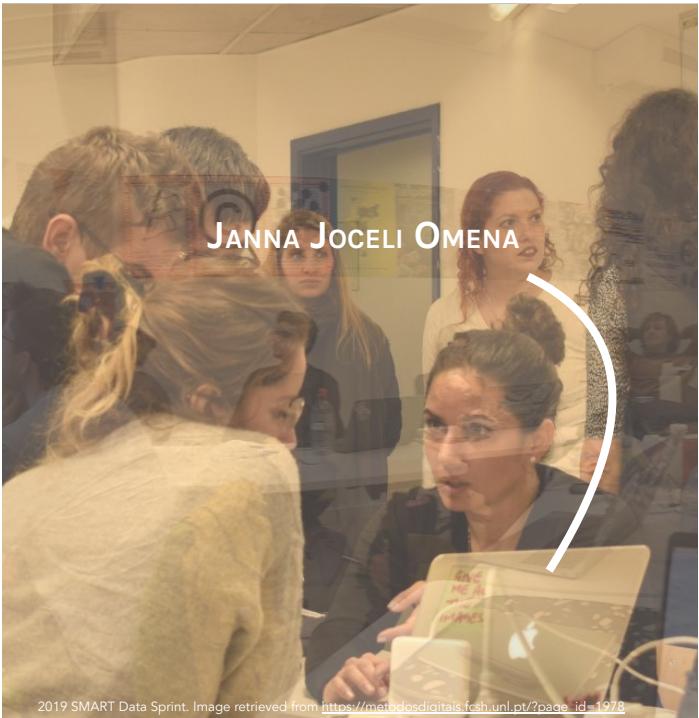


Co-Developing Software for Digital Methods

On Technical Expertise in Methodological
and Software Development

Janna Joceli Omena

Lecturer in Digital Methods
Department of Digital Humanities
King's College London



Lecturer (Assistant Professor) in Digital Methods ❤️👩‍💻✨✨

- Understand the **epistemological dimensions** of AI, web technologies, digital objects, and research software in designing and implementing methods and their role in research and knowledge production.

- Explore the **practice and theory of digital methods** to **develop accessible and reproducible methodologies**, supporting collaborations that create **research software** for analysing visual media content and online data.

2016-2023: Digital Methods School & Sprint in Lisbon, Portugal.

#SMARTDataSprint

<https://metodosdigitais.fcsh.unl.pt/> [#SMARTDataSprint history in gifs](#)

2023

Cross Vision-API Studies



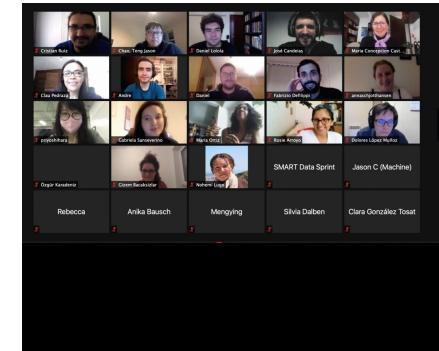
2022

Discussing Methods Making



2021

The current state of platformization



2020

Digital methods:
Theory-Practice-Critique



2019

Beyond Visible Engagement



2018

Interpreters of Platform Data



2017

What is the data journalism
debate on social media?



Images retrieved from <https://metodosdigitais.fcsh.unl.pt/>

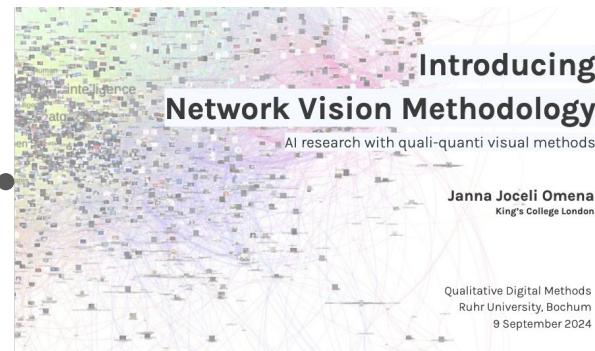
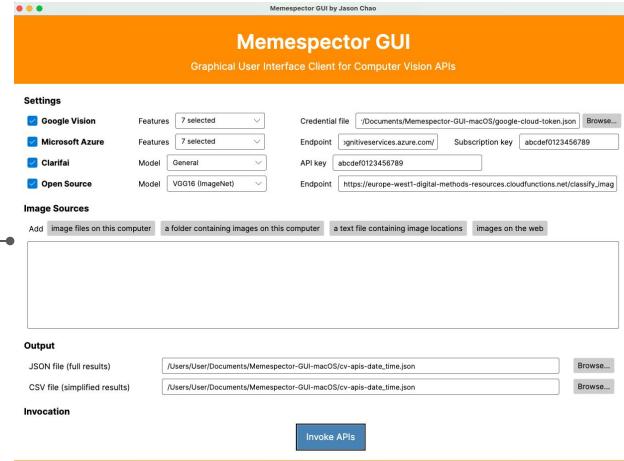
Situating this talk

