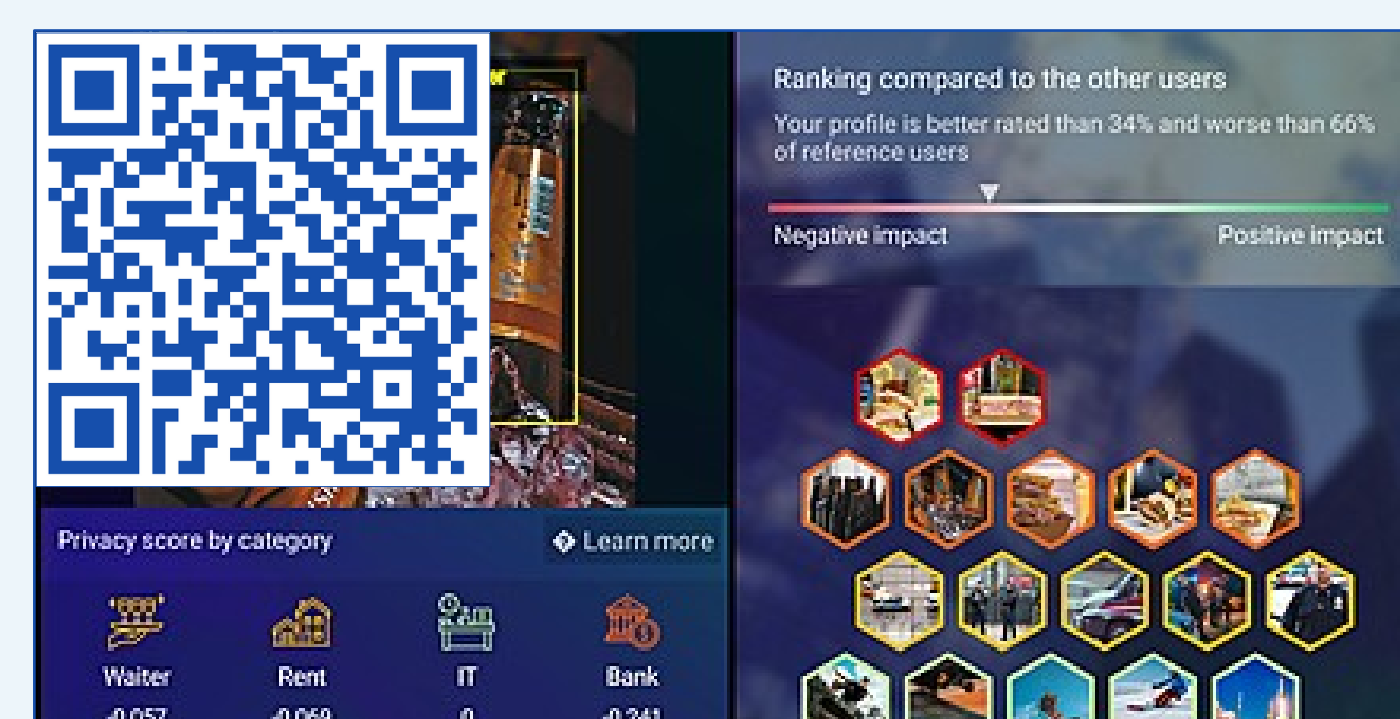
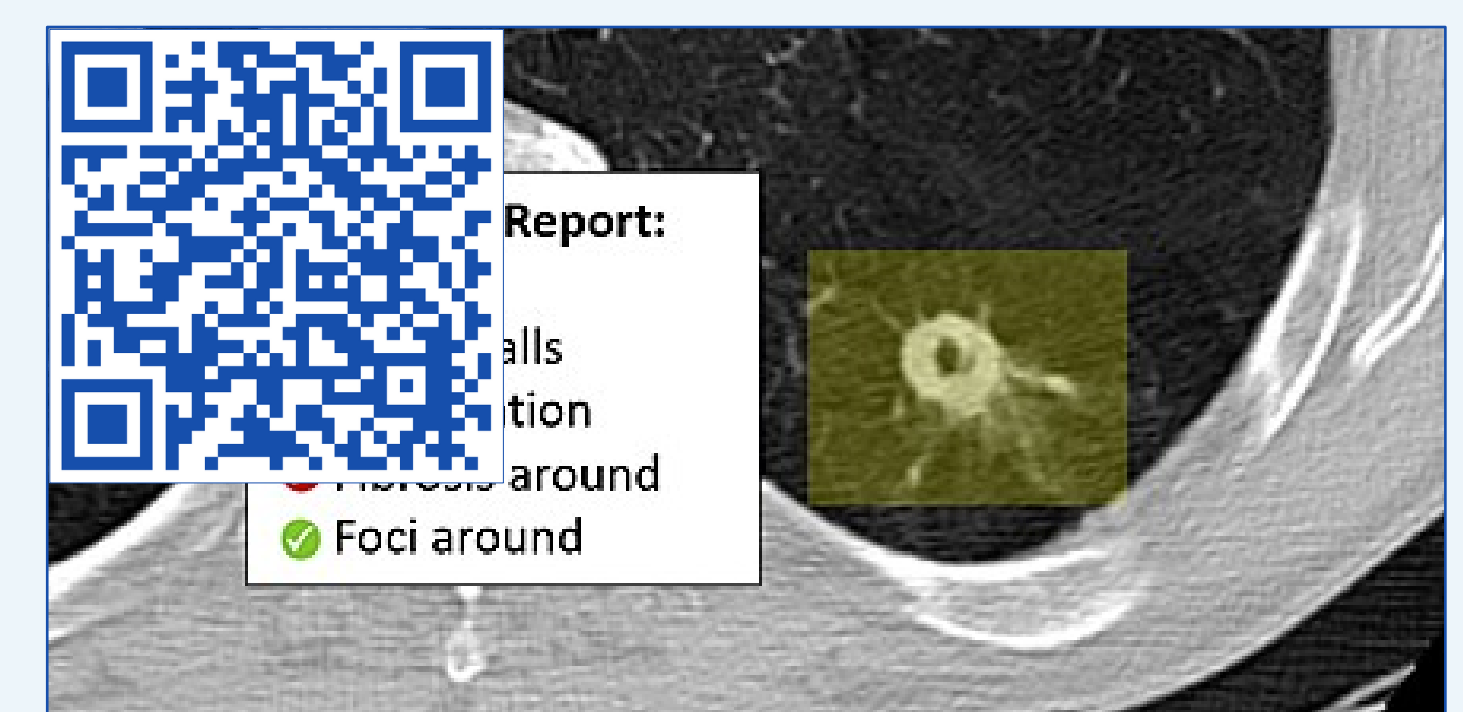
