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PANEL: SHIFTS IN SOCIALLY MEDIATED VISUAL CULTURES: IMAGES BY/FOR MACHINES AND HUMANS

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While “visual turns” have been pointed to before (Mitchell 2005), and claims of those are often indicators of moral panics surrounding new technologies, rather than shifts in visual culture, recent scholarship has noticed significant changes in the scope and form of images generated and circulated through automated and non-automated practices. Nicholas Mirzoeff (2015) goes as far as to say that one of the most notable uses of the internet is to create, send and view images of all kinds; that the global society is emerging as visual; and that networked publics are moving towards more intense forms of visual interaction. In a similar, if somewhat narrower approach, Martin Hand (2013) has argued, that photography has become ubiquitous in today's world. He means here

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both the explosive increase in the numbers of images taken, but also the fact that some aspects of photography have become woven into the very “fabric of information technologies and economic, social, political and cultural forms” (Hand 2013: 12). He claims that this has resulted in a standardized visual landscape, “where the majority of digital images are ordinary and mass-produced (…) but photos are still meaningfully produced, used and interpreted very differently among social groups and communities of practice” (ibid). In a recent, jarring essay on the role of machine learning and algorithms in visual culture, Trevor Paglen (2016) astutely notes, that visual culture has changed form by detaching from human eyes and becoming invisible. “The overwhelming majority of images,” Paglen writes: “are now made by machines for other machines, with humans rarely in the loop.”

This panel brings together five scholars of visuality to engage with the above-mentioned shifts in (socially mediated) visual culture to analyze different visual practices and rhetoric of visuality used by or influencing different networked publics (boyd 2010). In doing so, we follow Mirzoeff’s (2015: 68) call: “The interest for us is not in the specific platform but the development of a new visual conversation medium” and the practices, norms and rhetoric surrounding the meanings and implications of that visual conversation. Our analyses look at different groups, practices and discourses, but all come back to the central question of how visual culture is enacted, made sense of and regulated in both automated and manual, algorithmic and intimate, professional and vernacular ways.

The first two papers in our panel engage with how everyday users experience, enact and understand the properties, affordances and structures of visual social media apps. The first presentation asks how young people, for whom Instagram and Snapchat are important arbiters of networked visuality, articulate their own visual practices, and how they frame and situate these two visual apps in the flows of their networked lives. The second presentation asks what the visual conversational practices of German Snapchatters are, and analyzes Snapchat’s distinctive aesthetics and visual affordances.

Since social media apps are increasingly used to send and view photographs, our third presentation explores one apparent paradox concerning digital photography. It asks whether professional photographers, for whom a conventional understanding of photography is of importance, can distinguish digital photographs from photorealistic computer-generated images by looking at them on a computer screen? Their inability to do so has implications for our understandings of digital photography, which our fourth presentation discusses, by stepping outside of human-to-human visual culture and engaging with automated aspects of visual culture. Algorithms are constantly tasked with interpreting social media images that carry multiple social functions and meanings for people creating and uploading them. Thus this presentation asks how deep learning algorithms used on social media images are used to predict gender of the uploader, and what the potential political, social and ideological implications of such data-driven categorizations are.

Finally, our fifth presentation zooms out and engages with the current state of networked visuality and internet mediated visual culture. It explores the shifts that visual

scholarship has been pointing to, the reason for those changes, and engages with what an image is in the age of the internet. It brings the panel to completion by offering an argument on why images seem so important.

References

boyd, d. (2010). Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications. In Papacharissi, Z (ed.). Networked Self: Identity, Community, and Culture on Social Network Sites. New York: Routlege, 39–58

Hand, M. (2013). Ubiquitous Photography: Digital Media and Society Series. Cambridge: Polity Press.

Mirzoeff, Nicholas (2015). How to See the World. Penguin Books Ltd. Kindle Edition.

Mitchell, William J 2005. What Do Pictures Want? Chicago – London: Chicago University Press.

Paglen, Trevor 2016. Invisible Images (Your Pictures are Looking at You). The New Inquiry. 8.12.2016. https://thenewinquiry.com/essays/invisible-images-your-pictures-are-looking-at-you/

DESIRABLE OR ACCURATE? BOTH, OF COURSE - MAKING SENSE OF SNAPCHAT AND INSTAGRAM

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This presentation focuses on how young people make sense of their own practices on and with visual social media apps. We take a networked publics (boyd 2010) approach, which means that to understand practices of socially mediated visuality, we need to understand the properties, affordances, and dynamics of visual social media. But affordances always refer to the potential of a given technology; they are socially constructed (Hsieh 2012), dependent on actor intentions (Majchrzak *et al*. 2013), or imagined (Nagy & Neff, 2015). Yet, how people make sense of visual apps and their affordances, shapes perceptions, practices and visual culture in the larger sense.