Digital methods researcher



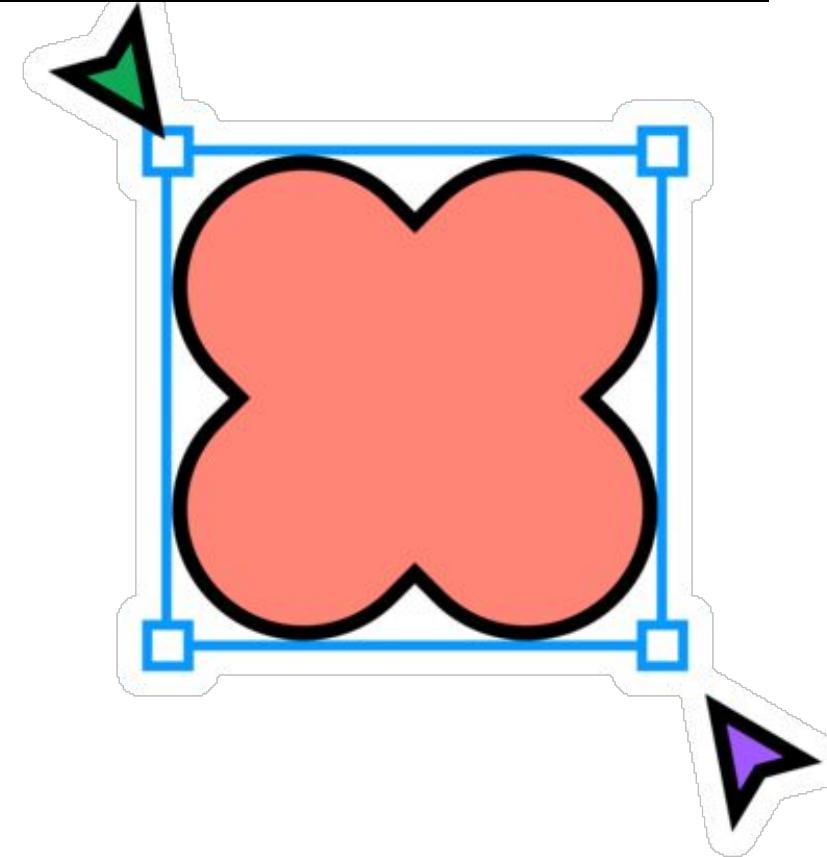
Technical expertise in Methodological and Software Development

Research software developer



Situating this talk

The Collaboration Constellation: brilliant colleagues ✨💻❤️



Gif by @Figma

Co-Developing Software for Digital Methods

On Technical Expertise in Methodological and Software Development

1 Memespector-GUI

2 Phases of collaborative research

3 Current methodological demand

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Memespector-GUI

Graphical user interface for invoking multiple Vision APIs

The screenshot shows the Memespector GUI application window. At the top, it displays the title "Memespector GUI by Jason Chao". Below the title, the main header reads "Memespector GUI" and "Graphical User Interface Client for Computer Vision APIs".

Settings

Four API providers are listed with their configuration options:

- Google Vision**: Features dropdown set to "7 selected". Credential file: "/Documents/Memespector-GUI-macOS/google-cloud-token.json".
- Microsoft Azure**: Features dropdown set to "7 selected". Endpoint: "ognitiveservices.azure.com". Subscription key: "abcdef0123456789".
- Clarifai**: Model dropdown set to "General". API key: "abcdef0123456789".
- Open Source**: Model dropdown set to "VGG16 (ImageNet)". Endpoint: "https://europe-west1-digital-methods-resources.cloudfunctions.net/classify_imag".

Image Sources

Add buttons: "image files on this computer", "a folder containing images on this computer", "a text file containing image locations", and "images on the web".

Output

JSON file (full results) dropdown: "/Users/User/Documents/Memespector-GUI-macOS/cv-apis-date_time.json". Browse... button.

CSV file (simplified results) dropdown: "/Users/User/Documents/Memespector-GUI-macOS/cv-apis-date_time.json". Browse... button.

Invocation

A large blue button labeled "Invoke APIs".

User Manual and **About** links are located at the bottom right of the window.

Developed by Jason Chao in late 2020.
Idea generation by Janna Joceli Omena.

Total Downloads 1,483

<https://tooomm.github.io/github-release-stats/?username=jason-chao&repository=memespector-gui>

Chao, J. (2021). Memespector-GUI: Graphical User Interface Client for Computer Vision APIs (Version 0.2.5) [Computer software]. <https://doi.org/10.5281/zenodo.7704877>



Jason Chao

research software developer & human rights advocate

Links

- [Blog/Archive](#)
- [GitHub](#)
- [Facebook](#)
- [Twitter](#)
- [LinkedIn](#)

Contact information

chao@jasontc.net [@jasonchao](https://twitter.com/jasonchao) [+13026001617](tel:+13026001617)

About

Experience in tech



Experience in human rights advocacy



Roles in civil society organisations



Education



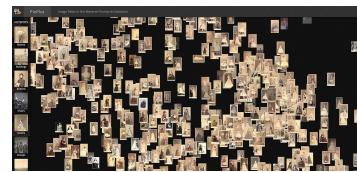
<https://jasontc.net/>

Software Development and Tool-Making for Visual Media Analysis: a historical overview

Launch date | Creators | Purpose



ImageJ



Retina

A free open source web application to share network visualizations online, developed by OuestWare.

