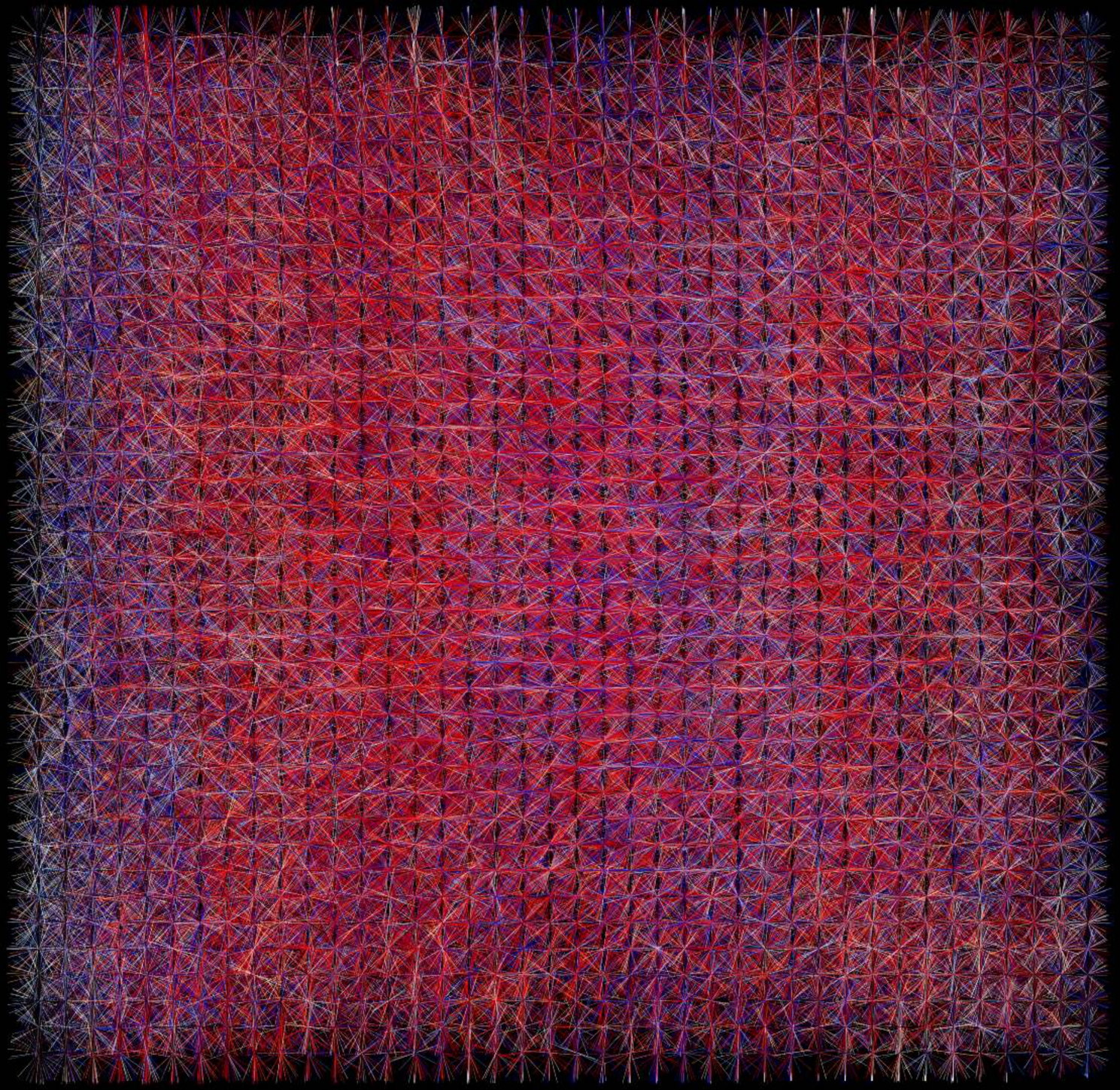
useless

by *chiko*



About

useless

The crypto market is like a living creature; it is destructive and chaotic yet beautiful. Despite it being uncertain and volatile people still jump into it like moths to a flame for the desire to gain wealth. I consider this as one of the aspects of human nature, and I wanted to show this through my work using data.

Useless is my genesis collection of 1024 generative artworks created with crypto market data. As a quantitative researcher, I wanted to express the various emotions and experiences I felt while participating in the crypto market.

While most people view data simply as an array of numbers, to me data are essentially traces of human actions, thoughts, and emotions preserved in the form of 0s and 1s. Within data are mixed the intense emotions of countless people – joy, frustration, anger, elation, and so on – and they are indeed some of the emotions that I feel being a player in the crypto industry.

If you're a trader, you know the madness that the crypto world can bring. Visualizing data and expressing myself as an artist is my attempt at staying sane amidst the chaos and confusion. *Useless* invites viewers to have a moment of self-reflection on their investment experiences and the emotions they felt during those times.

The act of visualizing market data aesthetically may seem counterproductive from the perspective of a quantitative researcher seeking market alpha. However, I believe that no one has explored this side of art to this depth yet, and it is my intention to explore the potential of data as a medium for artistic expression. Hence, this is where the title of my Genesis collection “*Useless*” comes from, and it is my most useless and unproductive attempt at finding alpha.

Visualization of Data: How I Plot

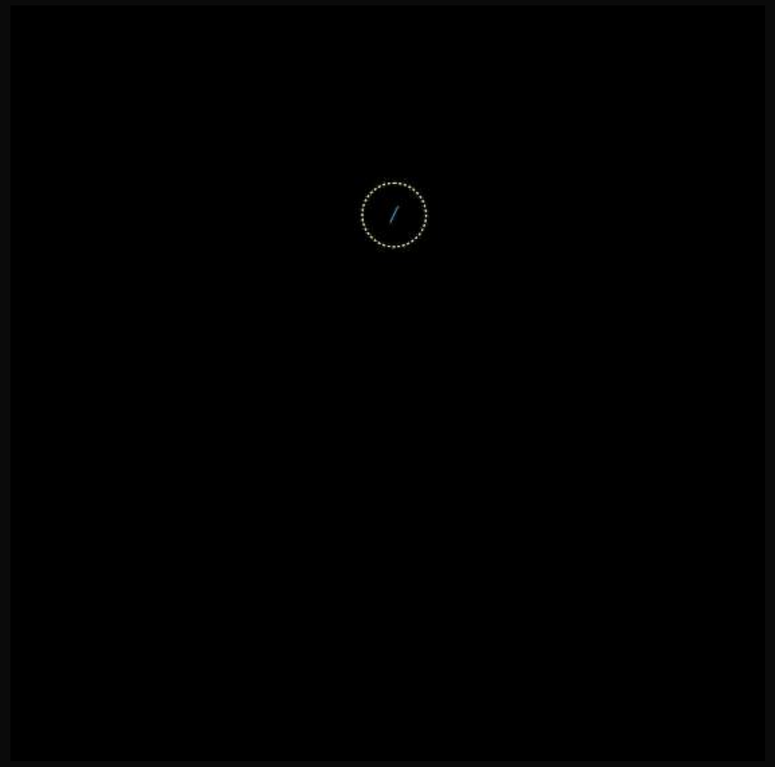
There is input data, which consists of a range of datasets, including spot data, derivatives data, and on-chain data, which are utilized for quantitative research and trading purposes.