Snapshot practices have always had multiple functions – they help make memories, create and maintain relationships, and tell stories. Socially mediated images have added or scaled up photography's functions as social currency, for impression management and interaction (van Dijck 2008). Thus, affordances that are interpreted as fostering sharing (scalability, searchability and duplicability in boyd's 2010 model) lead to increased relevance of interactivity and relationality in how people make sense of their photographic practices. Further, specific platforms and apps have properties and affordances that are made sense of by users in different ways. Snapchat, with its ephemeral content and explicit control over audiences is experienced by users as a source of enjoyment (Bayer et al, 2016), whereas the affordances that foster attention economy (i.e. hashtagging and unidirectional following) on Instagram, make it particularly suitable for strategic impression management and self branding (Marwick 2013). Given the ubiquity of networked visuals, and their importance in constructing identities, social entities (i.e. families); attributing meaning or value to different categories or phenomena (i.e. what is beautiful, feminine) - it is important we understand how visual social media is made sense of by users.

Material, method, analysis

This presentation is part of a larger, collaborative project that analyses how college students make sense of their social media experiences. That project in turn is situated in one author's ethnographic study, where she trained young people to become ethnographers of their own social media experience. For this presentation we discursively analyzed eight people's multimodal (video, screen-captures, text narrative)

auto-ethnographic reflections (instant reflections, analytical narrative, field notes, interviews). The focus of these reflections, including which apps they explore, are choices made by participants themselves. Thus, we analyze how young people, for whom Instagram and Snpachat are important, make sense of and articulate their visual practices, and how they frame and situate these visual apps in their lives.

Discussion

In the following we present how our participants make sense of Instagram and Snapchat; how the affordances of both are explicitly and implicitly compared, and how the apps are rhetorically constructed as different yet important in their everyday lives.

INSTAGRAM	SNAPCHAT
Posting pictures on social media = posting images on Instagram. Instagram dominates what participants frame as "posting images on social media". Facebook profile pictures, or snaps are not experienced as such. The first is not framed as a "social media image", and the second not as "posting".	**Snapchat is a "communication platform"** used with everyone for all kinds of content and emotions. Snapchat is framed as choice platform to communicate with friends, family, acquaintances and (potential) lovers, about what the participants are up to, frustrated with, where they are, or anything in between. Snapchat has substituted other chatting apps, as well as the camera app.
Instagram has **permeated experiences of socially mediated visuality** to the extent where everyday life is viewed through and already created content measured against the lens of **"insta-worthy."**	**Snapchat is and seems casual**. Participants frame Snapchat as both allowing them to be, but more importantly, making them come across as more relaxed about their self-presentation.
There's nothing "insta" about Instagram. Posting to Instagram is framed as slow, calculated and painstaking. Images are chosen and edited based on assumptions about imagined audiences, comparisons to others' content, and preferred aesthetic.	Snapchat is framed as presenting participants and their lives in a **fairly accurate way,** but doesn't have a recognizable aesthetic, thus doesn't have the benefit of aestheticizing one's life.
Instagram is about strangers. Our participants have public Instagrams, which they acknowledge as reducing their ability to relax their self-presentation, but	**Insta-Snapchat.** Whether exchanging messages with friends or posting to My Story, Snapchat is framed as a **here- and-**

which they are reluctant to give up, as they enjoy aspects of the attention economy. “Stalking” and “discovering” content by strangers is articulated through a **dialectic of inspiration and envy**.	**now activity**.

Conclusion

Instagram is experienced and construed as an app where participation is effortful, driven by self-imposed rules, and occasionally depressing because of comparison to, and envy of strangers’ beautiful lives. Snapchat, in contrast, is experienced and construed as an app that is and seems casual and allows spontaneous, yet relaxed participation. Our participant Anna writes:

Instagram lets me portray my life in just the way I like it, how I know others like it, and in a way that is broadly accepted. On Instagram I am showing my desired life. However, I know it is not entirely accurate … I think that the identity cues I give via Snapchat might be the most accurate, since it’s both content about “the ugly truth,” and about the spectacular and special moments.

