

# Assessing IP Similarities Through Technology: A Trademark Exploration of Challenges and Avenues

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Julien Cabay (Associate Professor ULB and ULiège, Faculty of Law, JurisLab

Affiliated Researcher Digital Law Center, Unige)

[julien.cabay@ulb.be](mailto:julien.cabay@ulb.be)

Thomas Vandamme (Ph.D. candidate ULB, Faculty of Engineering, LISA)

[thomas.vandamme@ulb.be](mailto:thomas.vandamme@ulb.be)

Olivier Debeir (Professor ULB, Faculty of Engineering, LISA)

[olivier.debeir@ulb.be](mailto:olivier.debeir@ulb.be)

# Outline

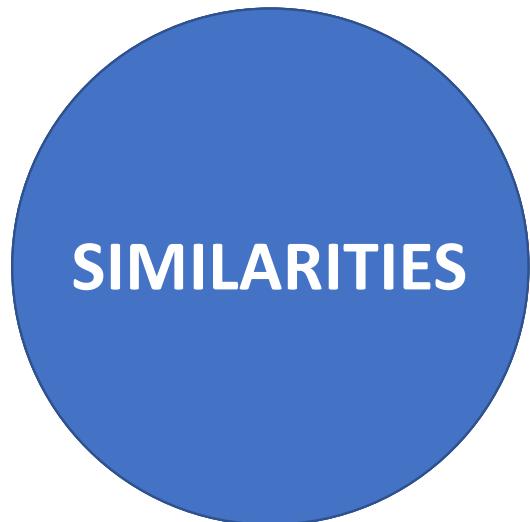
- IP Similarities
- Resorting to technology
- Exploratory research
- State of the art
- Challenges and concerns
- Avenues: bridging the gap

# IP Similarities?

- Are these two objects similar from a copyright perspective (infringement) ?
  - NO : Brussels Commercial Court, 17 Sept. 2008
  - YES : Brussels Court of Appeal, 12 Apr. 2011



# IP Similarities



- Common IP feature
  - Copyright
    - 'Similarities', 'Audience'
  - Patent
    - 'Equivalents', 'Person skilled in the art'
  - Design
    - 'Overall impression', 'Informed user'
  - Trademark
    - 'Likelihood of confusion (LoC)', 'Average consumer'
- Protection/Infringement stages
- Assessment
  - Subjective
  - Biases
  - Scale

# Resorting to technology

- Solutions “at scale”
  - Private Companies
    - Monitoring and enforcement
    - Prior art and clearance search
  - Public IP Offices
    - Registration
  - Regulator
    - Intermediaries content moderation (art. 17 DSM Dir. ; art. 6 DSA Prop.)
      - // CJEU, *Glawischnig-Piesczek*, C-18/18; Adv. Gen. Saugmandsgaard ØE, 15 July 2021, *Poland v EU Parliament and Council*, C-401/19
    - ‘Improve the effectiveness of our IP systems’ (EU Commission Communication, *Making the most of the EU’s innovative potential – An intellectual property action plan to support the EU’s recovery and resilience*, Brussels, 25.11.2020, COM(2020) 760 final)

# Resorting to technology

- Solutions “at scale” are here to stay => fixing subjectivity and biases?
- Introducing IPSAM Research Project:
  - ARC (Actions Recherches Concertées) 2020-2023 (ULB)
    - <https://www.ulb.be/fr/arc/arc-research-project-ipsam>
  - Interdisciplinary
    - Law: JurisLab (Center for Private Law - FabLab ULB)
    - Engineering: LISA (Laboratory of Image Synthesis and Analysis) (Prof. Olivier Debeir)
  - Focus:
    - 2D images (IP Common)
    - IP Offices tools (BOIP Support)
    - TM (quantitative/qualitative data)

# Exploratory research

- Testing IP Offices tools
  - // Moerland & Freitas 2021
- Publicly available image search tools
  - **BOIP**: Image search, powered by Darts-ip (Clarivate Analytics)
  - **EUIPO**: eSearch plus, powered by TradeMark Vision (Clarivate Analytics)
  - **WIPO**: Global Brand Database, in-house developed

## BOIP Trademarks register



## eSearch plus

The EUIPO's database access  
Search trade marks, designs, owners, representatives, Bulletins and Office decisions in one single application. [Learn how](#)



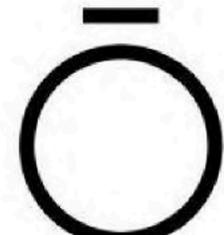
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or	Shape	Nonverbal	2,439,889			
<a href="#">drag an image here</a>	Color	Combined	17,300,675			
	Composite	Unknown	55,808			
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# Exploratory research

- Methodology
  - Query set
    - LoC according to EUIPO (art. 8(1)(b) EUTMR)
      - // Katyal & Kesari 2021 (USPTO rejections based on 15 U.S.C. § 1052(d))
      - ≠ METU dataset (Tursun & Aker & Kalkan 2017: similarities identified by 'expert')
    - Figurative EUTM
      - ≠ Katyal & Kesari 2021 (word TM)
      - // METU dataset (Tursun & Aker & Kalkan 2017: text removal)
    - Recent Opposition Division decisions (definitive)
      - // Gangjee 2021 (limiting gap LoC relative grounds for refusal/infringement)
  - Dataset control
    - Earlier TM retrieved through image search (match)
  - Technical issues
    - BOIP: upload failure (permanent)
    - EUIPO: upload failure, service unavailable, error message (temporary)
    - WIPO: no