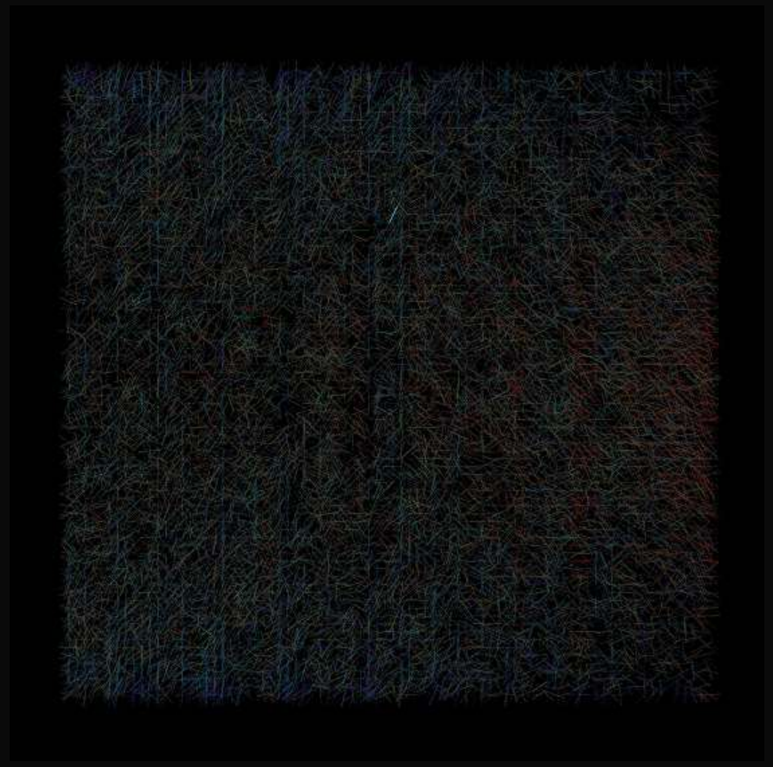
timestamp	hashrate	next_rtn	return_1month	dollar_volume	premium_index
1619978400	245873106811.17600	0.0011490685727764100	-0.023782916255083800	118276348.28322500	0.00094079
1619982000	196698485448.94100	2.00738493667529E-05	-0.021382350895356000	126962858.75182600	0.00103325
1619985600	245873106811.17600	0.0026442323901880700	-0.01890589053223980	149848710.45414200	0.00108435
1619989200	147523864086.7050	-0.0059934684373832400	-0.017497313825249200	131183658.47198800	0.00101743
1619992800	270460417492.29300	-0.004461853184203110	-0.024990516554396700	211633045.74203500	0.00084468
1619996400	172111174767.82300	0.0032931385243060200	-0.02940659279909540	279099081.2989710	0.00073926
1620000000	147523864086.7050	0.01460814401304080	-0.02759024704248740	116322012.17951300	0.00083926
1620003600	98349242724.47030	0.011013375504470300	-0.008323766588344990	388770601.9827990	0.00078206
1620007200	73761932043.3527	0.0002681047683934510	0.004864203878526930	376278426.39147700	0.0008099
1620010800	196698485448.94100	-0.002362730906714790	0.00832666674387883	241862480.01550300	0.00112371
1620014400	147523864086.7050	-0.0018930469230804500	0.008194495576775870	263044879.0676540	0.00124075
1620018000	147523864086.7050	0.001834277705801360	0.009091991521871680	157173710.06640700	0.00099934
1620021600	344222349535.64600	0.0004316725670883150	0.01785415218929170	211321470.70416400	0.00069865
1620025200	172111174767.82300	0.014182668303756900	0.014241885998268000	171107385.4789970	0.00063127
1620028800	98349242724.47030	6.52109511005694E-05	0.026711764395290100	528227393.28336600	0.0007882

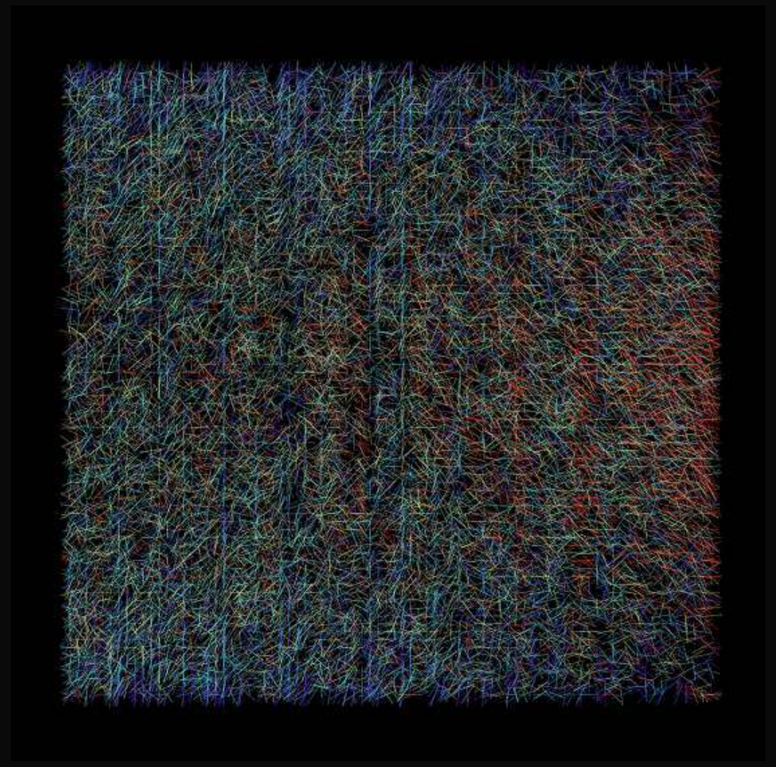
Visualization of Data: How I Plot

The data undergoes a set of preprocessing and operations to adjust the distribution, where each column(field) is mapped to attributes such as coordinates, size, color, and rotation.
This transforms the datapoints into individual dots within the plot.