Yet, our participants do not frame either app as expendable. Instead, it seems, both are framed as important ways of visually experiencing their everyday lives. Why does there seem to be space for both, when Facebook, for example, was framed by participants as having completely lost its relevance for visuality? Returning to the framework of networked publics, it is worth asking, whether Snapchat and Instagram can coexist as relevant for the same user, because only one of them is (experienced as) a networked visual public (Instagram), while the other (Snapchat) might serve as something else. And what will happen as a result of Instagram incorporating My Story? Hjorth and Hendry (2015) proposed a transition from first-generation camera-phone practices or networked visuality (emphasizes sharing), to second-generations camera-phone practices or emplaced visuality (emphasizes place-making). Perhaps Snapchat could be positioned as another transition, a third generation of camera-phone practices for conversational visuality.

References:

Bayer, J.B, Ellison, N.B, Schoenebeck, S.Y., Falk, E.B. (2016). Sharing the small moments: ephemeral social interaction on Snapchat, *Information, Communication & Society,* 19, 7, 956-977.

boyd, d. (2010). Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications. In Papacharissi, Z (ed.). Networked Self: Identity, Community, and Culture on Social Network Sites. New York: Routlege, 39–58

Hjorth, L., & Hendry, N. (2015). A Snapshot of Social Media : Camera Phone Practices.

Hsieh, Y.P (2012). Online social networking skills: the social affordances approach to digital inequality. First Monday, 17, 4.

Majchrzak, A.; Faraj, S.; Kane, G.C; Azad, B (2013). The contradictory influence of social media affordances on online communal knowledge sharing. *Journal of Computer-Mediated Communication*, 19, 1, 38–55.

Nagy, P., & Neff, G. (2015). Imagined Affordance: Reconstructing a Keyword for Communication Theory. *Social Media + Society*, *1*(2), 1–9.

Van Dijck, J. (2008). Digital photography: communication, identity, memory. Visual Communication, 7, 57–76.

FILTERED FACES - AN INVESTIGATION OF SNAPCHAT'S AESTHETIC AFFORDANCES

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Ever since Snapchat's release in 2011, the number of the app's users is constantly growing. The platform tripled its number of daily active users from 50 M to 150 M from March 2014 to June 2016. It is the preferred social network of teens(in the US, and also hugely popular among this age group in Ireland, Sweden, Belgium, Canada and the UK (Statista 2016). Fair to say, it 'hit a nerve' - (at least a western nerve) - but which nerve? I would argue, that Snapchat as a platform and medium accelerates our understanding of visual media as being conversational and communicative. Visual media have actually always been communicative in a symbolic-interactionist-sense, but we rarely had the chance to immediately 'talk back' in visual ways to a renaissance painting or a family photo album. With the penetration of smartphones and their mobile networked cameras, visual communication became an everyday cultural technique. These visual conversational practices are also entangled with the structures and affordances of apps like Facebook, Instagram, WhatsApp, Vine, Prisma, Hipstamatic, EyeEm, VSCO, etc that amplified these practices (some more successfully than others). Visual communication is performed both in front of the camera with our bodies and facial expressions but also on the display, by editing and filtering these bodily expressions. To understand the technical and aesthetic affordances of Snapchat, it is crucial to take both levels of hardware and software into account. Inspired by recent methodic approaches (McVeigh-Schultz & Baym 2015; Schrock 2015; Hutchby 2014), this paper takes a closer look at the structural implications and communicative environments that Snapchat affords, with specific emphasis on visual and aesthetic conventions. Software co-constructs processes of editing, distribution, sharing, affirmation, etc. (Gillespie 2010; Kitchin und Dodge 2011).

Avoiding any techno-deterministic causal explanations and emphasizing the visuality of practices, I am using Belting's triadic model of the interrelation of body-medium-image (Belting 2005) as frame of analysis. Snapchat as medium and software is always understood as connected to the operating body and generated image. It seems particularly interesting how visual conversational practices play out aesthetically, as this visual layer is seldom investigated more closely.

