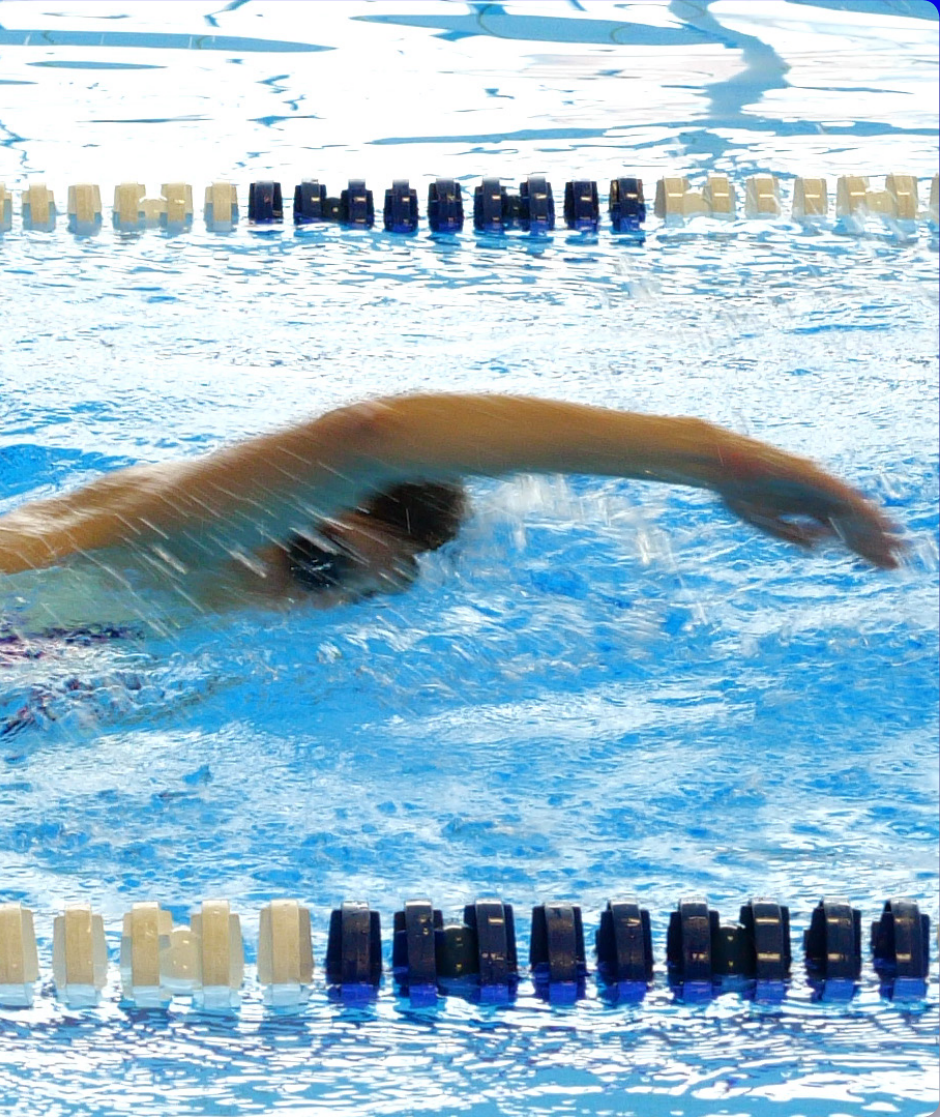




Olia Lidina

27 March - 30 May 2020

garabyte



# Best Effort Network





[Olia Lialina](#)

# Best Effort Network

"Effective and deceitfully simple, Summer relies on the goodwill of its hosts, their willingness to keep their website up and running, to pay for the webhosting, to keep the domain name, to make regular updates, to maintain the site when needed, etcetera. If this doesn't happen, it causes friction in the swing. As such, it shows how art on the net is not only about technology but also just as much about human involvement."