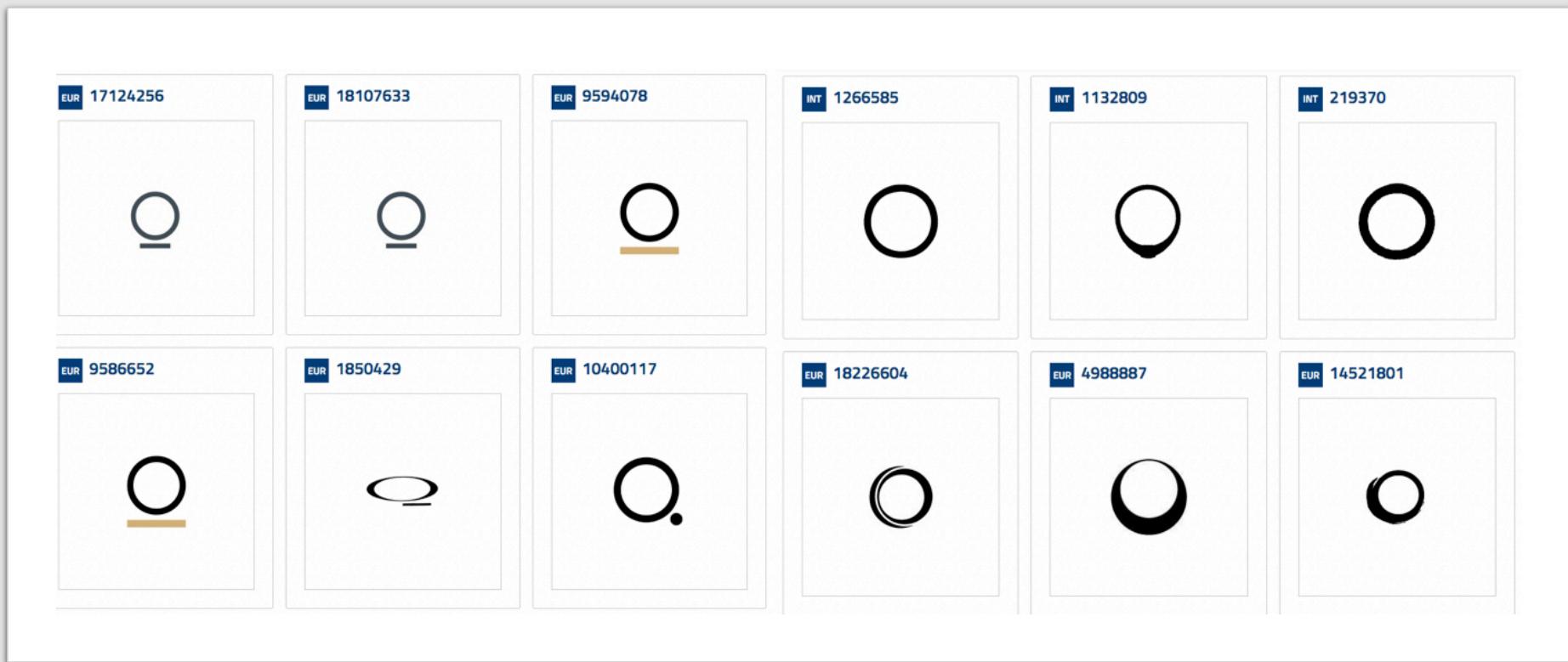
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163