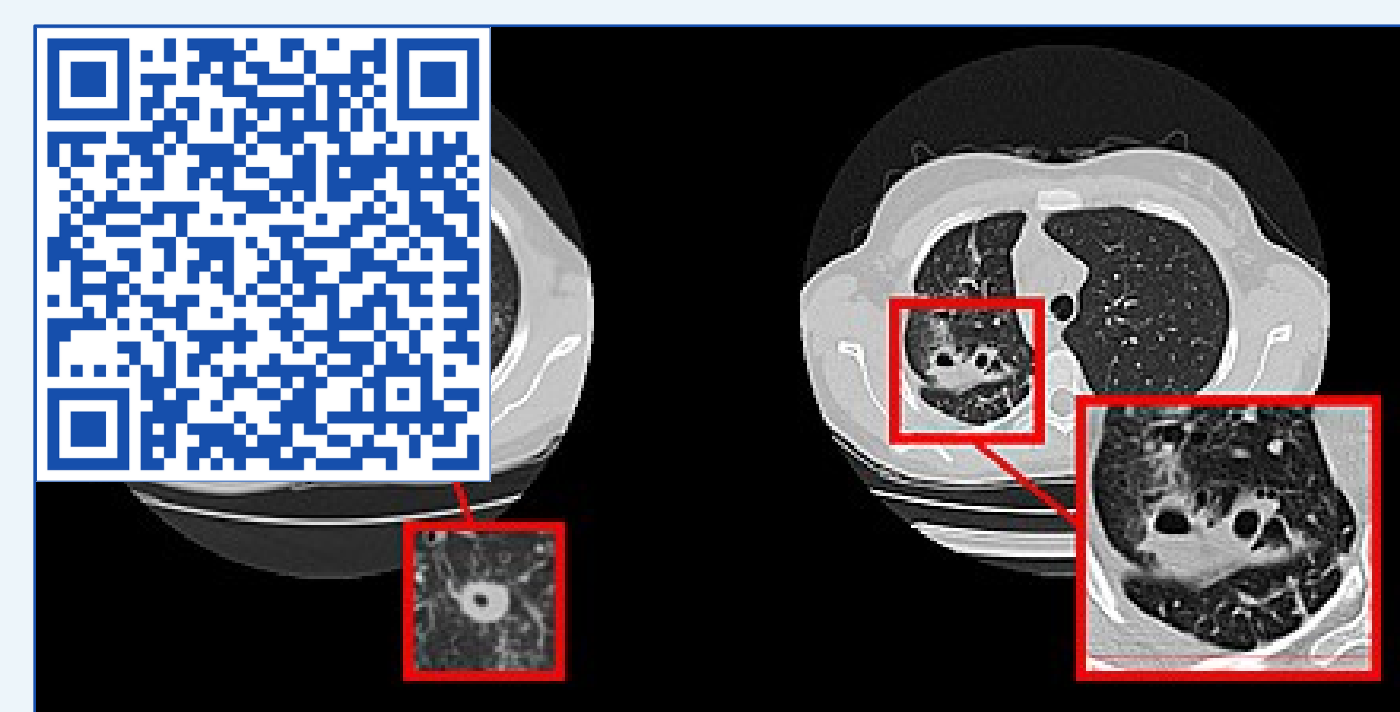
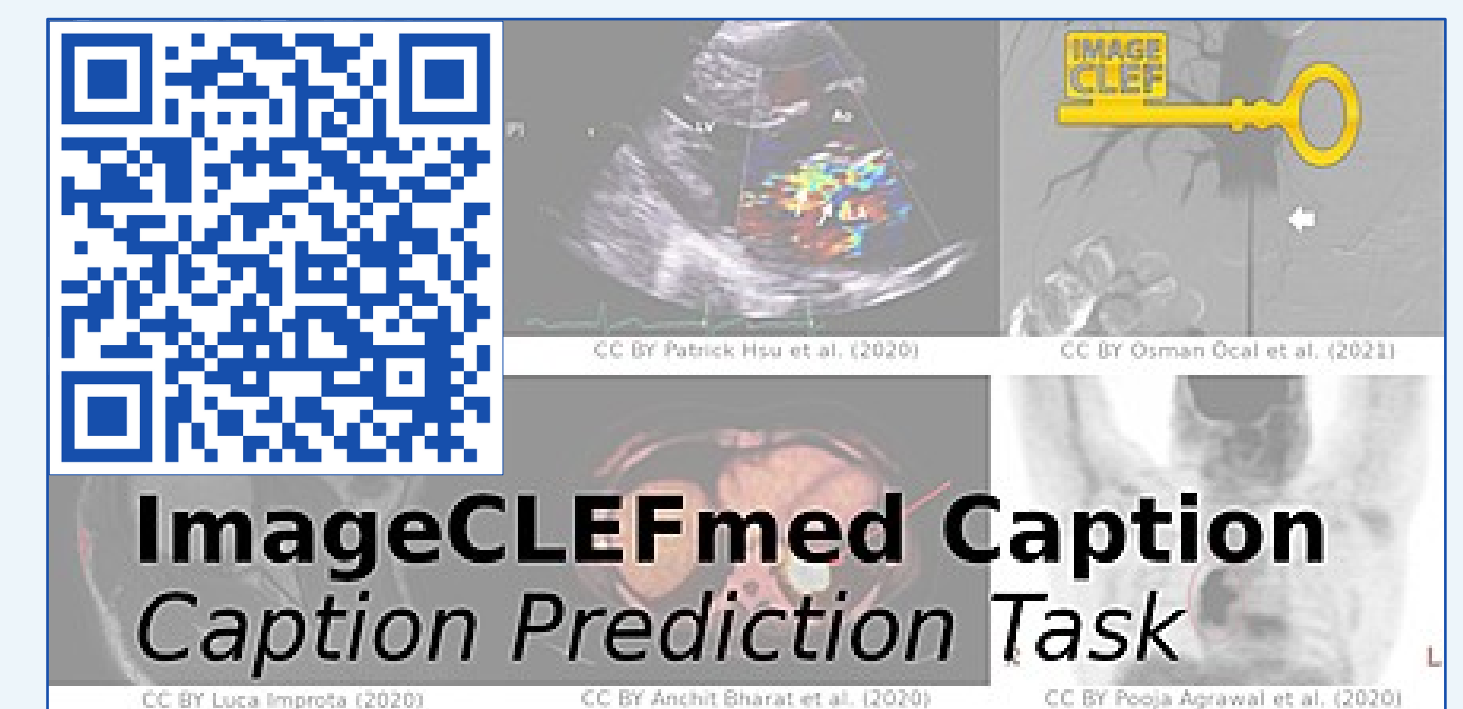