"Summer makes explicit how net art (or even the web more generally) is never merely about seamless technical constructions; rather it is a co-creation of multiple people, techniques, processes and locations that work towards a collaborative performance."

Annet Dekker, "Location, location, location!", in Olia Lialina, Net Artist, edited by Valerie Perrin. Paris: Les Presses du Réel, 2020 (forthcoming)

arebyte Gallery are pleased to announce **Best Effort Network**, a series of new and re-made works from 2013 - 2020 by 90's net art pioneer Olia Lialina. The exhibition comprises *Summer* (2013), *Best Effort Network* (2015/2020), and *Hosted* (2020). This exhibition will be Olia's first solo presentation in London.

# Best Effort Network



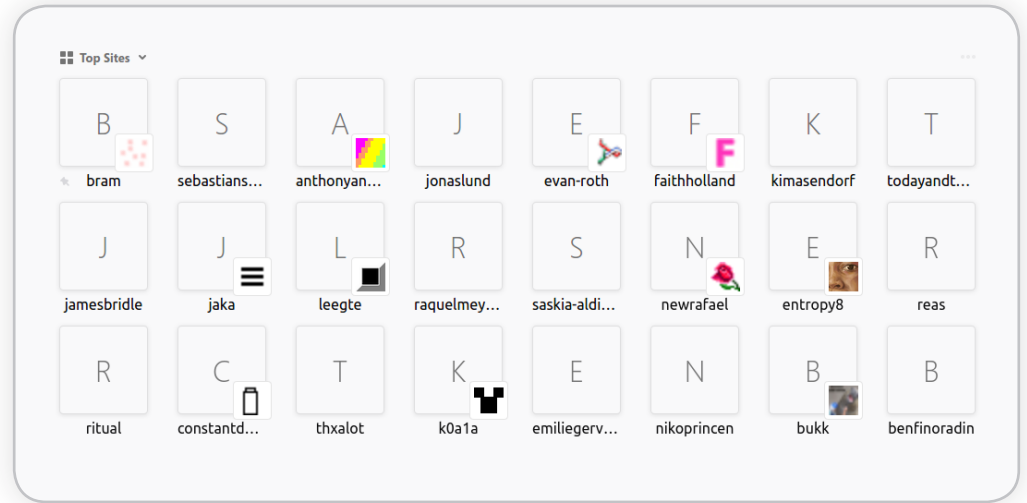
Spanning more than 25 years, Olia Lialina's work has made her an important voice in new media art and theory. Often gestural and illustrative, her works address the systematic nature of the Internet through manifestations of intimacy between hardware, software and human mediation. In addition to working solely, direct and ancillary collaborative efforts with other artists, websites and browsers are brought into play to reveal the complex networks of data flow.

Creating links between the physical body and the virtual space, Olia presents herself in constructed online spaces through her ongoing *Network Portraits* series and GIF models. In *Summer* (2013) and *Best Effort Network* (2015), accessing and revealing the underlying codes and protocols of developers. While an adoption of experimental cinematic methodology, employing what media theorist Lev Manovich has characterized as spatial and temporal montage, is seen in her user-generated "netfilm" *My Boyfriend Came Back From The War* (1996) and user-generated story *Agatha Appears* (1997).

Positioning browsers, hyperlinks, HTML tags, GIFs, (amongst many other things) as spaces for art, Olia Lialina dissects the language surrounding online culture and production by using the Internet as a medium for artistic intervention and storytelling. The inherent entanglements of the Internet landscape are brought into the work. The presentation of these underlying elements, prevalent in working with the Web as a medium, are shown in various ways, and in part explore the architecture of the Internet through IP networks and the movement of data from server to server.

"If something is in the net it should speak in net language."