As Snapchat always was and still is a mobile-only platform, its affordances are closely related to the mobility and ubiquity of the hardware (Hand 2012), usually a smartphone. This device allows you to be constantly connected. Through flat rate data plans, visual mobile communication became an affordable everyday practice (in Western Europe), not something elitist or extravagant (only for brief period). There are usually two cameras than can be used on a smartphone, the front-camera and the back camera. When opening Snapchat on your phone, the display first shows the little white ghost on a yellow background and then immediately shows you what is facing your front camera. Which is normally: your face. The app is designed to be used while you hold your phone upright, which means pictures and videos are generated in a portrait format. The portrait

format is, in the truest sense of the word, a format for portraits, usually of human faces (Belting 2013). The face is the starting point of visual conversational practice on Snapchat. The face has always been the most successful body part for communicating and showing ourselves in non-technically-mediated interactions, featuring a nearly endless and fine-tuned repertoire of possible expressions. Recent research on the ‚selfie' as multifaceted visual genre (Tiidenberg und Gómez-Cruz 2015; Warfield et al. 2016; Senft und Baym 2015) affirms the importance of embodied expressions for communication.

What is crucial for analyzing selfies in general and Snapchat in particular is to take into account the malleability of the digital photo (Hand 2012): Digital photos are actually accumulations of pixels that appear to us as pictures. They can be edited, transformed and altered. There is still a „practical ontological realism" (Hand 2012) ascribed to digital photos, and an especially Snapchat seems to be particularly authentic (this is also discussed and confirmed by the previous paper in this panel). Snapchat introduced some new visual conventions or ways of showing, regarding format (portrait), filters, bitmoji, etc. that are very different from what Instagram and Youtube allows users to do visually. The photo (or video) becomes the canvas for possible visual work: you can ‚paint' on the photo in different colors with your finger; add as many stickers (from a huge range of different styles and categories) as you want, add location and time information, etc. Many of these editing styles seem similar to earlier collage/assemblage techniques of scrapbooking (Good 2013).

In my paper, I will especially focus on the introduction of ‚selfie lenses', which was a huge success and important boost for Snapchat's popularity. Lenses allow users to augment, decorate or distort their faces (and voices) with a broad variety of things – animal ears, make-ups, hair wreaths, famous people. The app provides a repertoire of masks, that is dynamic and easy-to-use.
The analysis of the aesthetic affordances that are provided by the smartphone as hardware and Snapchat as software was accompanied by a close reading and visual analysis of three German ‚Snapchatters' (Laura Falafel, Yugorette, Simon Desue) and their stories. They build specific personae around specific lenses, acting out different personalities in their Snapchat stories. For example an 'ugly' younger version of Laura Falafel wears braces, lives with her mom and has a weird accent. Based on these condensed performances, 'selfie lenses' can be interpreted as playful practice of digital masking. While this practice clearly has old analogue predecessors, playful masking is translated, amplified but also standardized in Snapchat's digitally networked structures. Based on these findings and connecting to the other contributions in this panel, questions of authenticity in digital photographic practices have to be understood as strongly linked to questions of truthfulness in relation to identities.

References

Belting, H. (2013). *Faces; eine Geschichte des Gesichts*. München: Beck.

Belting, H. (2005). Image , Medium , Body : A New Approach to Iconology. *Critical Inquiry* 31: 302–319.

Burri, R. V. (2012). Visual rationalities: Towards a sociology of images. *Current Sociology* 60: 45–60.

Gillespie, T. (2010). The politics of ‘platforms’. *New Media & Society* 12: 347–364.
Good, K. D. (2013). From scrapbook to Facebook: A history of personal media assemblage and archives. *New Media & Society* 15: 557–573.
Hand, M. (2012). *Ubiquitous Photography*. Cambridge: Polity Press.
Hutchby, I. (2014). Communicative affordances and participation frameworks in mediated interaction. *Journal of Pragmatics* 72: 86–89.
Kitchin, R., Dodge, M. (2011). *Code/Space. Software and Everyday Life.* MIT Press.
McVeigh-Schultz, J., Baym, N.K. (2015). Thinking of You: Vernacular Affordance in the Context of the Microsocial Relationship App, Couple. *Social Media + Society* 1.
Schrock, A. R. (2015). Communicative Affordances of Mobile Media : Portability , Availability , Locatability , and Multimediality. *International Journal of Communication* 9: 1229–1246.
Senft, T.M., Baym, N.K. (2015). What Does the Selfie Say ? Investigating a Global Phenomenon Introduction. *International Journal of Communication* 9: 1588–1606.
Statista. 2016. *Snapchat - Statista Dossier, Study ID 26377*.
Tiidenberg, K., Gómez-Cruz, E. (2015). Selfies, Image and the Re-making of the Body. *Body & Society* 1–26.
Warfield, K, Cambre, M.C., Abidin, C. (2016). Introduction to the Social Media + Society Special Issue on Selfies: Me-diated Inter-faces. *Social Media + Society* 2.