Memespector-GUI | *interact with various computer vision APIs* Offline Image Query and Extraction Tool

A cross-platform client for computer vision APIs with a graphical user interface, developed by Jason Chao. It extracts a group of images from the original and creates a new folder, facilitating the analysis of the selected images, developed by Jason Chao and Janna Joceli Omena.

(1) ImageSorter |

(2) PixPlot | *Visualize large image collections interactively*

(1) Image visualisation software developed by Visual Computing Group. Pixplot uses a pre-trained convolutional neural network for image captioning, developed by DHLab. (2) Facilitates the dynamic exploration of tens of thousands of images. Uses the a pre-trained convolutional neural network for image captioning.

Image t-SNE Viewer | *analyse images w/ the t-SNE algorithm*

Embeds a set of image files in 2D using t-SNE, placing images of similar content near each other.

Image Preview (Gephi Plugin) | *image networks*

Wikipedia Cross-Lingual Image Analysis

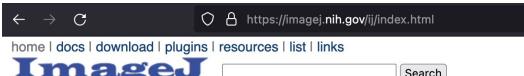
Network visualisation, exploration and manipulation software. A tool that scrapes all the images of each language version of a Wikipedia URL and show them side by side in a table for comparison.

ImagePlot macro | *cultural data trends*

Custom programming scripts that automate tasks inside ImageJ, developed by Software Studies Initiative

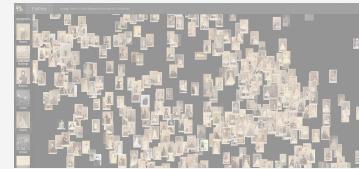
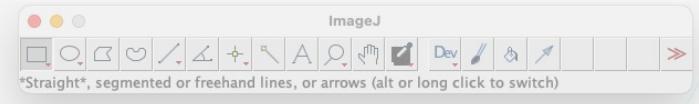
ImageJ | *biomedical image analysis and manipulation*

Image processing and analysis software that was developed by Wayne Rasband at the National Institutes of Health (NIH)



Software Development and Tool-Making for Visual Media Analysis: a historical overview

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2017

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2012

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2011

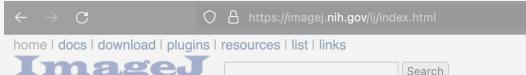
ImagePlot macro | *cultural data trends*

Custom programming scripts that automate tasks inside ImageJ, developed by Software Studies Initiative

1997

ImageJ | *biomedical image analysis and manipulation*

Image processing and analysis software that was developed by Wayne Rasband at the National Institutes of Health (NIH)



The ImageJ website has moved to [ImageJ.org](https://imagej.org).

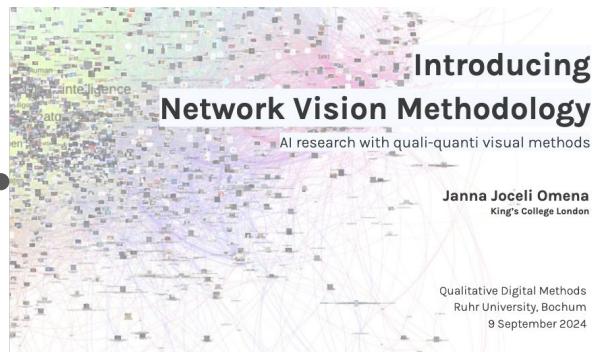
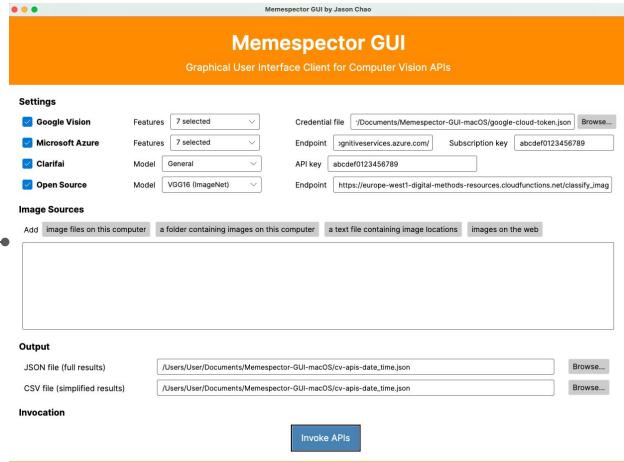
Developed at a pivotal moment,
**Memespector -GUI is associated with
reproducible methodologies** by helping make
the computer vision network and other digital
methods more accessible to researchers.