Internet Protocol (IP) networks are often described as 'best effort' networks, meaning the way the network processes data does not



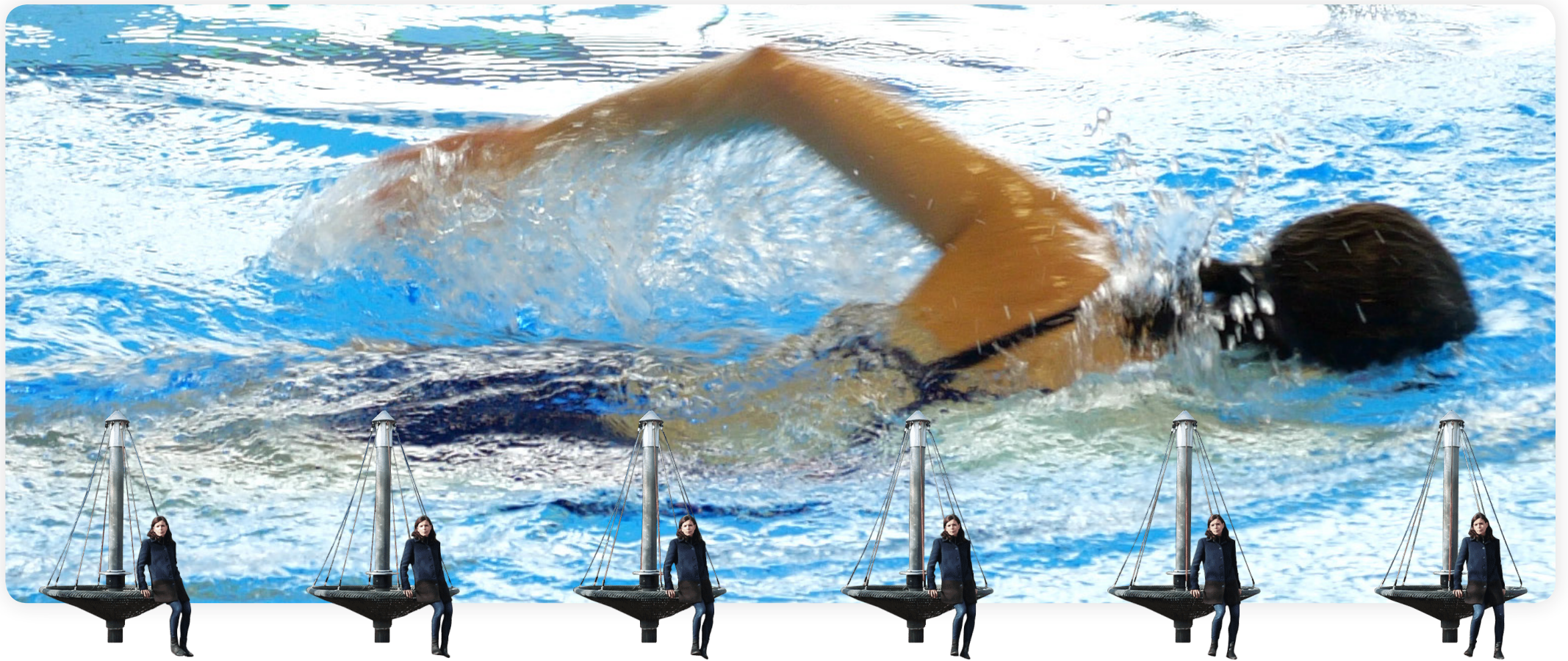
discriminate as to what that data is; ie, the network gives its 'best effort' to deliver every package of data as quickly as it can. However, it does not guarantee that full packets will be delivered, or that it will treat important financial data any differently to data of a meme. All data is therefore homogenised within the network.

*Best Effort Network* (2015/ 2020) refers to the way data packets find their way to a destination. This process is hidden and so we rarely see how packets are sometimes lost, bounced back, resent or received (or not). The work makes this process more tangible: Olia spins round and round on the carousel and if she disappears it means the website (best.effort.network) has been loaded on a different browser on a different screen. Olia will reappear when the request reaches the top of the queue of waiting browsers.