DO YOU KNOW IF YOU'RE LOOKING AT A PHOTO SHOT WITH A CAMERA, OR AT A PHOTOREALISTIC COMPUTER-GENERATED IMAGE? A CASE STUDY WITH PROFESSIONAL PHOTOGRAPHERS AND PHOTO-EDITORS

Full article accepted to Visual Communication, pre-print available at http://urn.fi/URN:NBN:fi:uta-201708162290 Lehmuskallio, Asko; Häkkinen, Jukka & Seppänen, Janne (accepted). Photorealistic computer-generated images are difficult to distinguish from digital photographs: A case study with professional photographers and photo-editors."

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With digitization of news work, including increasing reliance on near-real time connections to the Internet, questions of authenticity of journalistic images have resurfaced. Can we trust images shown to us in networked publics? Or the images that we ourselves forward on social media for others to see?

In order to counter 'pictorial fraud,' press photographers need to adhere to strict guidelines in how photographs are shot, edited and published, while pictures published may be widely digitally circulated (Gursel 2016). In recent years, photographers have been fired due to removing or adding content to images, Pulitzer-prize winning Narciso Contreras being only one famous example among many. He had retouched a photo of a fighter in Syria by removing from it the video camera of a colleague before sending the picture to the Associated Press.

The discipline asked for in press photography concerns particularly photographic processes, that should leave decipherable traces in the images taken for, and published by, news media. Of particular concern in published guidelines are the technical characteristics of the photographs published. Has the picture been staged or re-enacted? Has content been removed or added?
Surprisingly, these guidelines pay little attention to the increasing use of photorealistic computer-generated imagery, that is increasingly found in various areas of visual communication, be it in films, games, advertisements, or on social media. When

creating computer-generated imagery, render software is used to create visualizations that have not been captured with a camera.

While photojournalistic practice focuses on uses of digital photo-editing, the software used to render images already allow for creating photorealistic visualizations that may be difficult to distinguish from photographs. The at times heated discussions regarding uses of digital photography within press photography, and recent developments within computer-generated imagery point toward a seeming paradox in our understandings of photography. The images we see as photographs, might not contain any trace of an event outside of the photographic technology.

We approach this apparent paradox by focusing on one detail that is of importance within these discussions: Can professional photographers, for whom a conventional understanding of photography is of importance for their professional practice, distinguish digital photographs from photorealistic computer-generated images by looking at them on a computer screen?

The rationale for the question is evident: If computational techniques for photorealistic image rendering are indeed so advanced that professional viewers cannot distinguish them from photos taken with a camera, our understanding of the digital photographic image, and of its relations have to be reassessed. This is particularly so, since many professional photographers still hold that it is utterly important to be able to make a distinction between strongly edited digital photographs – let alone purely computer-generated pictures – and photographic images taken according to a conventional understanding (e.g. Mäenpää 2014; Solaroli 2015).

Therefore we showed 20 professional photographers and photo-editors 37 pictures on a computer screen and asked them to look at each picture and answer a simple question: “Do you think the picture shown is a photograph or is it computer-generated?” Due to their expertise, these people should be particularly suited in making a correct distinction, particularly since the majority of respondents were acclaimed professionals working in news and press photography.

To make the task somewhat more interesting, we did not choose just any pictures, but border cases. The computer-generated-images we chose looked very much like actual photographs taken with a camera, whereas some of the pictures recorded with a camera contained elements that an untrained eye might take to result from render engines.

After each decision we asked the research participants to justify their choices in writing, as well as later to answer to questions in a short interview. This material was analyzed by paying special attention to two aspects: 1) are the studied able to make a correct distinction between photographs and computer-generated images?, and 2) what knowledge of photography do they rely on when making their distinctions both in writing and the latter interview?
Our results show clearly that the people we studied are unable to distinguish correctly between digital photographs and photorealistic computer-generated images. Since they, somewhat paradoxically, continued to hold to a conventional understanding of

photography, (visible in the ways in which they described pictures they assumed to be photographs), we pay attention to this contrariness by turning to related literature on the digitization of photography in general and discussions surrounding their use in photojournalism in particular.

While a conventional understanding of photography follows the idea that at the time a photographic image is taken something outside of the camera is actually having an effect on both the material surface of photographic film and, after developing and printing, to the photographic pictures created, many scholars continue to argue that digitalization has undermined the causal connection between a pre-photographic reality and the photographic image (e.g. Rubinstein and Sluis 2013).