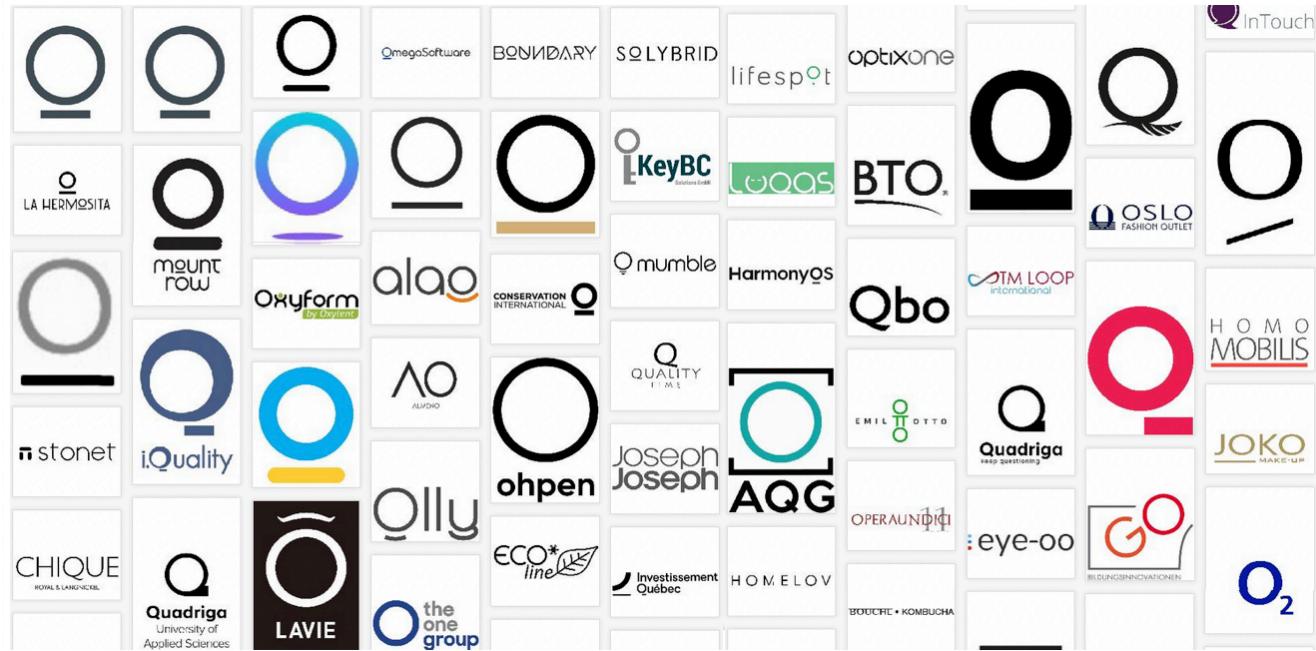
Earlier trade mark



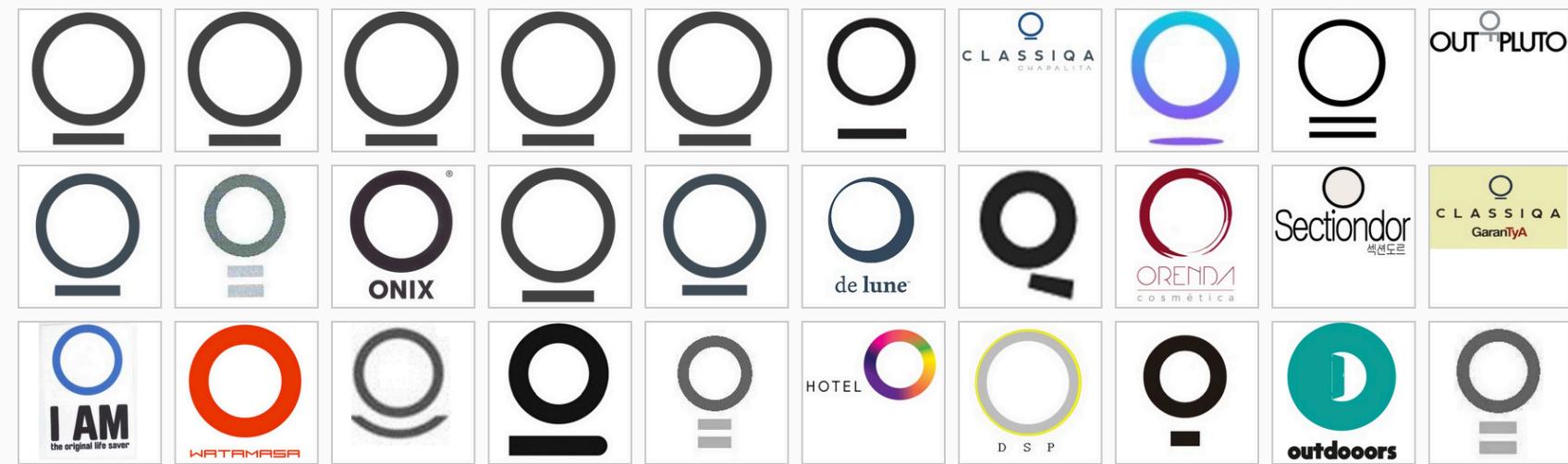
Contested sign



BOIP



EUIPO



## WIPO (concept filter)

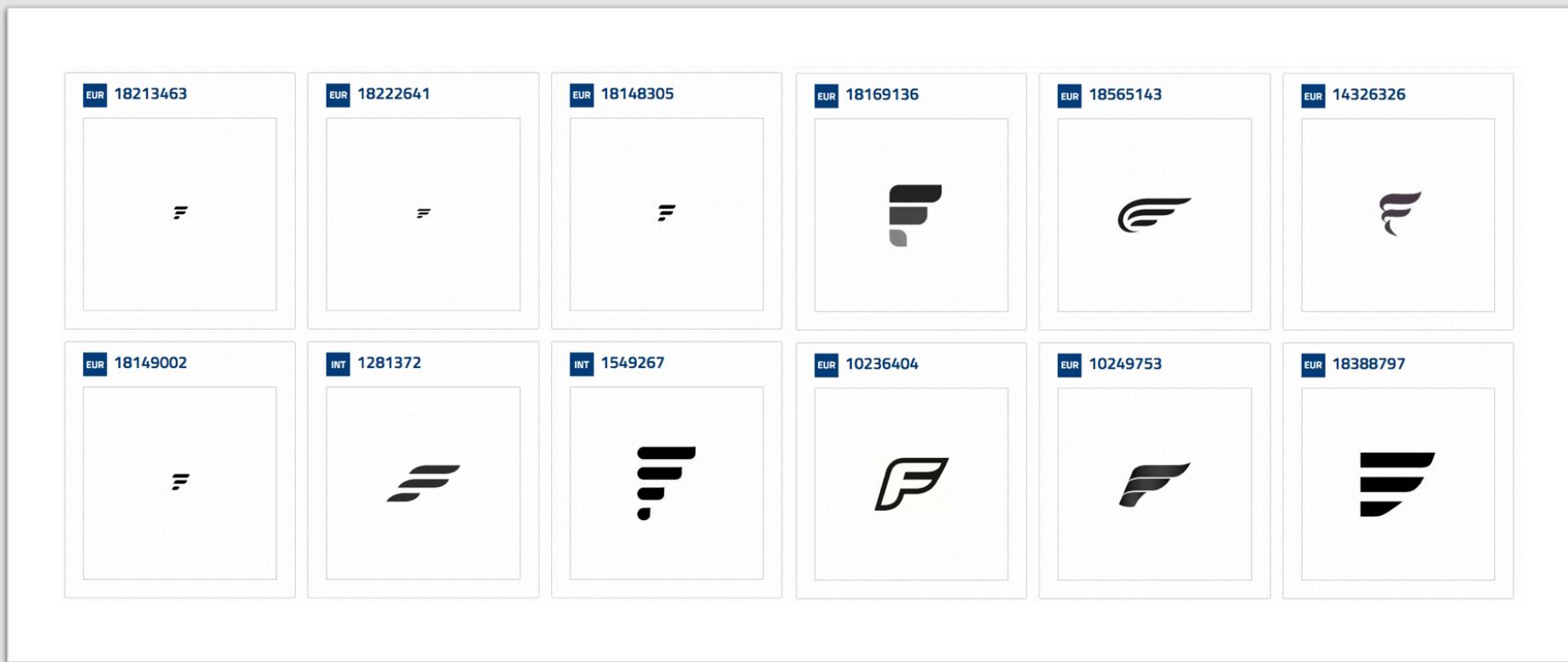
Opposition  
No B 3 126  
137



Earlier trade mark