*Best Effort Network* utilises a "best effort network" and so doesn't provide any guarantee that data is delivered as expected or that the delivery meets any metric of quality: a comment on the parallels between the relinquishing of responsibility within the worlds of politics, social networks and consumerism once a product, post or policy is out of the hands of the maker.

During the run of the exhibition more locations will join the packet switching experiment: *Best Effort Network* will be on display at HeK (Basel), The Photographers' Gallery (London), the Open Data Institute (London) and Birmingham Open Media (Birmingham).

In the animated piece *Summer* (2013) we see the artist swinging back and forth, infinitely looped, basking in bright sunlight. Cut out against a gradient background of blue and white, the swing is hung from the browser's location bar. The animation's



eighteen still images are located on twenty-six different websites, with each site redirecting the browser from one server to the next, displaying the images in sequence and thus creating a cross-domain animation. The work is literally scattered across the internet, making it impossible to watch offline. The speed and rhythm of the image sequence, the animation itself, depends on internet infrastructure. It is the most fragile GIF on the internet; just one node down will result in breaking the work.



“I like to swing on the location bar of the browser, and I like to know that the speed of swinging depends on the connection speed, and that you can’t watch this GIF offline.”

The new work, *Hosted* (2020) is a 70-frame animation, each frame uploaded to a different hosting service on the Internet creating a sequence similar to a flip-book. In it we see Olia swimming from one side of the

screen to the other; the sequence is cut horizontally by the lane marking ropes in the pool and mimics the browser bar at the top of the screen. To become an animation each image needs to be opened in a new tab on the browser in a specific sequence. In the exhibition, this process is automated but visitors can perform this sequence themselves. As with *Summer*, the *Hosted* animation isn’t smooth because of different restrictions and conventions of the hosting services: such as maximum image size and position; also connection speed, but this roughness is integral to the work.

*Hosted* is about the loss of control but also about regaining it. When users are only allowed to upload photos into storage “buckets” of global companies, the browser itself becomes the place where they can make things be as intended, at least partially, by switching the tabs of the browser.





[Rebecca Edwards](#)

# How the Internet Works

There are three major parts of the internet, three rings if you like.

People are on the outer ring which is called the Last Mile. Comprising the outer ring are the texts we send, the notifications we receive, the websites we go to and all the social media updates we post and look at; basically anything we search, like, buy or communicate is located in this outer ring. Also in this outer ring are houses, offices and all their internet devices, as well as wifi and routers and cell towers. All of these things use radio waves to send information to, and receive data from, the internet.

The way this data is cross-communicated between people is strategic and done in an economical way. For example: if I send an image that I've taken with my phone camera to you via email, the first thing that happens is the image gets cut up into more manageable pieces called packets. These packets are then assigned some data called a header - where the packet has come from and where it's going to amongst other things - which follow rules akin to a postal service. Inside the data packets, the cut up image is turned into binary code made up of 0's and 1's. Each number is called a bit, and 8 of these bits strung together is called a byte. These bytes need to get themselves onto the radio waves to be sent. It works like this: 0's and 1's are sent on radio waves using different frequencies in order for the computer to understand what is a 0 and what is a 1. This is called frequency modulation<sup>1</sup>.

The radio waves carrying the bytes go into the router. Once in the router, the data is then carried out via wires which can either be electrical current if the wire is copper, or as lazer light whereby a 0 is no lazer light, and a 1 is lazer light present. The cables coming out of the back of the router in your house or office then connect to other wires outside which are owned by your Internet Service Provider (ISP) who are responsible for looking at the header of each of the packets of data and figuring out the fastest way for those packets to reach their next destination. This is an Internet Hub, where all the information comes in (from your devices, through your router, then to the Internet Hubs) located in the second ring of the three interlocking circles.



<sup>1</sup> In telecommunications and signal processing, frequency modulation is the encoding of information in a carrier wave by varying the instantaneous frequency of the wave.