Instead of claiming an ontological break per se between images created with analogue and digital cameras, we suggest that the computational in digital photography should be assessed from a clearer foundation, that takes both technical development and the roles of communities of practice in directing the use of specific digital photographs into account. If digital photographs are to serve as records of events that really happened, their particular purity has to be painstakingly created, every time anew. The capture, development, and visualization of a photographic trace has to be carefully manipulated in order to assure its authenticity (Schröter 2011). The authentic trace is an accomplishment assured by codes of conduct, education, and peer review in particular communities. Our understandings of particular photographs are hence tied to the communities of practice in which they are used, and in this context it is seldom a technology alone that is taken as a guarantee for authenticity. As both our findings and the related work among photojournalists show, the mechanisms of authentication are difficult to keep pure.

References

Gursel, Z.D. (2016). *Image Brokers: Visualizing World News in the Age of Digital Circulation*. Berkeley: Univ of California Press.

Mäenpää, J. (2014). Rethinking Photojournalism: The Changing Work Practices and Professionalism of Photojournalists in the Digital Age. *Nordicom Review* 35, 2, 91–104.

Rubinstein D., Sluis K. (2013). The digital image in photographic culture: algorithmic photography and the crisis of representation. In: Lister M (ed) *The Photographic Image in Digital Culture. Second Edition, Kindle.* New York/London: Routledge.

Schröter, J. (2011). Analogue/Digital. Referentiality and intermediality. *Kunstlicht*, 32, 3, 50–57.

Solaroli, M. (2015). Toward A New Visual Culture Of The News: Professional photojournalism, digital post-production, and the symbolic struggle for distinction. *Digital Journalism* 3, 4, 513–532.

THE ALGORITHMIC GAZE: PREDICTING UPLOADER'S GENDER BASED ON PRIVATE SOCIAL MEDIA IMAGES

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Introduction

Vast amounts of images are uploaded every minute around the world to social media platforms and companies have long had an interest in mining these, but only recently deep learning algorithms are said to perform convincingly in the interpretation of images (VanRullen, 2017).

How do algorithms interpret social media images, how is this different than human perception and interpretation, and focusing on equality what are the consequences of using algorithmic predictions to act or decide in a data-driven society? These are the driving questions in this paper.

To answer these questions, I will use the case of internet profiling and train an algorithm to predict gender of the uploader from the uploaded social media images. The reason for choosing this case as an example of the algorithmic gaze is that neural networks are the most advanced types of machine learning. Social media images are chosen because, they are increasingly interpreted through algorithms with the purpose of presenting images in the feed or predicting something about the uploader that can increase revenue.

Theoretical framework: Images and the algorithmic gaze

With a starting point in critical algorithmic studies (e.g. Gillespie, 2014) the theoretical framework for the paper will consist of three building blocks: Literature of algorithmic reasoning with a focus on image processing (e.g. Klette, 2014), human reasoning with a focus on image interpretation (e.g. Barthes, 1967; Rose, 2000; Fodor & Pylyshyn, 2015), and feminist science and technology studies (e.g. Star, 1991) with a focus on outliers and inequality (e.g. Sweeney, 2013).

Vision algorithms can be divided into supervised (top down deductive approach) and unsupervised learning (bottom up inductive approach). In comparison to human interpretations the unsupervised algorithm does not have any prior understanding of how gender differentiate on picture uploads, it will only know the patterns that it can find in the pictures that we put forward.

Therefore, it is interesting to detect whether classical discriminating understandings of female versus male stereotypes are reproduced in the outliers. This will be analyzed by focusing on stereotypic interpretations in the false negatives.

Methodology: dataset and training setup

Through the lens of audit studies (e.g. Sandvig, 2014) the paper will report on a case study from our lab where we try to predict gender (interpreted binary to mirror a commercial lens) from a representative dataset of 1,000 Danes and their total amount of self-uploaded private and public Facebook images; a total of 350,000 images. We have chosen to look at Denmark because the country has one of the highest penetration rates of Facebook in the world, thus training on this dataset will prevent potential age overfitting.

In order to predict the gender, we will build and train an algorithm based on three widely used neural networks in our lab and test the performance of these algorithm, one including and one excluding profile pictures (that may reveal gender most effectively).