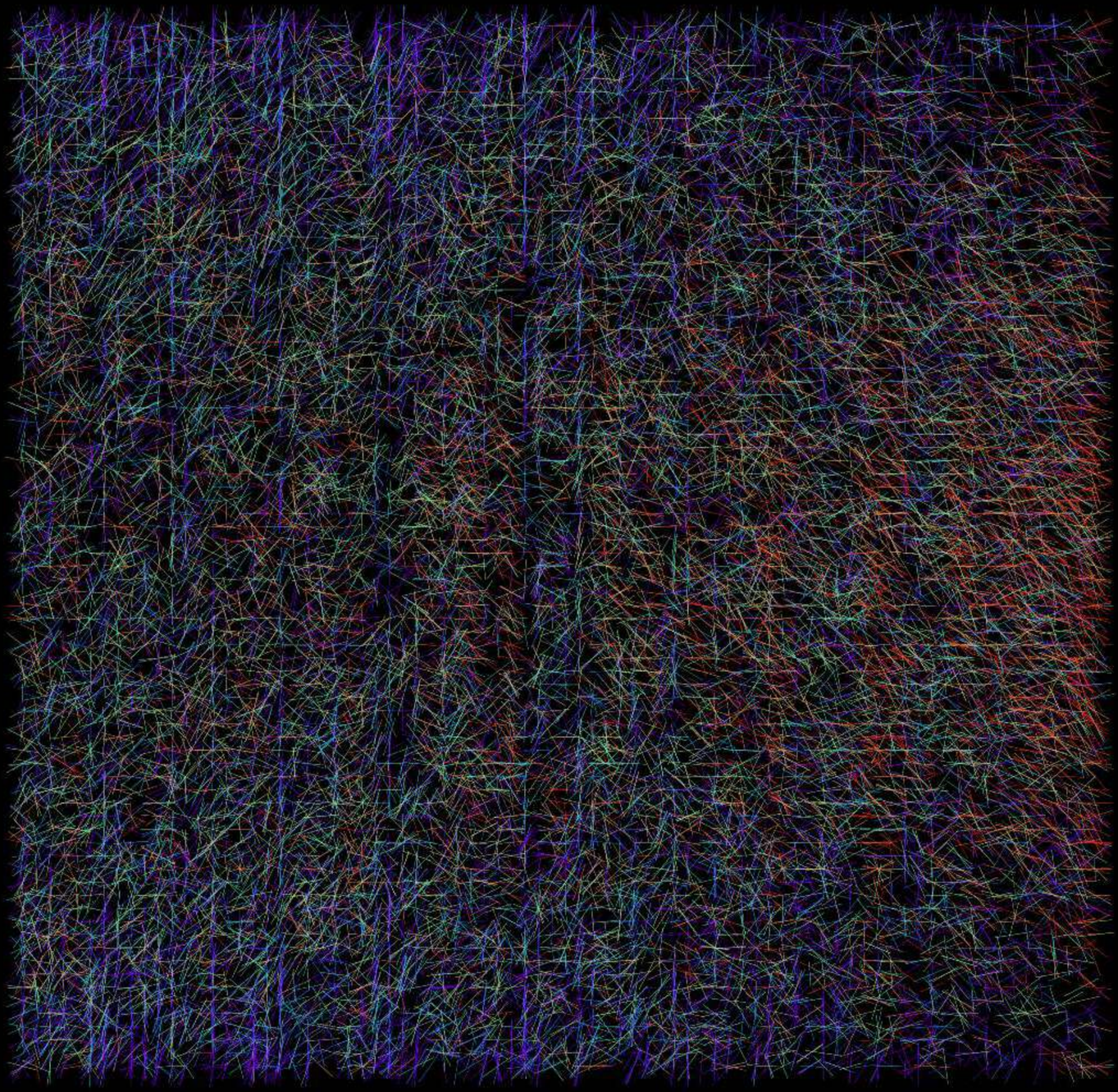
Visualization of Data: How I Plot







The final visualization is generated using a Matplolib scatter plot.



Traits

Colormap Texture Data Source Distribution Shape

Block Reward Interval Percentile Group Face color

Traits in detail

Colormap

Texture

The intention behind *useless* is most eminently represented through these two traits: colormap and texture.

Through *useless*, I wanted to express emotions that I have felt and experiences that I have garnered being a quantitative researcher in the crypto market.

Based on my personal experience, I have felt:

- *dopamine* – from extreme tension
- *anxiety* – from uncertainty about what might happen
- *awe and amazed* – looking at this phenomenon itself
- *elation* – as if you can own the world yourself
- *fascination* – being drawn in like a moth to a flame
- *competition* – a space full of enemies and endless competition
- *despair*
- *isolation* – like being dropped into the jungle alone
- *cold, heartless market* with no blood or tears
- *exhaustion* – from constantly watching a market that never rests & the *anxiety* of having to carry it constantly