Digital methods researcher

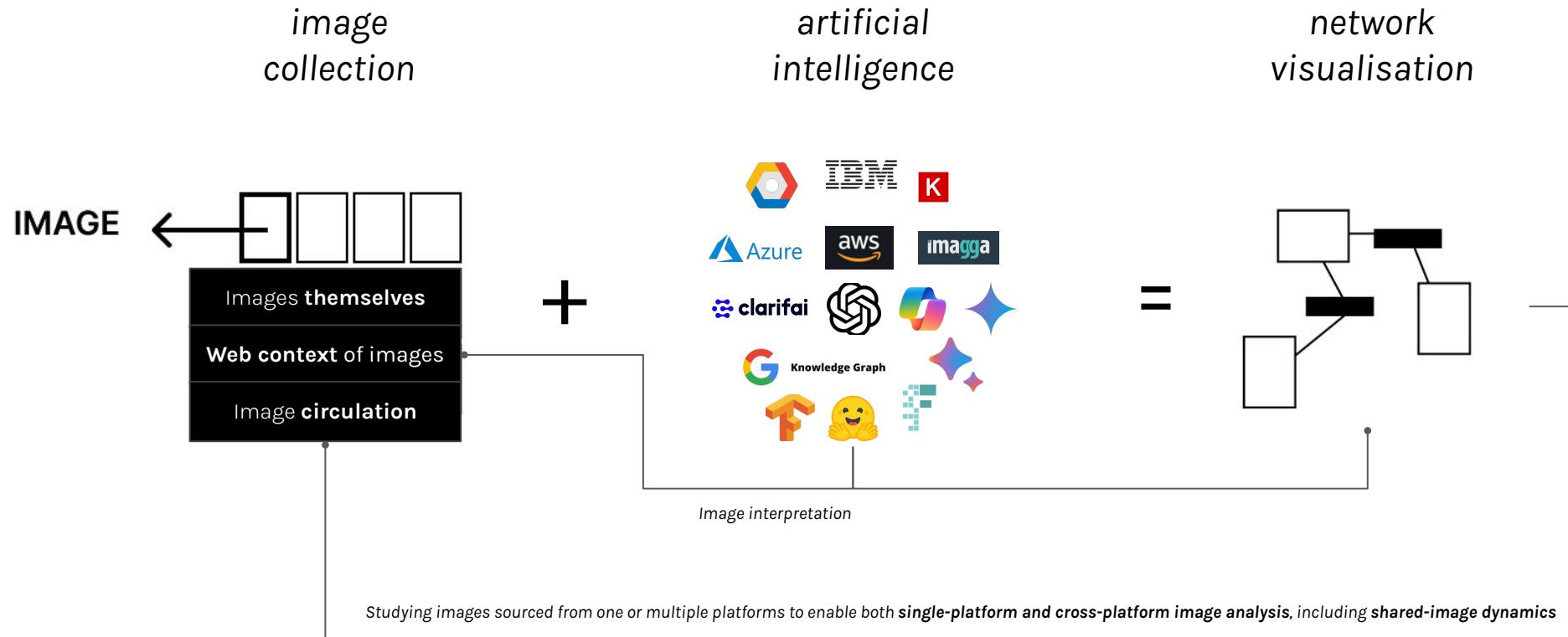


Collaborative Methodological and Software Development: Reproducible Digital Methodologies

Research software developer



OVERVIEW



Network of AI generated **biodiversity** images and associated labels/entities focus on the representation of biodiversity across models

Network Building

Nodes as computer vision outputs (labels and entities) and images generated by multiple AI image generative models > **image node**
attribute: Generative Visual AI models