The dataset then will look like this:

	Female	Male
Individuals in total	511	456
Individuals with at least one non-profile image (= selected group)	486	**397**
Maximum non-profile images per individual in selected group	13125	8241
Minimum non-profile images per individual in selected group	1	1
Median non-profile images per individual in selected group	150	52

By using metadata, we will be able to improve the prediction of the uploader's gender. However, we will *not* include metadata in the prediction to understand how accurate predictions this will provide when following new guidelines for privacy by design (EU Directive). In this way, we try to increase the difficulty in the prediction as an extreme case where we only focus on the images uploaded and the goal is to be able to predict gender from one uploaded Facebook picture (see also Author, in preparation for the algorithmic contribution).

Findings

When we test the three algorithms with profile pictures we get the following performance measures:

Neural network	Accuracy
Alexnet	66.9 %

VGG	66.5%
GoogLeNet	65.7%

There is no sign of overfitting (see also Author, in preparation), but the performance is not overly enthusiastic. Now we report on first iteration with the use of Alexnet (more iterations will be finished at the time of the conference). We remove all the profile pictures from the dataset and take a random subset of the total dataset to balance the number of females and males. We also adjust for the much higher number of images uploaded by females. This provides us with the following accuracies:

Accuracy (overall): 55.33%
Accuracy (female): 57.28%
Accuracy (male): 52.49%
The illustration show the test set as a function of the training iteration. Accuracy increases in the beginning, but quickly reach a plateau. The network is only marginally better to predict than random.

When we initially look at the false negatives, does the pictures deviate from the stereotypical understanding of male and female lifestyles and thereby create an unequal and discriminating understanding of females and males? There are more baby pictures in the male false negative category than in the male true positives and there are more alcoholic beverages in female false negatives than in female true positives. This can indicate that the algorithm does tend to discriminate according to stereotypical understandings of gender construction. However, these are very preliminary results and we need to scrutinize this further in future iterations.

Discussion and conclusion

The algorithmic results show signs of discrimination by reproducing some stereotypical understandings of male and females, because the data that participants upload are seemingly stereotypic. What is the consequences when using algorithmic predictions to act or decide in a data-driven society when we see stereotypic predictions of gender? Gender is often interpreted binary as this study is an example of. This in turn suppress other gender forms. The reproduction of gender stereotypes one can claim is caused by user data thereby reflecting the society historically *or* at a given time. However, when actions and decisions are built on top of such stereotypic predictions this will have profound preservative effects and stigmatizing individuals who tries to move away from such stereotypes. One solution would be to train the algorithm to adjust for certain types of stereotypic images, but developers will need to be governed by general policies and ethics beforehand in order not to enforce their own individual politics.

References

Author, in preparation
Barthes, R. (1967). *Image, music, text*, New York: Hill and Wang.

Fodor, J & Pylyshyn, Z.W. (2015). *Minds without meanings: an essay on the content of concepts*, Cambridge; MA: MIT Press.
Gillespie, T. (2014). The relevance of algorithms, in *Media Technologies*, Cambridge, MA: MIT Press.
Klette, R. (2014). *Concise Computer Vision*, Springer.
Rose, G. (2007). *Visual methodologies: an introduction to interpretation of visual materials*, London: Sage.
Sandvig, C., Hamilton, K., Karahalios, K., & Langbort, C. (2014). Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms, *ICA*, Seattle, WA, USA.
Star, S. L. (1991). Power, technology and the phenomenology of conventions: on being allergic to onions, in Law, J (ed.) *A Sociology of Monsters*, London: Routledge.
Sweeney L. (2013). Discrimination in Online Ad Delivery. *Communications of the ACM*, 56, 5, 44-54.
VanRullen, R. (2017). Perception Science in the Age of Deep Neural Networks, *Frontiers in Psychology*, 8, 142.

PICTURE ONESELF INTO BEING

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The visual turn has been introduced and discussed since around 2000, as an opposition to the linguistic turn around 1900. Even though the internet was still approached as a media of words. Since then social media and the internet turned more and more towards the visuals: Instagram, Pinterest, Facebook's Timeline, Snapchat, and Pokémon Go. In 2015 media scholar, Nicholas Mirzoeff pointed out that the most notable uses of the internet is to create, send and view images of all kinds. Three matters will be investigated in my presentation, 1) why does this change occur, 2) what is an image – and what is an image in the age of the internet, and 3) what is the relation between the images and the subject at the screen. Or to rephrase the last: why are the images so important?

I will investigate these three matters via analysis of two TV-commercials for smartphones from 2007 and 2016. The analysis will investigate images and bodies, images as affect, images and trauma in the TV-commercials through the following theoretical approaches:

The image and body

The body creates the images. Reality has been imaged and shaped, through our bodies and senses. We cannot comprehend it, if we do not shape it into images, which we can sense and tell others about. Reality is too much to take in directly; therefore, we must ritualize it and make it into images. It can only be transmitted and comprehended through all the different kinds of images we constantly create of it through the body – internal, external, concrete, abstract, as sounds, as things we taste and touch, as affects etc.