"Appearing and disappearing in the fog, Best Effort Network is another way to distribute herself through the web, but this time via the physical presence of others opening the URL. The work shows that nothing happens if you're alone, you're dependent on the willingness of others to connect and the machine to deliver. For many, the web is what is visible with a browser; at the same time it is apparent that there is more behind the surface. In this way Olia's unexpected disappearance, leaving behind the unoccupied, still-rotating roundabout, provides a space for the imagination to wander. In so doing the work also creates a presence through absence."

"[...]the grey foggy atmosphere and the abandoned roundabout also express a melancholic or even nostalgic quality, in which perhaps emptiness and repetition relate more to meditation, which is regarded by some as a first step towards enlightenment."

Annet Dekker, "Location, location, location!", in Olia Lialina, Net Artist, edited by Valerie Perrin. Paris: Les Presses du Réel, 2020 (forthcoming)





In the third and central circle is the internet backbone. Within this are thick, fibreglass cables which run under the ocean floor bed and carry laser light of the data to another part of the world. Although strong, there have been cases in recent years where the internet has been disabled completely. One particular case of this was in 2019 when an internet cable was dragged across the seabed accidentally by an anchor from a ship<sup>2</sup>. This meant that everyone living on the remote Island of Tonga, 1,100 miles northeast of New Zealand, were without internet for 11 days. This case highlights the importance of a stable internet infrastructure, but also speaks of the vast number of people who don't yet have a reliable internet connection or internet at all. The distribution of high speed cabling is incentivised by companies who would rather designate their time and labour into getting more cabling in larger cities, like New York or London, leaving those who live outside larger cities the possibility of an unstable connection. Internet Service Providers are less likely to lay cables in more remote areas, or areas with less population and less wealthy areas, as the process is expensive. However, because of this, some areas of the world only have access to one or two Internet Service Providers meaning a monopoly on a market and higher costs for those who may not be able to afford it. 5G internet, dubbed 'the new internet' may alleviate some of these problems albeit bringing many more with it, like the breaching of our data rights or potential health risks<sup>3</sup>.

5G uses higher frequency radio waves to carry packets of data - unlike 4G, the waves in 5G internet are faster and longer and allow for more information to be packed into each wave. However, the higher the frequency the easier it is to block the waves, so in order for 5G to act sustainably and give a good service, more physical infrastructure is needed, meaning more signal towers etc. This requires a lot more money, and as before, Internet Service Providers are less likely to provide 5G for less populated or less wealthy areas.



<sup>2</sup> <https://www.rnz.co.nz/international/programmes/delinepacific/audio/2018705741/tonga-internet-compa-ny-claims-cable-cut-was-sabotage>

<sup>3</sup> <https://www.bbc.co.uk/news/world-europe-48616174>



# Internet Terminology Glossary

all taken from: [docs.oracle.com](https://docs.oracle.com), [netspecific.net](https://netspecific.net), [techterms.com](https://techterms.com), [linfo.org](https://linfo.org)

## IP

Internet Protocol provides a standard set of rules for sending and receiving data over the Internet. It allows devices running on different platforms to communicate with each other as long as they are connected to the Internet. In order for an Internet-connected host to be recognized by other devices, it must have an IP address. This may be either an IPv4 or IPv6 address, but either way it uniquely defines a device on the Internet.

The Internet Protocol also provides basic instructions for transferring packets between devices. However, it does not actually establish the connection or define the ordering of the packets transmitted. These aspects are handled by the Transmission Control Protocol, which works in conjunction with the Internet Protocol to transfer data between systems on the Internet. For this reason, connections between Internet-connected systems are often called “TCP/IP” connections.

## HTTP

Hypertext Transfer Protocol is the protocol used to transfer data over the web. It is part of the Internet protocol suite and defines commands and services used for transmitting webpage data. Encrypted HTTP connections take place over HTTPS, an extension of HTTP designed for secure data transmissions.

## Browser-Side Scripting

Browser-Side Scripting. Browser script allows you to extend browser behavior using JavaScript, an interpreted language that runs in many Web Browsers. Browser scripts respond to events on browser-side Java objects. These browser objects work in tandem with their corresponding objects running in the object manager.