Network reading

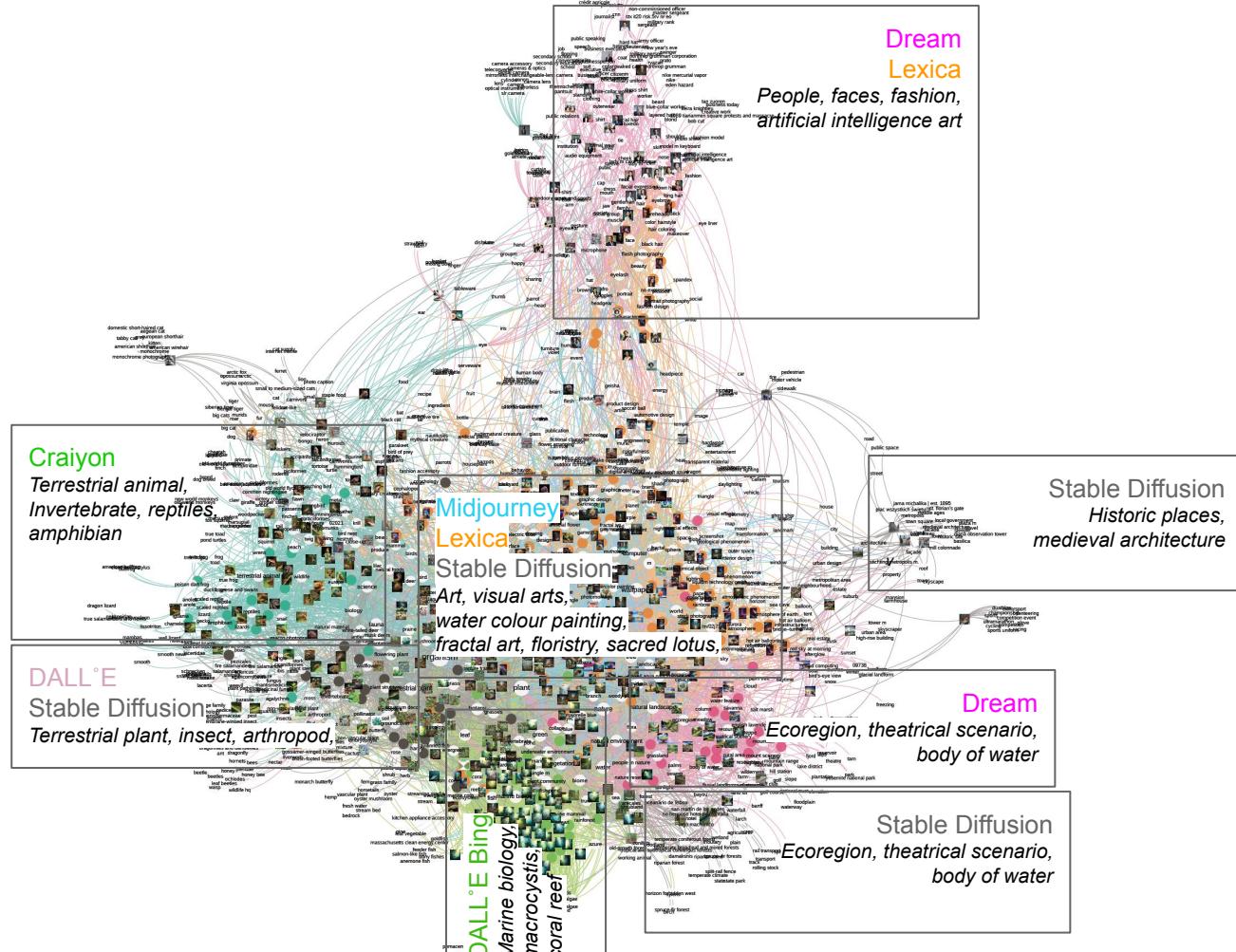
Images are clustered by similar visual content and colours shows which models images were generated by

n/a	(61.92%)
dallebing	(6.11%)
midjourney	(6.11%)
stablediffusion	(6.11%)
lexica	(6.05%)
dream	(5.99%)
craiyon	(5.26%)
dalle	(1.22%)
adobefirefly	(1.22%)

Network centre shows dominant labels and entities describing a good proportion of AI generated images

Network periphery and mid-zones reveals the particularities of generative Visual AI models and what these have in common

July, 2023



Online visual media are constructs of social meaning and monetisation, and they serve to uncover socio-cultural trends

On social meanings and monetisation

Visual media shape everyday communication and interaction

Central to meaning-making and content monetisation

(Highfield, 2016; Abidin, 2016; Leaver, Highfield and Abidin, 2020)

On understanding cultural trends and social dynamics

Reveal patterns and trends in big-data cultural visual media

Help understanding online cultures and social dynamics

(Manovich, 2020; Rogers, 2013)

The battle of images is over.

The **digital image** is the new medium of social life structured in networks, its **environment, before being a medium conveying a message or constituting its own content** as a medium.

The Milieu is the Message.

Digital Materialities and the New Theatre of Visual Operations

by Béatrice Joyeux-Prunel
David Zerbib

department	arts visuels
type	publication de recherche
media	texte
subject	numérique, philosophie, technique
published on	july 15, 2024
quote	Béatrice Joyeux-Prunel, David Zerbib, "The Milieu is the Message. – Digital Materialities and the New Theatre of Visual Operations ", <i>Issue</i> , july 15, 2024
permalink	https://www.hesge.ch/head/issue/en/publications/milieu-message-beatrice-joyeux-prunel-david-zerbib
licence	CC BY-SA 4.0

This article officially introduces Memespector-GUI and presents Network Vision Methods as reproducible.