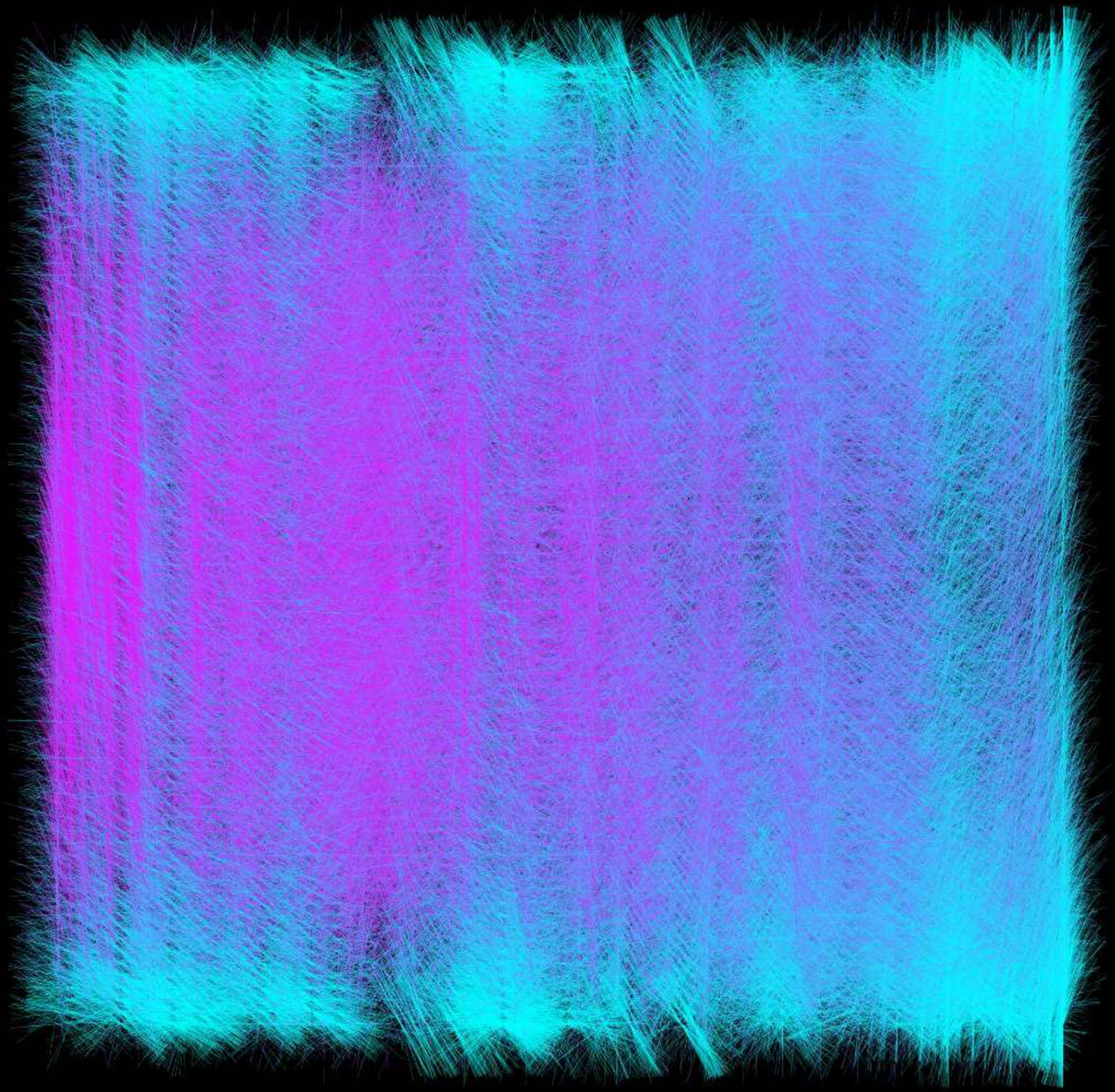
Traits in detail

Colormap

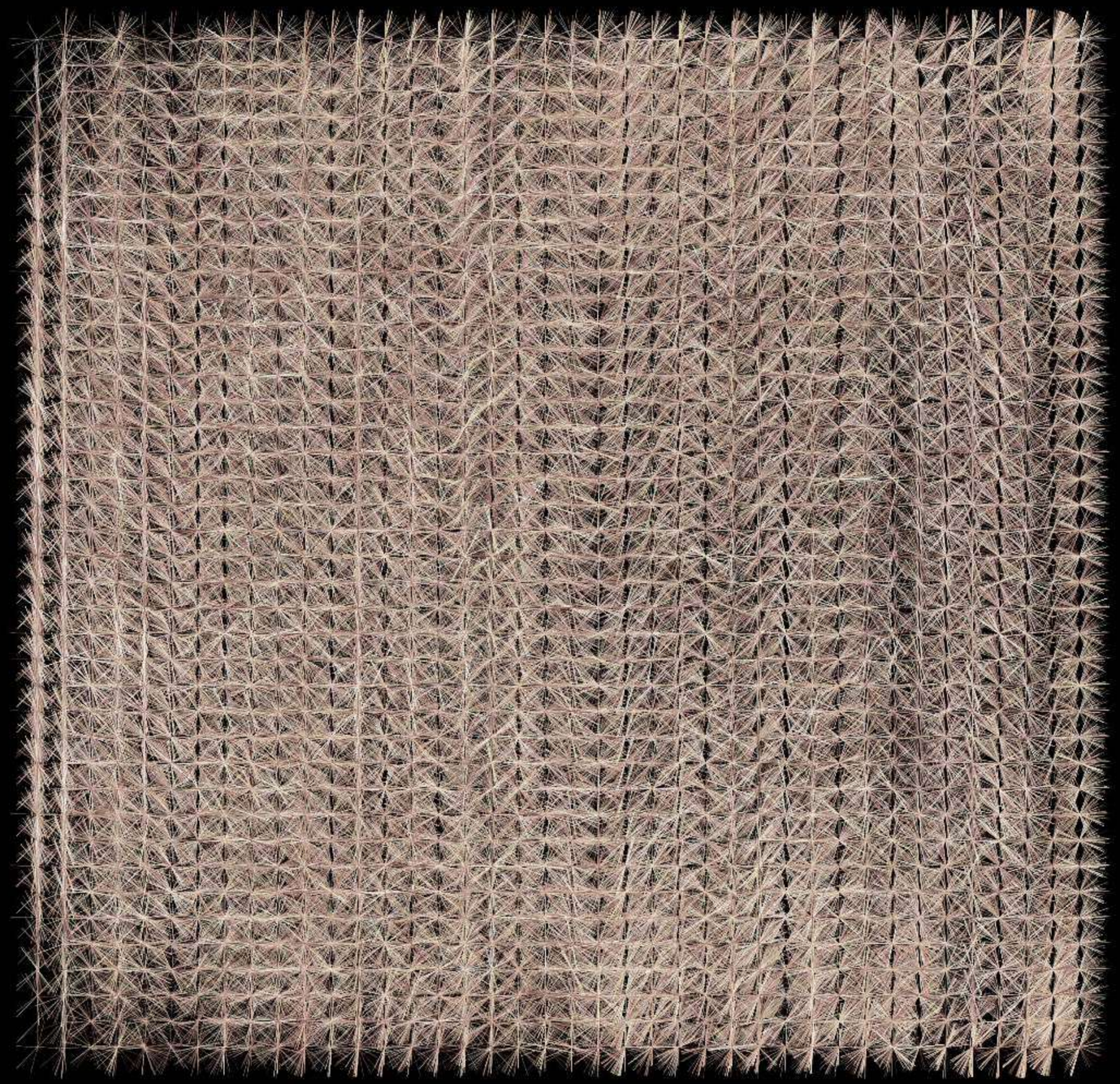
Color plays a significant role in expressing my emotions. They are sourced from the default colormaps provided by Matplotlib, a library for visualization in Python.

Colors that form *uselss*:
{Pastel2, Purples, Set3, bwr, gist_ncar, flag, bone, jet, accent, coolwarm, binary, twilight, rainbow, seismic, gist_rainbow, gist_heat, hsv, RdYlGn, terriain, tab10, PuBu, RdGy, cool, PubuGn, cubehelix, pink, ocean, nipy_spectral}

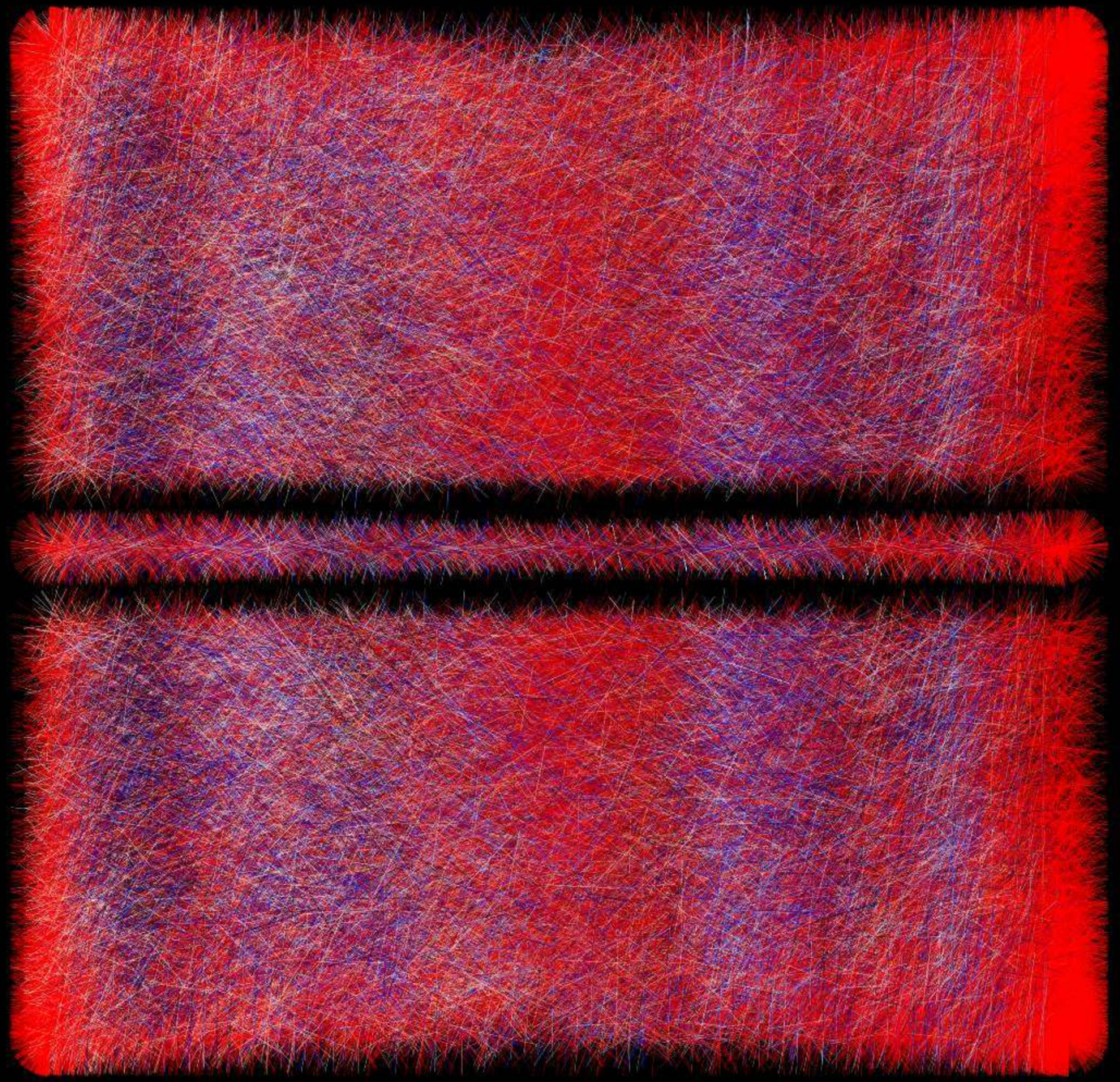
Hyper colors represent a fast-paced and pressing experience.