Contested sign



BOIP

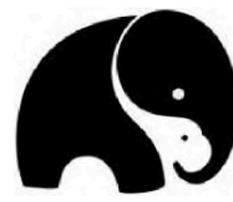


EUIPO

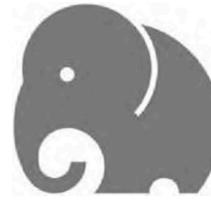


WIPO (concept filter)

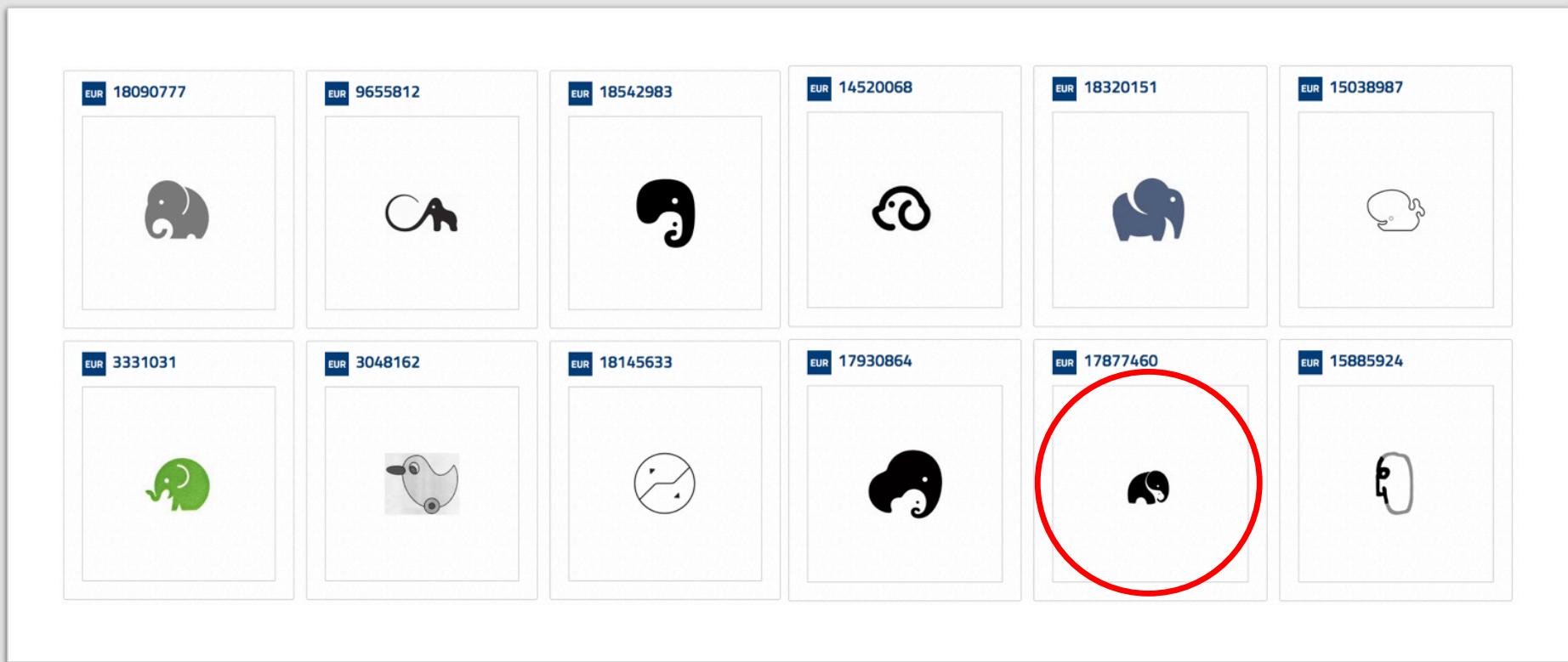
Opposition  
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202