Diseña 19

The Potentials of Google Vision API-based Networks to Study Natively Digital Images

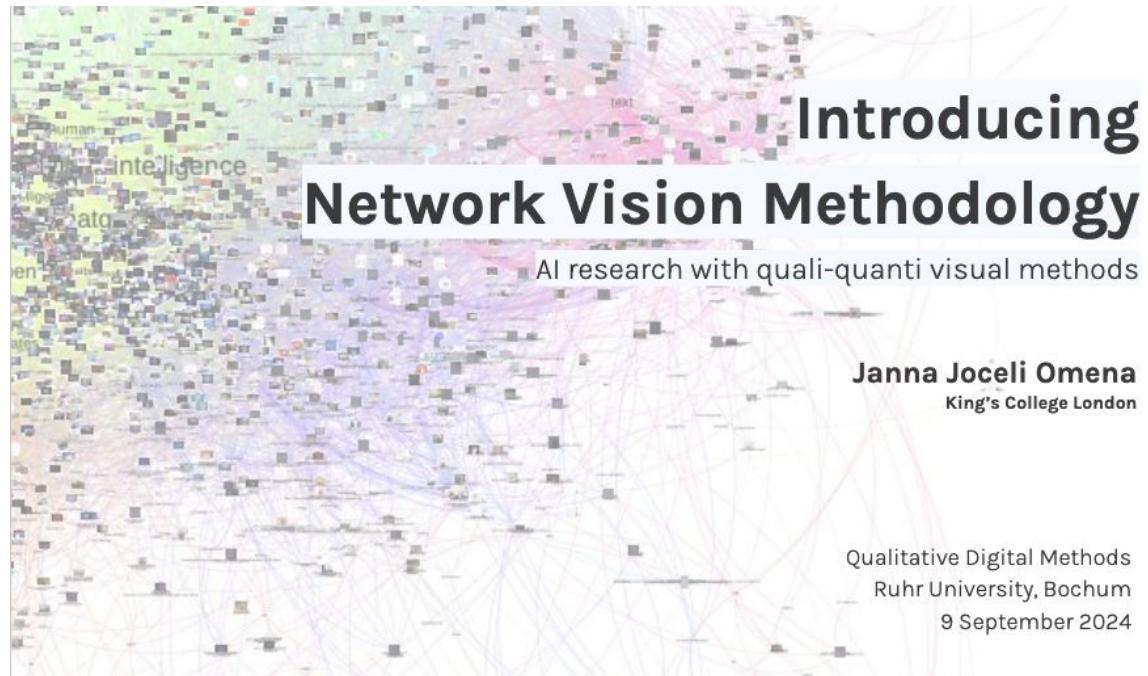
How to cite this article: Omena, J. J., Pilipets, E., Gobbo, B., & Chao, J. (2021). The Potentials of Google Vision API-based Networks to Study Natively Digital Images. *Diseña*, (19), Article 1. <https://doi.org/10.7704/disenae.19.Article.1>

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Original Research Article
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JAN 11 2021
Acceptance ☐
JUL 08 2021

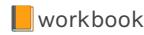
Traducción al español aquí

Janna Joceli Omena
Center for Advanced Internet Studies (CAIS)
Elena Pilipets
Universität Klagenfurt
Beatrice Gobbo
Politecnico di Milano
Jason Chao
Universität Siegen



DOI: 10.13140/RG.2.2.12658.52160

Workbook and
worksheets for
building visualising
and narrating
computer vision
networks



workbook
<https://bit.ly/network-vision-methodology> (seminal proposal)



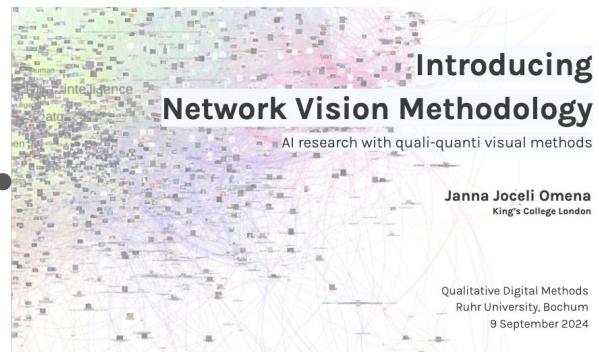
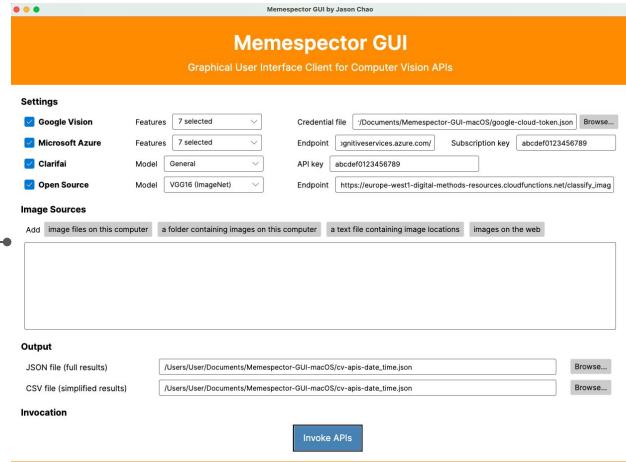
worksheets
<https://bit.ly/network-vision-methods>
<https://bit.ly/VisionAI-worksheet>
[Digital Methods: Repurposing GenAI Visual Outputs](#)

Digital methods researcher



Collaborative Methodological and Software Development: **Cross-Disciplinary Impact**

Research software developer



 Articles

About 35 results (0.07 sec)



Articles

About 35 results (0.07 sec)

Peer-review publications, developing studies in the context of

 Using Memespector-GUI (Chao, 2021) Adapting network vision methods (Omena et al. 2021)