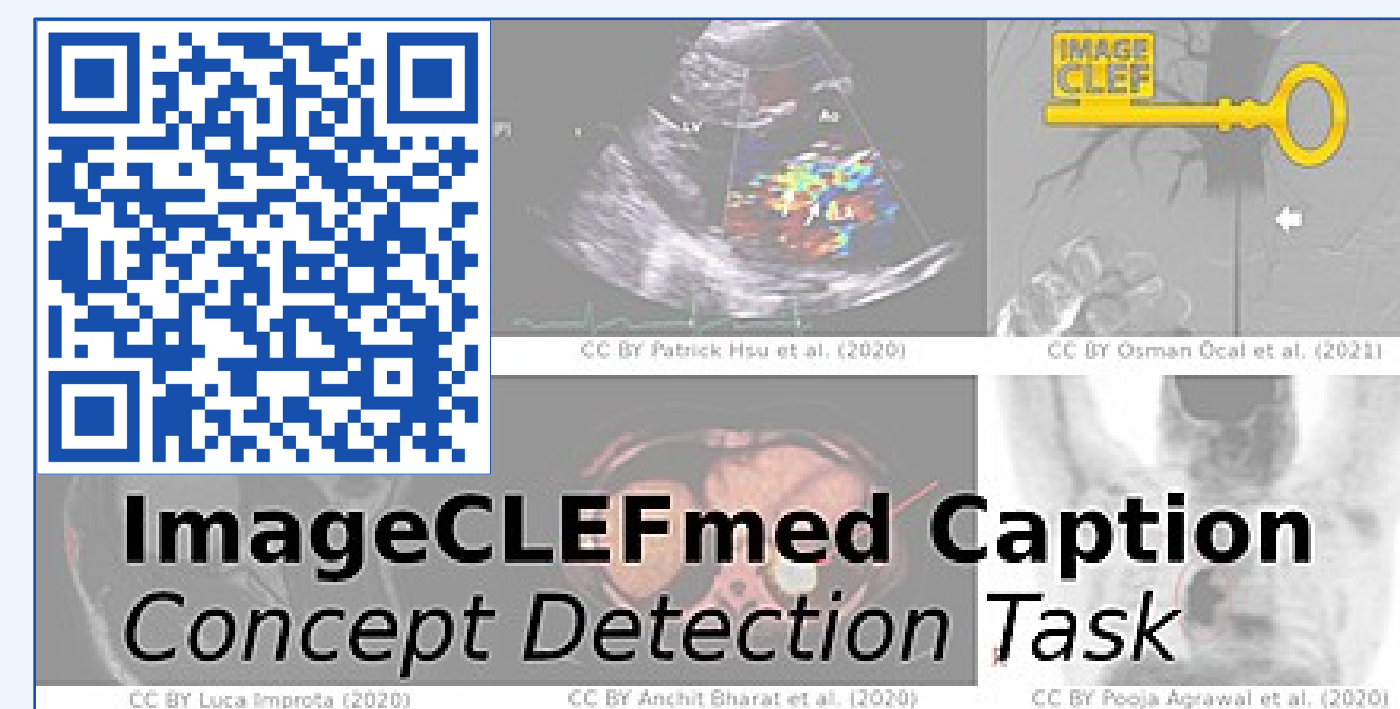
**Subtasks: Media Interestingness, Result Diversification**