Earlier trade mark



Contested sign

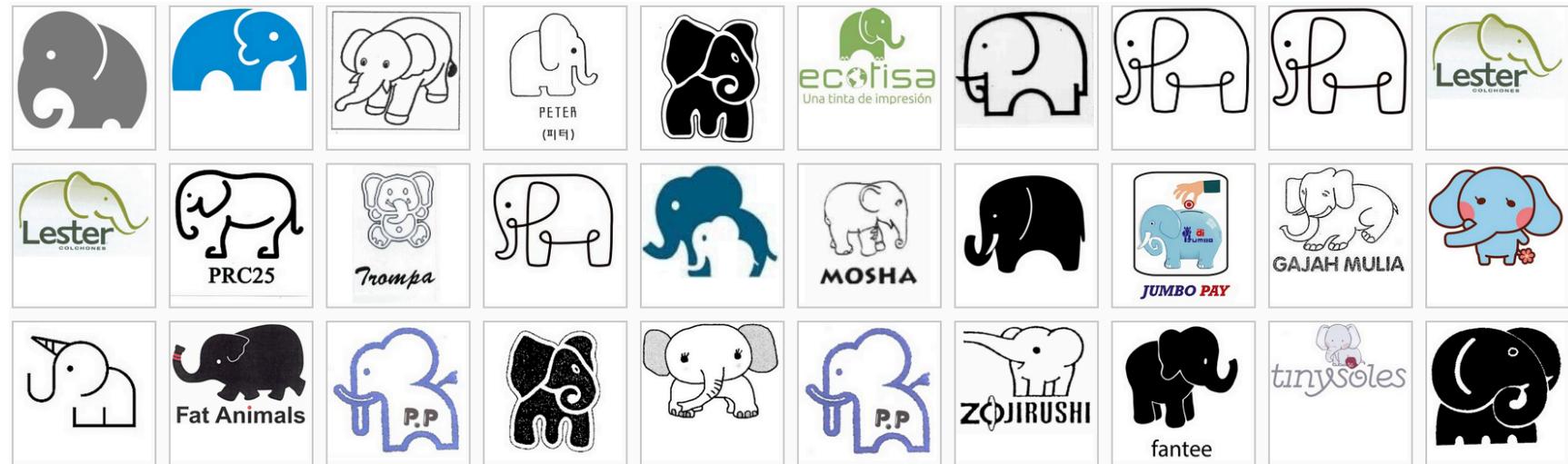


BOIP



Correct match : 649

EUIPO



## WIPO (concept filter)

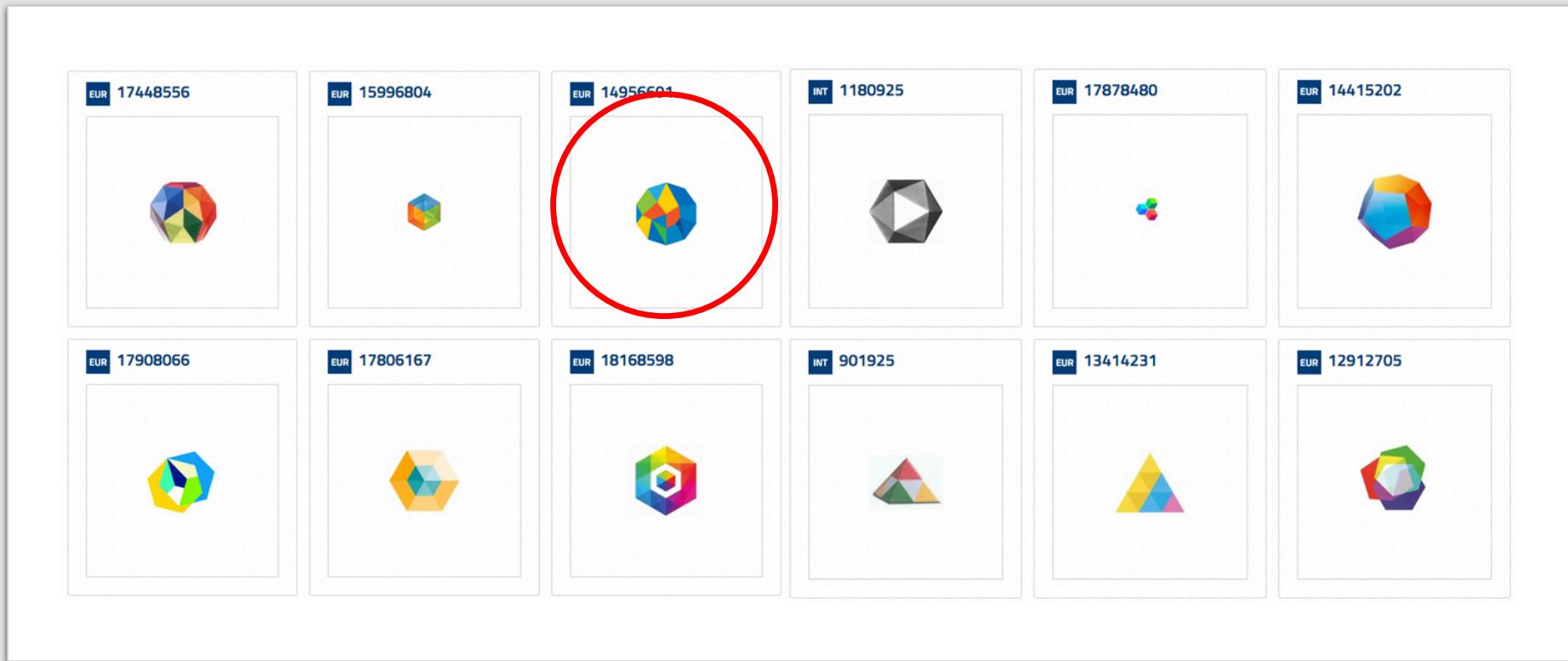
Opposition  
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564