## Best Effort Network

Best effort refers to a network service that attempts to deliver messages to their intended destinations but which does not provide any special features that retransmit corrupted or lost packets. Thus, there are no guarantees regarding delivery.

## Web Browser

A web browser is a software application for accessing information on the World Wide Web. When a user requests a particular website, the web browser retrieves the necessary content from a web server and then displays the resulting web page on the user’s device.

## Packet

A packet is a small amount of data sent over a network, such as a LAN or the Internet. Similar to a real-life package, each packet includes a source and destination as well as the content (or data) being transferred. When the packets reach their destination, they are reassembled into a single file or other contiguous block of data.

## Network

A network consists of multiple devices that communicate with one another. It can be as small as two computers or as large as billions of devices. While a traditional network is comprised of desktop computers, modern networks may include laptops, tablets, smartphones, televisions, gaming consoles, smart appliances, and other electronics. Many types of networks exist, but they fall under two primary categories: Local Area Networks and Wide Area Networks.

## Data

Computer data is information processed or stored by a computer. This information may be in the form of text documents, images, audio clips, software programs, or other types of data. Computer data may be processed by the computer’s CPU and is stored in files and folders on the computer’s hard disk.

At its most rudimentary level, computer data is a bunch of ones and zeros, known as binary data. Because all computer data is in binary format, it can be created, processed, saved, and stored digitally. This allows data to be transferred from one computer to another using a network connection or various media devices. It also does not deteriorate over time or lose quality after being used multiple times.

## CPU

The Central Processing Unit is the primary component of a computer that processes instructions. It runs the operating system and applications, constantly receiving input from the user or active software programs. It processes the data and produces output, which may be stored by an application or displayed on the screen.

## Interface

The term “interface” can refer to either a hardware connection or a user interface. It can also be used as a verb, describing how two devices connect to each other.

## Host

A host is a computer that is accessible over a network. It can be a client, server, or any other type of computer. Each host has a unique identifier called a hostname that allows other computers to access it. Depending on the network protocol, a computer’s hostname may be a domain name, IP address, or simply a unique text string.

## Firewall

In computing, a firewall serves a similar purpose. It acts as a barrier between a trusted system or network and outside connections, such as the Internet. However, a computer firewall is more of a filter than a wall, allowing trusted data to flow through it.

## Homepage

A home page is a webpage that serves as the starting point of website. It is the default webpage that loads when you visit a web address that only contains a domain name.

## Hyperlink

A hyperlink is a word, phrase, or image that you can click on to jump to a new document or a new section within the current document. Hyperlinks are found in nearly all Web pages, allowing users to click their way from page to page. Text hyperlinks are often blue and underlined, but don’t have to be. When you move the cursor over a hyperlink, whether it is text or an image, the arrow should change to a small hand pointing at the link. When you click it, a new page or place in the current page will open.

## IP Address

An IP address, or simply an “IP,” is a unique address that identifies a device on the Internet or a local network. It allows a system to be recognized by other systems connected via the Internet protocol. There are two primary types of IP address formats used today — IPv4 and IPv6.

## Lazy Loading

Lazy loading is a programming technique that delays loading resources until they are needed. A common example is a webpage that defers loading images until the user scrolls to their location within the page. Lazy loading is used on the web and in software programs, such as mobile and desktop applications.

## Netfilm

Netfilm is term coined by Olia Lialina in her 1996 talk at DEAF (Rotterdam), where she called artists not to use the WWW as an information channel about films, but as a medium to make films: “Netfilm is the best way to tell stories, hundreds of stories simultaneously, because Net language is closer to film than to video. Video doesn’t think by frame. Web (HTML) does. Not only. It gives a chance to operate with such ideas as line, parallel, associative montage. Its a fascinating experience.”

## Net Art

Net art is an elusive and sometimes anarchic art form which uses the Internet as its primary material. Net art works often draw on data from other Internet materials and websites, which helps give them their distinctive dynamics and transience.