The sensoric images or perceptual images, are created and put together almost like pixels by all the senses of the body.

We pick up the world and form it through the images we shape and seek out. We go out into the world with our images and the world enters us through its images. The body is the meeting point and intermediate link for the images, which come to and from us. We are not only sensing subjects; we are constantly symbolizing and getting hold of our sense datum through images.

To see and sense is in itself a way of formulating. It is a need so great that we cannot stop it. The images must come out – in dreams, in concrete pictures, constructed or not, in phantasms, in sound images, in the metaphors of words, in bodily expressions, in sensations of textures, and in synesthetic sensing. The world is perceived from the inside through the body and we have the possibility to look at it from the outside through the images, which are made from this material. These images are made from our

subjective point of view through the visuals and the affects from the outside world, and the increasingly significant visuals on the internet and the social media. The images need an intersubjective form to be able to communicate with others. In that way, new visual conversation medias are created.

Image and Affect

In the beginning was the emotion, the affect, Julia Kristeva claims: "In the beginning was the word, says the Genesis. No! In the beginning was the affect. The word came later." The language came afterwards, because it is the response to and is the processing of an affective world. The words are a tool that apparently seems to protect against the disturbing affective world.
With the reservation - apparently - I refer to Kristeva's own thesis that the words are not strong or good enough to explain and to keep the emotional from life. Therefore, we still ritualize the strong affective emotionality through religion, mass culture, practices, research and images. We can only understand in detours or the long way around.
The image thus function in two ways. First, as a phenomenon, an object that starts as subjective affect. The affect is then secondly expressed via intersubjective images such as customs, rituals, morality, science, religion and concrete images, because the language is not sufficient to keep the emotion at a distance or to express it. Through these interpretations, we become hermeneutics of phenomena and passions. The subjective affections are thus also intersubjective and objectified.

Image and Trauma

Many children's games, fairy tales, and electronic games deal with the possibility of being eliminated from the world or losing control of reality. The primitive pains and the unthinkable anxiety, as Donald W. Winnicott calls them, are the basis of children's games and of adults' heritage of imagination. These pains and anxieties come from stories and conceptions about falling to pieces, not having any contact with the body, losing one's sense of orientation, falling continuously, not continuing to exist, being in total isolation because there is nobody to be in touch with – to connect with. Winnicott uses the term disconnection about the young child's movement into the open space away from the illusion of connection and it is linked to the terms of transitional object and transitional experience concerning the process where the child finds a new object to relate to after its mother. The aesthetics of commodities is an extension of this connection and transitional experience. Disconnection creates a basis for archaic as well as present anxieties. The anxieties and their configurations are omnipresent in children and adults. They are also important for TV commercials.
Our memory is closely associated with visualization and so are traumas. The trauma has its origins in an event, which has been hidden. One could say that the trauma insists on a past, which has never been made present, i.e. visible. Therefore, it is very important to visualize the images of trauma. It always takes two traumas to create a trauma: the hidden trauma and its substituting visualization.

The Images

We are back at the point of departure of this explanation: It is the body that creates the images. Reality has been imaged and shaped, one might say, through our bodies and senses. We cannot comprehend it if we do not shape it into images, which we can sense and tell about. The TV commercials teach through their images about digital technologies, and how we shall live with and communicate about these technologies.

References

boyd, d. (2007). “Why Youth Heart Social Network Sites: The Role of Networked Publics in Teenage Social Life” Harvard.

Bergson, H 1991 (1895). *Matter and Memory.* New York: Zone Books

Damasio, A. R. (2000).*The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, New York/London.

Fausing, B (2013). See for your Selfie. Selfies and the Search for Recognition, K-Forum June.

Fausing, B. (2015). Self-Media. The Self, The Face, The Mirror, The Media and the Selfie,” *Triade*, 3,1, Rio de Janeiro.

Fausing, B. (2017). *Emotion in Motion. On Images and Affect* London.

Kristeva, J. (1982). *Powers of Horror* New York.

Mirzoeff, N. (2015). *How We See the World, London: Penguin Books*.

Strangelove, M. (2010). *Watching YouTube: Extraordinary Videos by Ordinary People* Toronto: University of Toronto Press