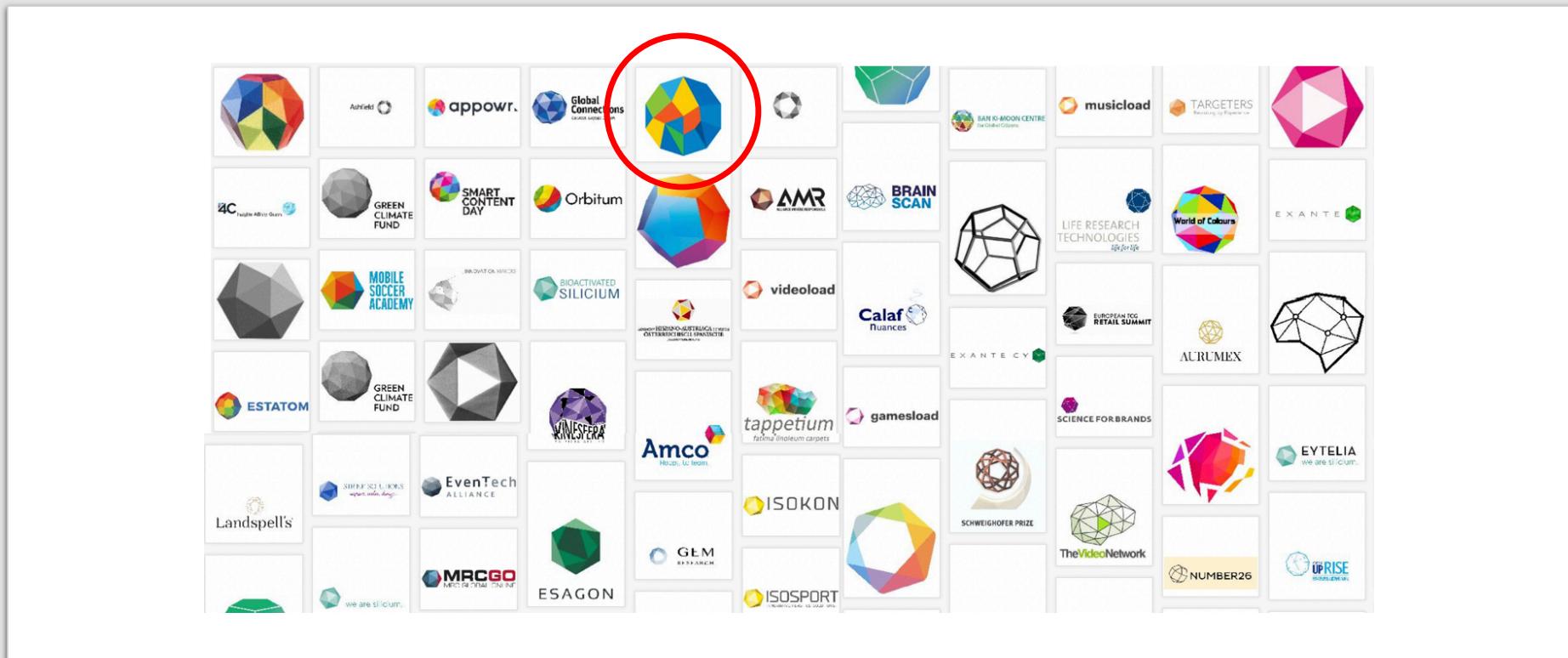
Earlier trade mark



Contested sign



BOIP



EUIPO



Correct match : 218

## WIPO (concept filter)

Opposition  
No B 3 059  
743

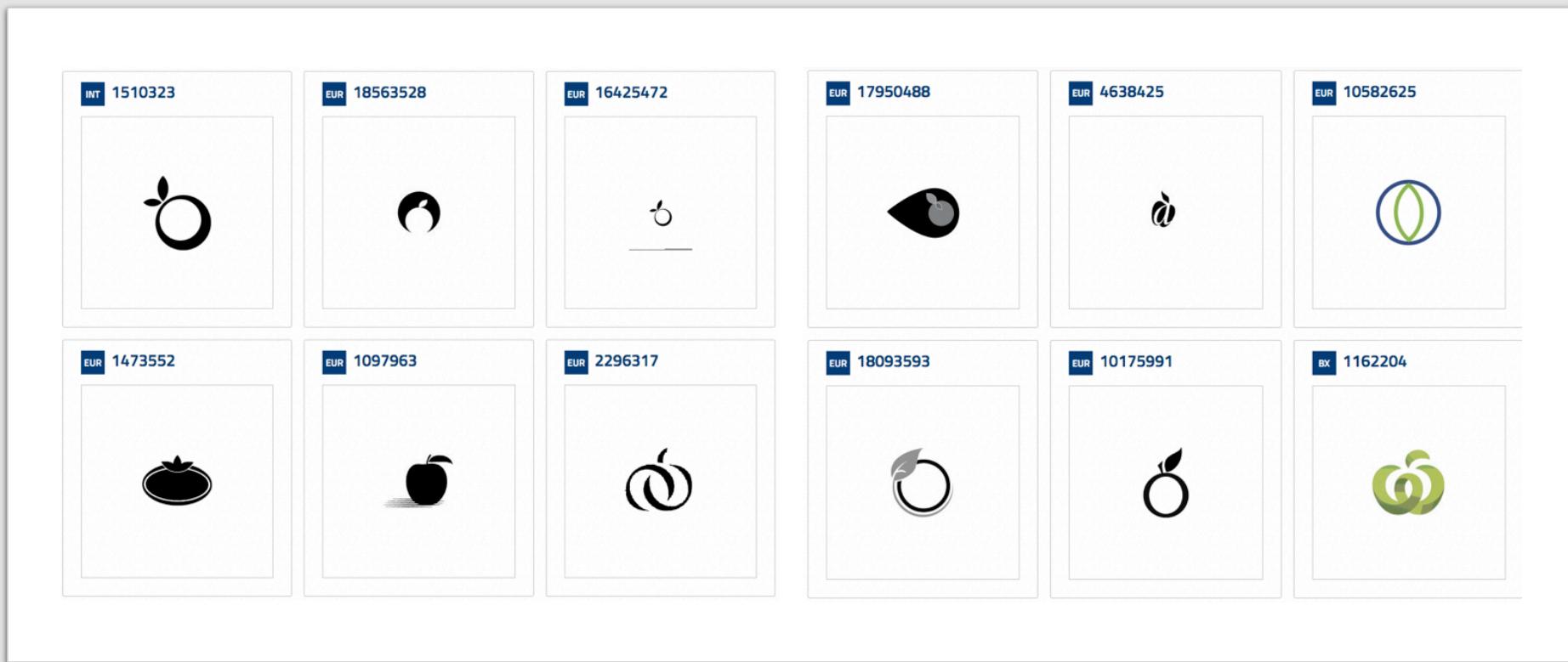


Earlier trade mark



Contested sign