Bleached colors represent my state
of being worned out.



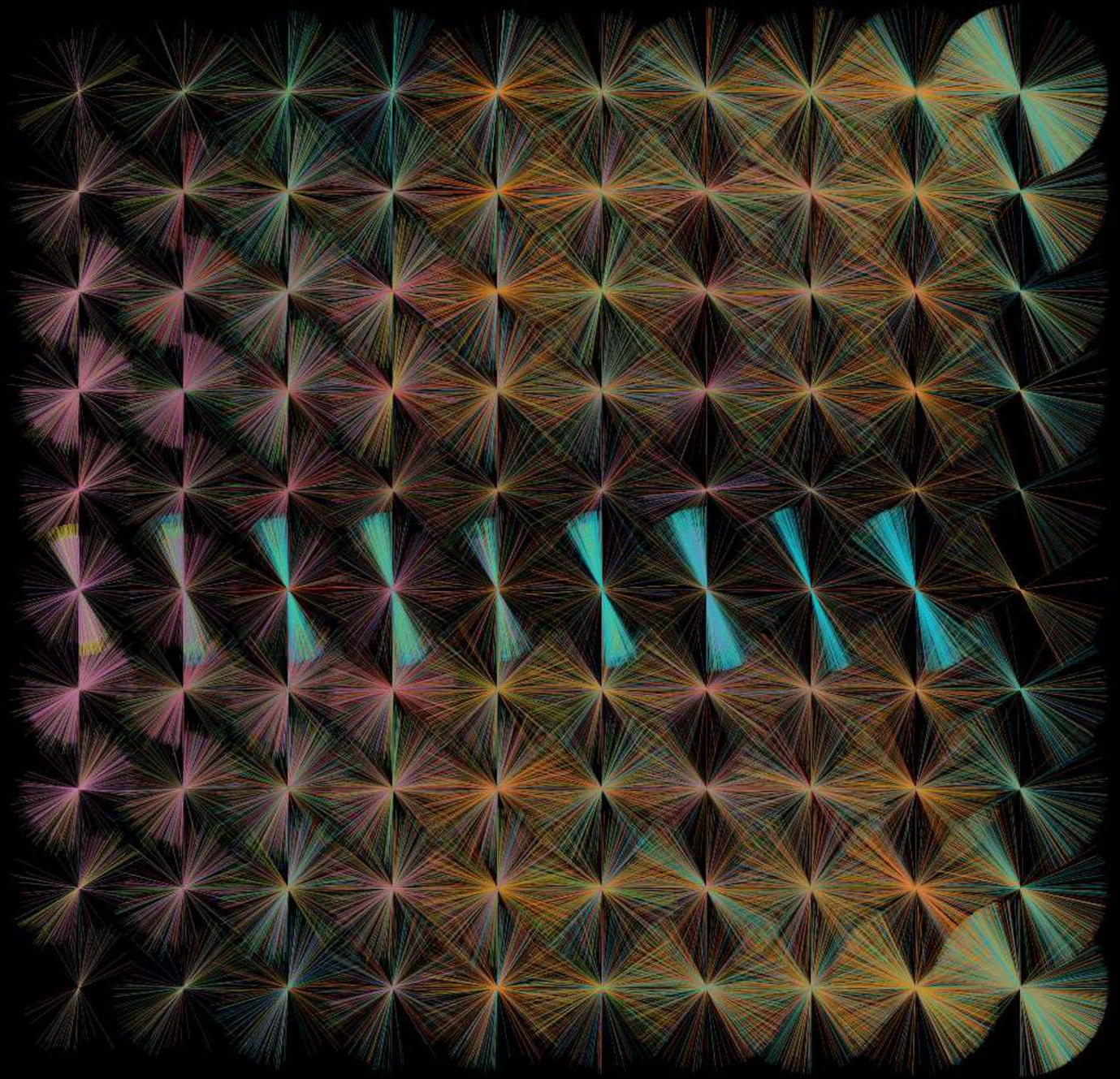
The color red with strong color contrast.
For traders, red is an ominous color.
It evokes danger and alertness.



Hidden Grail: tab10

The color that I use a lot in my quantitative research.

It is one of the default colormaps in Matplotlib consisting of 10 colors that are designed to be as distinguishable as possible.