Von-Polheim, P., Cano-Orón, L., & Vengut-Climent, E. (2023). **Types of discourse disseminated by food influencers: Trends on Instagram in France, Germany, Italy, Spain, and the United Kingdom.** Information Professional , 32 (6). <https://doi.org/10.3145/epi.2023.nov.18>

Xiao, F. (2023). "We are snowflakes": **Minor transnationalism and the cultural resilience of slash fanfiction community in China.** Global Media and China, 8(4), 480-505. <https://doi.org/10.1177/20594364231188350>

Alfenas de Mattos, R., & Martins Rosa, J. (2022). **#Legislativas2022: As Apropriações da Hashtag no Instagram nas Eleições Portuguesas de 2022.** Revista Comunicando, 11(2), e022021. <https://doi.org/10.58050/comunicando.v11i2.292>

Lavrov, I.; Schranz, F.; Miozzo, C. & Palaffre, M. (2022). **Visual Communication strategy of populist leaders on Instagram in 2020.** Dígitos. Revista de Comunicación Digital, 8: 155-177. DOI:10.7203/drddcd.v1i8.238

Peer-review publication, theorizing social network analysis

Theoretical paper based on
network vision methods (Omena et al. 2021)

Herms, K. & Lehmann, J. (2025). **Seeing Like a Field?** Swiss Journal of Sociology, 51(2). DOI: <https://doi.org/10.26034/cm.sjs.2025.6906>

PhD dissertations

PhD dissertations:
Oliveira, F. R. (2023). **As fake news e a produção jornalística de referências.** Retrieved from <https://repositorio.ufba.br/handle/ri/37610>

Vasconcelos, E. L. (2024). **Análise de visualidades jornalísticas: aplicação de métodos digitais na pesquisa com imagens em jornalismo.** Retrieved from <https://repositorio.ufba.br/handle/ri/39735>

When a research software engineer and a digital methods researcher **speak each other's language**, it's not just collaboration — it's **infrastructure for reproducible, applied, and methodologically aware** research.

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1 Memespector-GUI

2 Phases of collaborative research

3 Current methodological demand

Co-Developing Software for Digital Methods

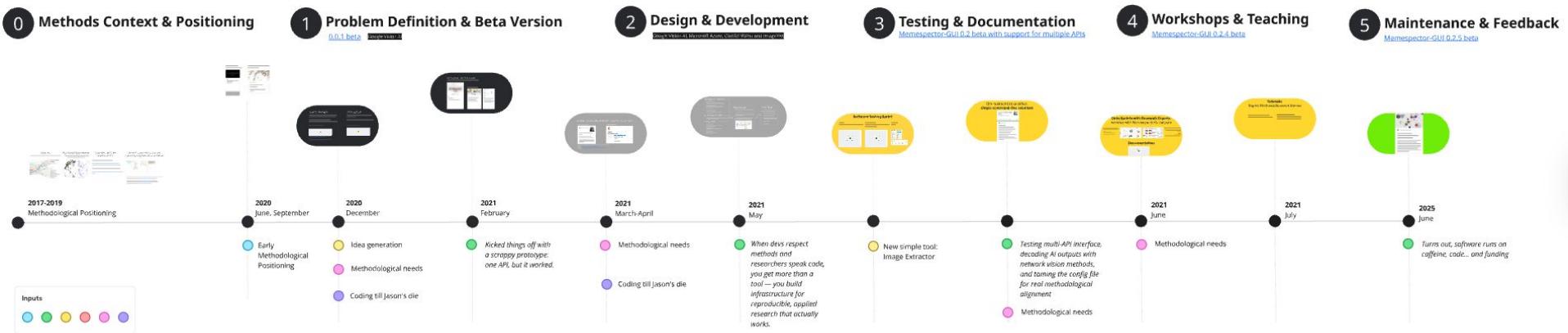
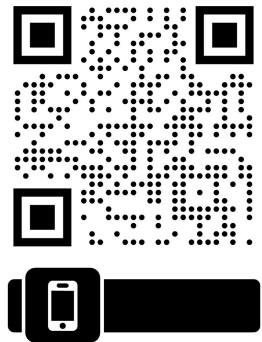
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Memespector-GUI: Phases of Collaborative Research Software Development