### Conclusion

Over 20 years, ImageCLEF has organized numerous tasks in a broad set of domains. Its 20<sup>th</sup> anniversary, ImageCLEF 2022, addresses medical imaging, nature, system fusion, and internet applications. Its tasks provide large datasets with new test collections on real-world situations, enabling performance assessment and comparison.

### Subtask Overview on Alcrowd

ImageCLEF 2022 subtask challenges are hosted on Alcrowd to enable a comfortable participation. Scan the following QR codes to directly access individual subtask challenges:



**Please mind:** Challenge tasks and their subtasks are organized individually by different organizers. Challenges can differ regarding arrangements. Follow ImageCLEF 2022 media channels to not miss relevant news from organizers.

### Conference, Proceedings and Special Section

Results are presented at the conference in Bologna, Italy, and are published in CEUR Workshop Proceedings. Selected contributions will be invited for submission to a special section "Best of CLEF'22 Labs" in the Springer Lecture Notes in Computer Science (LNCS) of CLEF 2022, together with the annual lab overviews.

### Stay Informed on ImageCLEF 2022

Website



Twitter



Facebook



Contact

[alba.garcia@essex.ac.uk](mailto:alba.garcia@essex.ac.uk)

[bogdan.ionescu@upb.ro](mailto:bogdan.ionescu@upb.ro)

[henning.mueller@hevs.ch](mailto:henning.mueller@hevs.ch)