Traits in detail

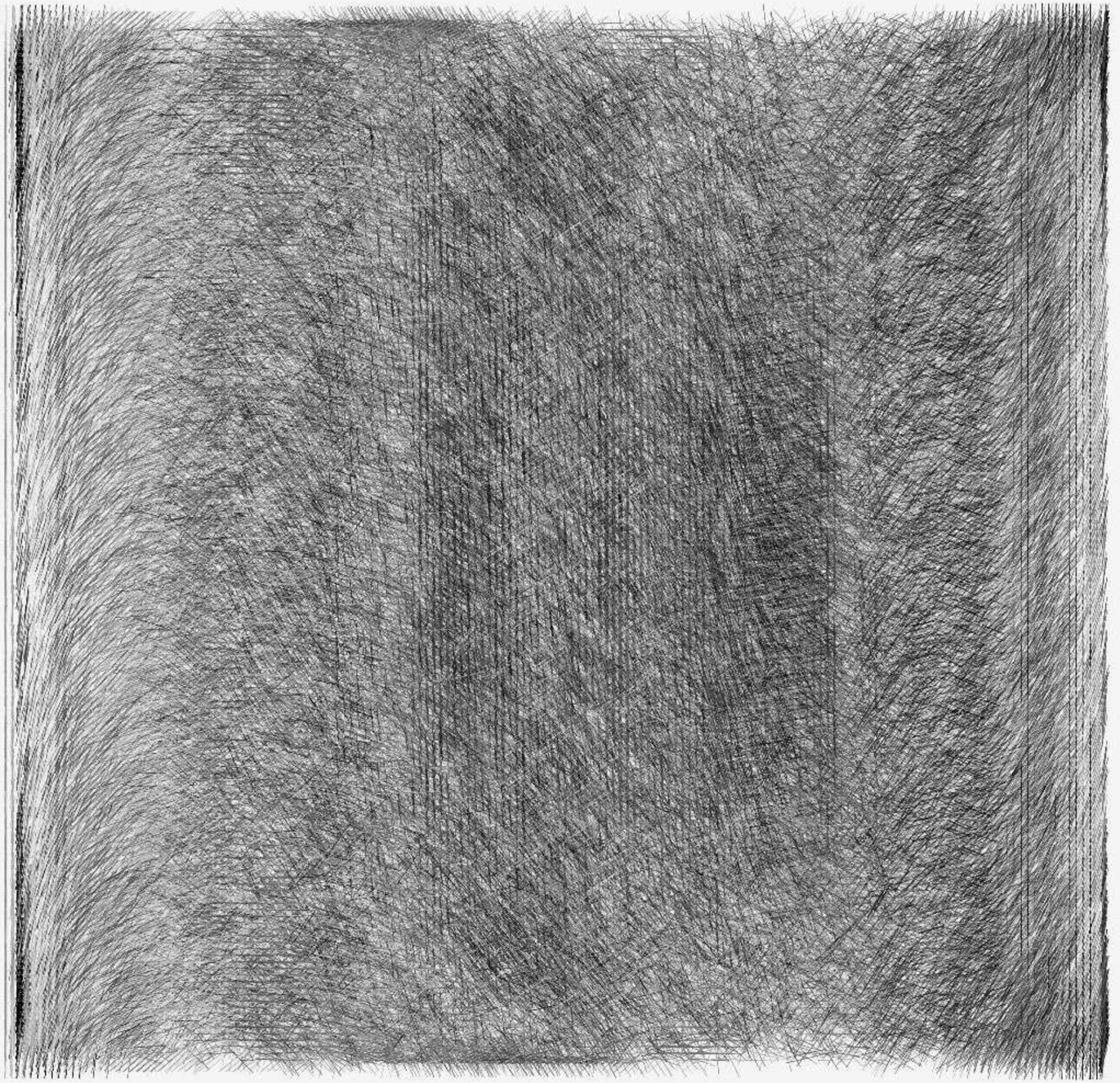
Texture

Texture is a reflection of my experiences that I have gained of being a quantitative researcher in the crypto market.

There are nine different types of textures in the collection: {dense, maze, airy, shell, crystal, uniform, matrix, suede, sonar}

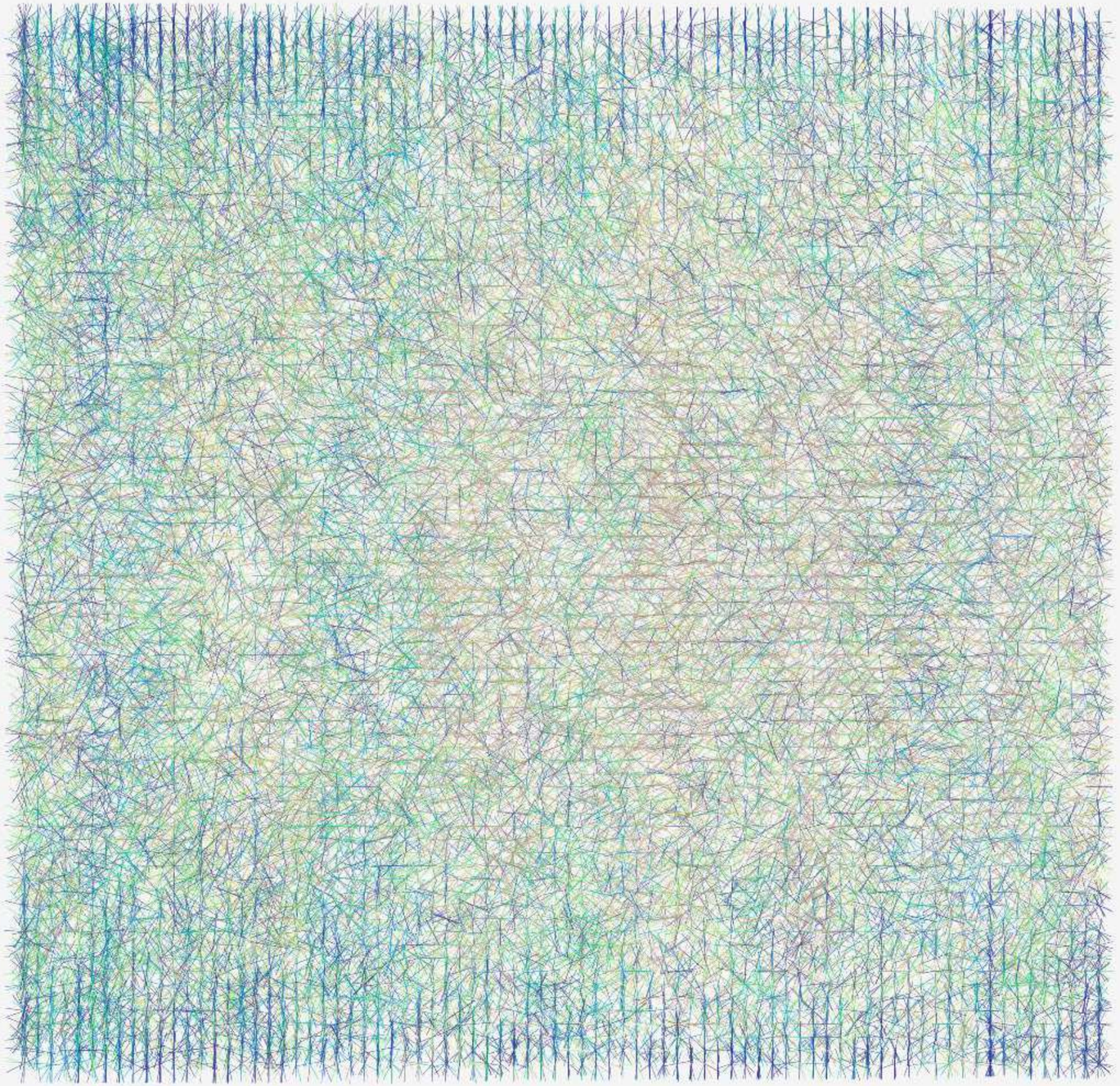
Financial data is inherently noisy.
I believe the role of a quantitative researcher is to filter out noise and extract meaningful insights.