// Moerland & Freitas 2021 : ‘This test [conceptual similarity] used the Apple, Inc. logo to identify similar signs for food products and computers. In fact, all tools performed well in Test 2’



BOIP



EUIPO

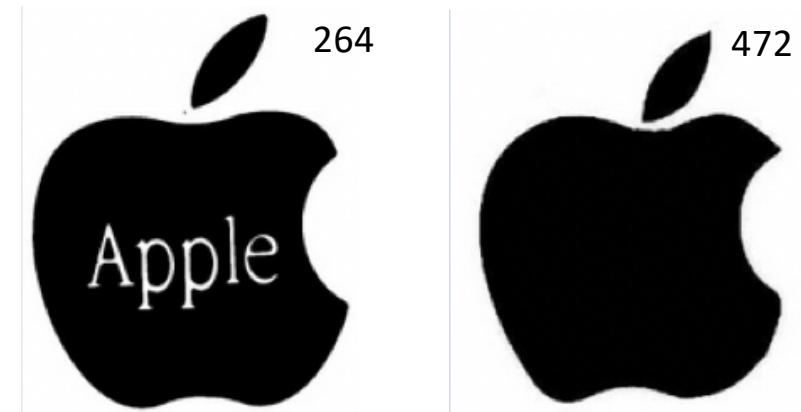
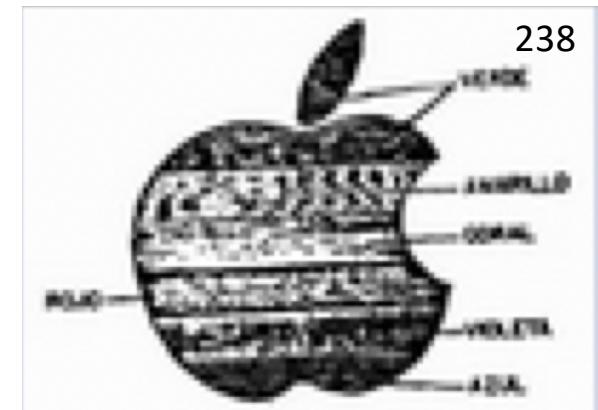