## Javascript

JavaScript is a programming language commonly used in web development. It was originally developed by Netscape as a means to add dynamic and interactive elements to websites. While JavaScript is influenced by Java, the syntax is more similar to C and is based on ECMAScript, a scripting language developed by Sun Microsystems.

JavaScript is a client-side scripting language, which means the source code is processed by the client’s web browser rather than on the web server. This means JavaScript functions can run after a webpage has loaded without communicating with the server. For example, a JavaScript function may check a web form before it is submitted to make sure all the required fields have been filled out. The JavaScript code can produce an error message before any information is actually transmitted to the server.





[arebyte Gallery](#)

[arebyte.com](http://arebyte.com)

arebyte is a London-based art organisation which supports the development of contemporary artists working across digital and emerging artforms. Following in the long tradition of artists experimentation with new technologies, arebyte Gallery, has led a pioneering programme since 2013, to much acclaim. The gallery commissions new works from emerging, as well as more established artists, across the UK and internationally, supporting multiple voices in digital culture, and bringing innovative perspectives to art through new technologies.

### *Olia Lialina*

Born in Moscow in 1971 and now based in Germany, Olia Lialina is among the best-known participants in the 1990s net.art scene - an early-days, network-based art pioneer. Her early work had a great impact on recognizing the Internet as a medium for artistic expression and storytelling. This century, her continuous and close attention to Internet architecture, “net.language” and vernacular web has made her an important voice in contemporary art and new media theory.

Lialina has, for the past two decades, produced many influential works of network-based art: *My Boyfriend Came Back from the War* (1996), *Agatha Appears* (1997), *First Real Net Art Gallery* (1998), *Last Real Net Art Museum* (2000), *Online Newspapers* (2004-2018), *Summer* (2013), *Self-Portrait* (2018).



Lialina is also known for using herself as a GIF model, and is credited with founding one of the earliest web galleries, *Art Teleportacia*. She is cofounder and keeper of *One Terabyte of Kilobyte Age* archive and a professor at *Merz Akademie* in Stuttgart, Germany.



arebyte 2020 Programme

# SYSTEMS

arebyte’s 2020 programme takes the notion of Systems as its point of departure. Systems discusses the erratic interplay between the systems we encounter on a daily basis, and how we might use parts of these systems to reconfigure our understanding of the world. From global infrastructures of economics and finance, to organic and environmental systems of growth and reproduction; from computational and technological systems, to collaborative and interdisciplinary systems of discourse and pedagogy, the way our world functions will be brought into conversation, opening up a dialogue for critique and exchange.

Continuing from the 2019 theme Home, Systems invites artists to respond to the networks and structures at play in the digitised world. The networks which have become carriers for emotional, political and ecological agendas are critiqued through group exhibitions, residencies, off-site projects and newly commissioned work.

The networks we live among are “sites of exchange, transformation, and dissemination...conveying a sense of a spare, clean materiality” \*, but they’re also part of a larger world-system, convoluted and undefined through the proliferation of information and opposing agendas. These networks that have become so entangled and entwined with everything we buy, consume, read, think and act upon are broached in Systems through cryptocurrency and sovereignty with Helen Knowles; through data packets, point-to-point latency and internet protocol with Olia Lialina; through software subculture and open sourcing with Alan Warburton; through emergent technologies, creative Artificial Intelligence and algorithms with Luba Elliott; and through discourse surrounding the artist residency and intervention within the physical and virtual gallery space with *Going Away.tv*, Goldsmiths University Computational Arts Department and AOS (arebyte on screen).

The artists in Systems confront our current world systems of varying scales, and posit alternative ways of thinking about the underlying systems present throughout our histories, presents and futures.

\* N. Katherine Hayles, *Cognitive Assemblages: Technical Agency and Human Interactions* (Critical Inquiry Vol 43, no. 1 Autumn 2016) p32-55