Texture: dense



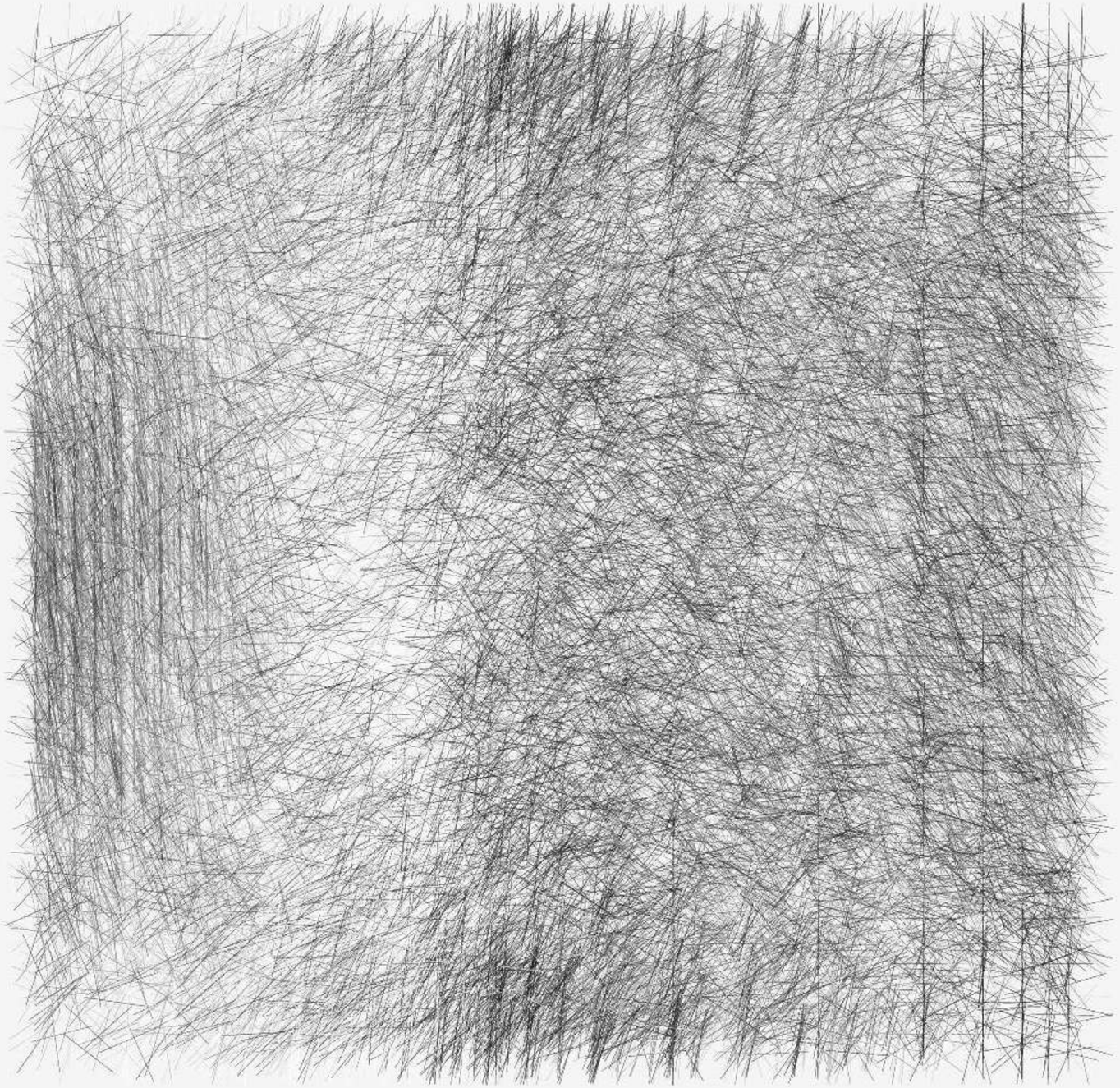
Superficially, it may appear as if there’s nothing, but upon closer examination, you can find flows and relationships.

Texture: maze

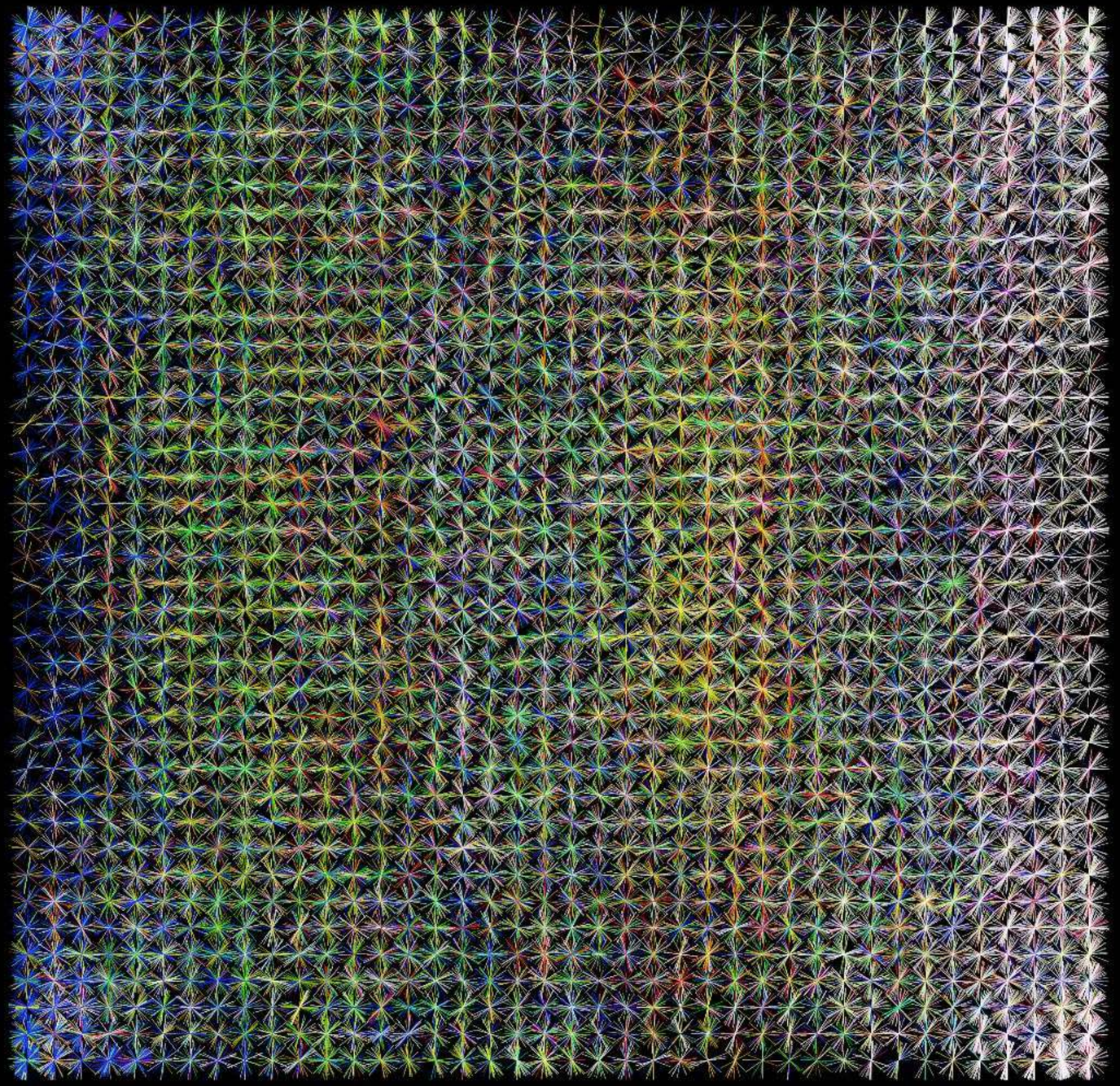


Normally, investors discover patterns and build their own investment strategies. Similarly, I aimed to create an effect of repetition and modulation of small patterns, making it seem like something appears and disappears when observed from a distance.