Correct match: 472

## WIPO (concept filter)

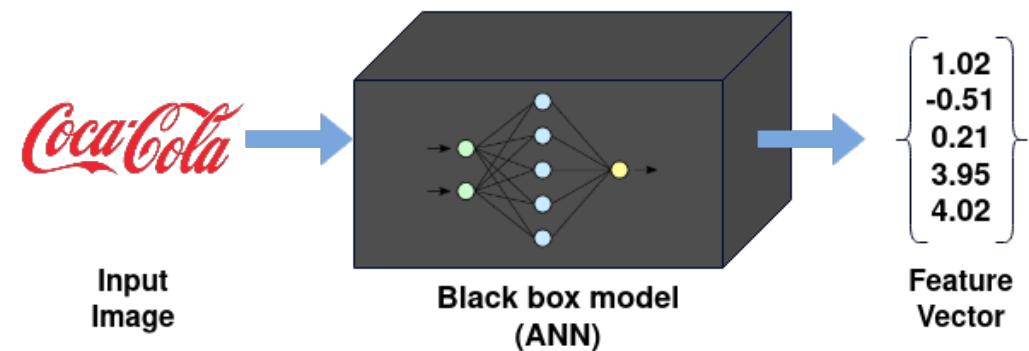
# Exploratory research

- General assessment:
  - Very different outcomes
  - Noise (false positive)
  - Far from LoC (false negative)
  - Surprising results
    - Ex. Apple correct matches in WIPO's tool: 238 (Spain), 264 (Corea), 472 (North Macedonia) !
- Why? How?
  - // Katyal & Kesari 2020 (about private search tools):  
*'(...) we do not know the exact mechanics of how each search engine defines similarity or the the treshold that each chooses when optimizing information retrieval'*



# State of the art

- Technology: Deep Learning
  - Leverages massive amounts of data to automatically learn complex relationships
  - **But :**
    - Requires big (labeled) datasets
    - Reflects the data used
    - Black box : No insights of the inner workings



# State of the art

- Data: METU Dataset (Tursun & Aker & Kalkan 2017)
  - ‘Best’ current publicly available TM dataset
    - Training set sorted in three categories: Text, Figure, Both
  - Current standard in academia for Trademark Retrieval tasks
  - Criticism:

*(...) The first version included 930,328 logos, 320 of which belonged to a “query set” for which an **expert** had identified similar logos already. (...) The test-part of the dataset is provided by the patent office “**Grup Ofis Marka Patent A.S.**”, and query set is constructed through collecting and enriching trademark **infringement cases** appearing in the market’*

# State of the art

- Deep Learning for figurative TMs
  - Using either :
    - Knowledge transfer (Use a model trained on another task)
    - Weak Learning (Use weak labels, e.g. Vienna Codes)
  - Both approaches seem wrong : No legal aspect of TM similarity (LoC)
  - E.g. Tursun & others 2019
    - Uses an off-the-shelf CNN, trained on natural images
    - Removes the text from trademarks to increase performances

# Challenges and concerns

- Bias in data
  - // Moerland & Freitas 2021: ‘(...) when teaching an AI to establish a pattern of similarity of signs, one could easily ascertain a similarity between two signs, while someone else would not. Even if **case law regarding similarity of signs** is used as training data, courts sometimes come to **different outcomes** for the same cases’
- Bias in design
  - // Ganjee 2021: ‘Algorithms may also find patterns which are ‘valid’ but **not causally related** in a **meaningful way to the rules of trademark law**’
- Bias in use
  - // Fobbe 2020 (Head of legal content, Darts-ip): ‘Personally, it is not the artificial intelligence that I fear, but the use that practitioners could make of the tools. The abandonment of **critical thinking when faced with a statistics bar**, for example’

# Challenges and concerns

- Solutions “at scale” are here to stay, subjectivity and **biases in data** too...
- => Fixing subjectivity and **biases in the design and use of algorithms?**
  - Biases in design
    - Engineering framing
      - Ex: text removal in METU dataset
    - Lawyer framing
      - Ex: ‘expert’ similarity in METU dataset
  - Biases in use
    - Automation biases
      - // art. 14(4)(b) AI Act: ‘possible tendency of automatically relying or over-relying on the output produced by a high-risk AI system’
    - Specific biases to IP similarities assessment
      - Balganesh & Manta & Wilkinson-Ryan 2014 (Copyright); Manta 2007 (TM)
- => Concerns as to ‘**under**’ and ‘**overenforcement**’

⇒ FAIR TRIAL

// Steponenaite & Valcke 2020  
// GC case law on probative value of surveys, i.a. T-261/17

⇒ FAIR BALANCE

//CJEU case law

# Avenues: bridging the gap

- IPSAM: Academic engineers and lawyers working together, attempt towards
  - ‘Law By Design’
    - Safeguarding public values associated with IP (// Elkin-Koren 2017 ; Lambrecht 2020)
  - ‘Explainable AI’
    - ‘Transparency’ rather than elusive ‘explicability’ (// Katyal & Kesari 2020)
- Expected contribution to SOTA
  - TM Dataset: BOIP, rather than METU
  - Assessment Model: Combining Computer Vision/Case Law
- Expected contribution to IP regulation
  - Benchmarking
    - // Katyal & Kesari 2020: ‘(...) one way forward in studying risk assessments in the law is to evaluate the outputs of AI models’
    - From exploratory research to systematic analysis and comparison with IPSAM
  - Critical analysis of IP rules and related technologies
    - Towards limiting biases in design/use

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Many thanks for your attention, comments and questions !

[julien.cabay@ulb.be](mailto:julien.cabay@ulb.be)

[thomas.vandamme@ulb.be](mailto:thomas.vandamme@ulb.be)

[olivier.debeir@ulb.be](mailto:olivier.debeir@ulb.be)

<https://www.ulb.be/fr/arc/arc-research-project-ipSAM>