Co-Developing Software for Digital Methods

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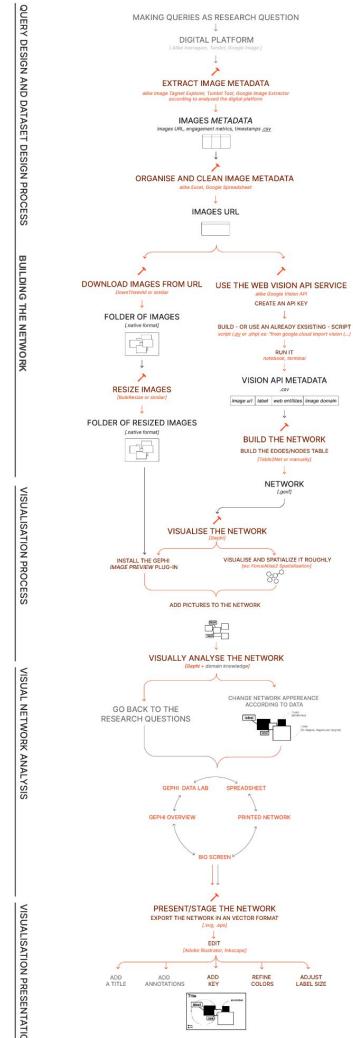
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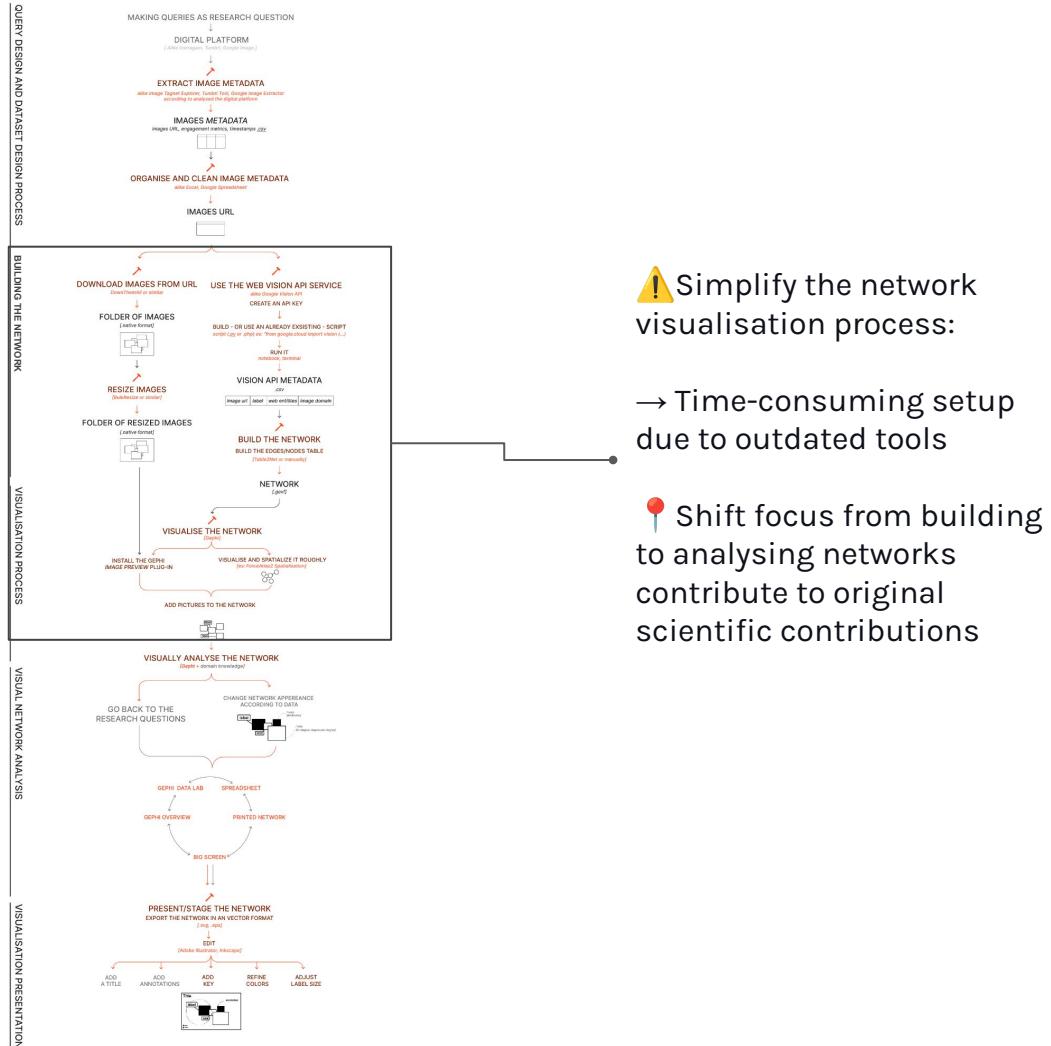
How are network vision methods employed to analyse image collections?



How to read

- researcher intervention
- computational medium
- software output
- technical practice

What are the current methodological demand?



Future steps: Invited Research Fellowship

project

LLMs and Digital Methods Research

- Exploring CLIP Models and Web Search Integration
- Developing Reproducible Python Notebooks with CLIP Models and Web Search Integration.

• **University of Münster**
Center for Digitized Public Spheres Research
<https://www.uni-muenster.de/ZEDOE/en/index.html>

JUN. PROF. DR. JAKOB JÜNGER

Junior professor
Spokesperson of [Center for Digitized Public Spheres Research](#)

Department of Communication

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②Bispinghof 9-14
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Tel.: +49 251 83-21273
✉ jakob.juenger@uni-muenster.de



<https://github.com/strohne/Facepager>

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Thank you (:

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