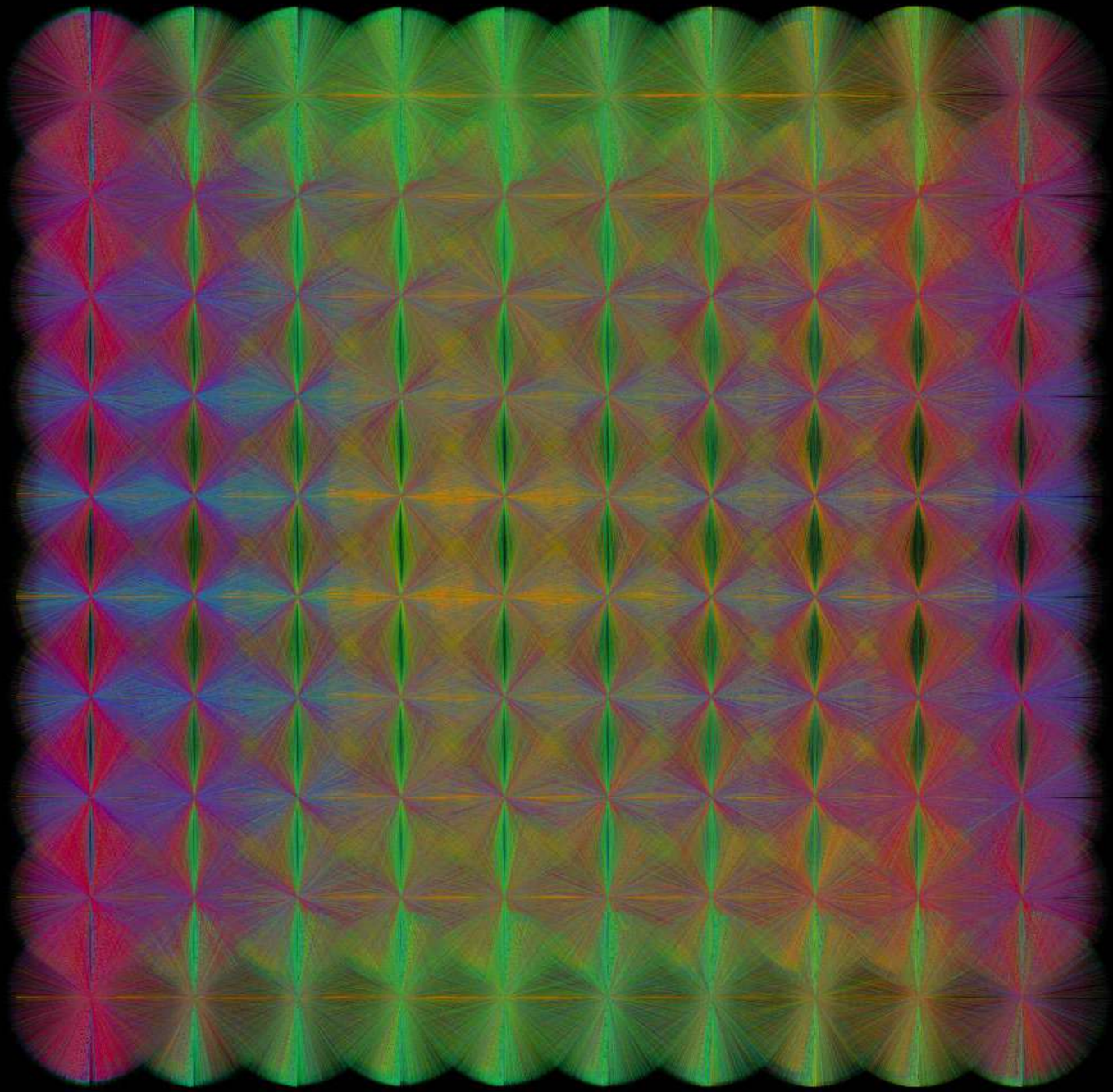
Texture: airy



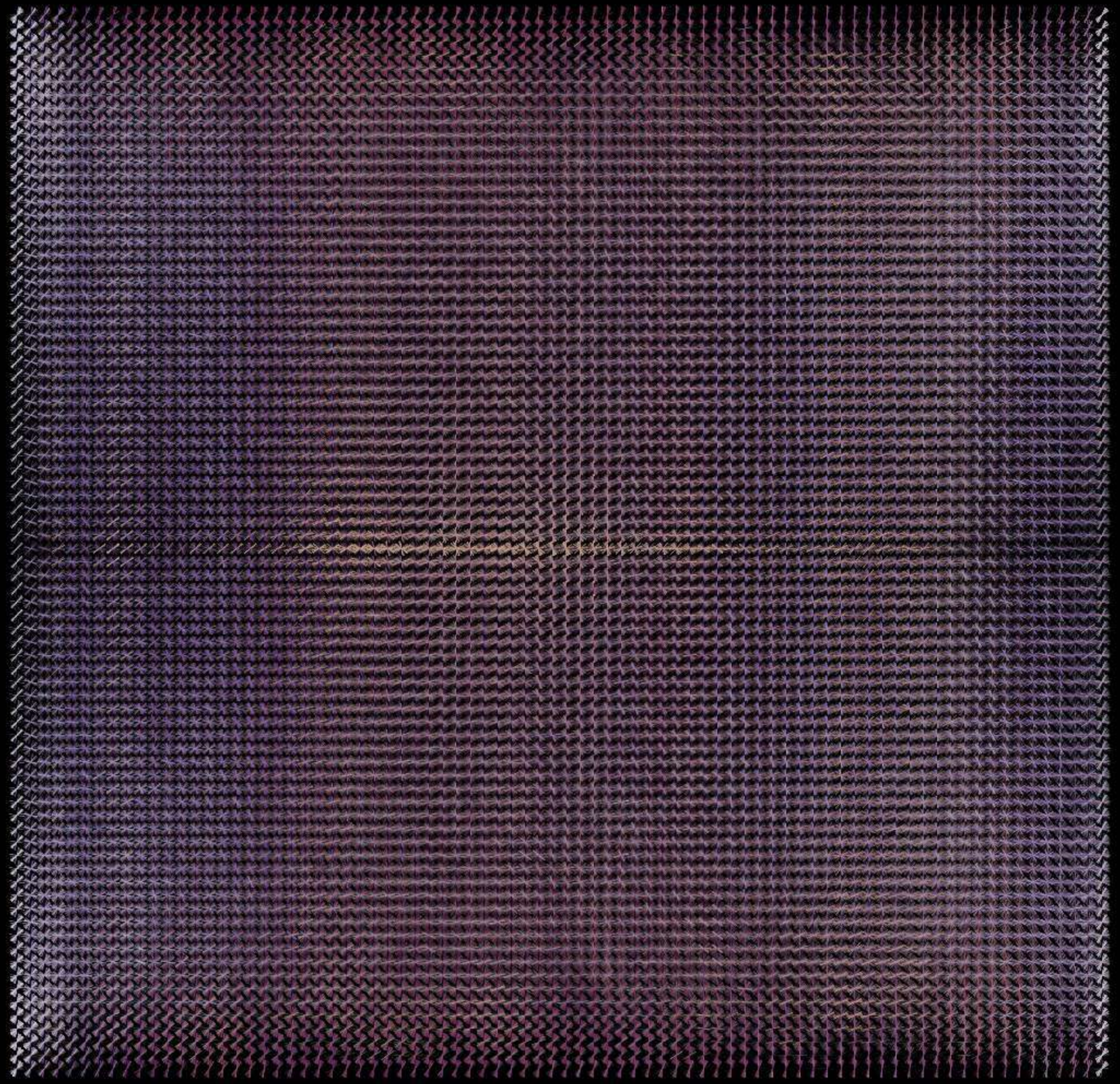
Texture: shell



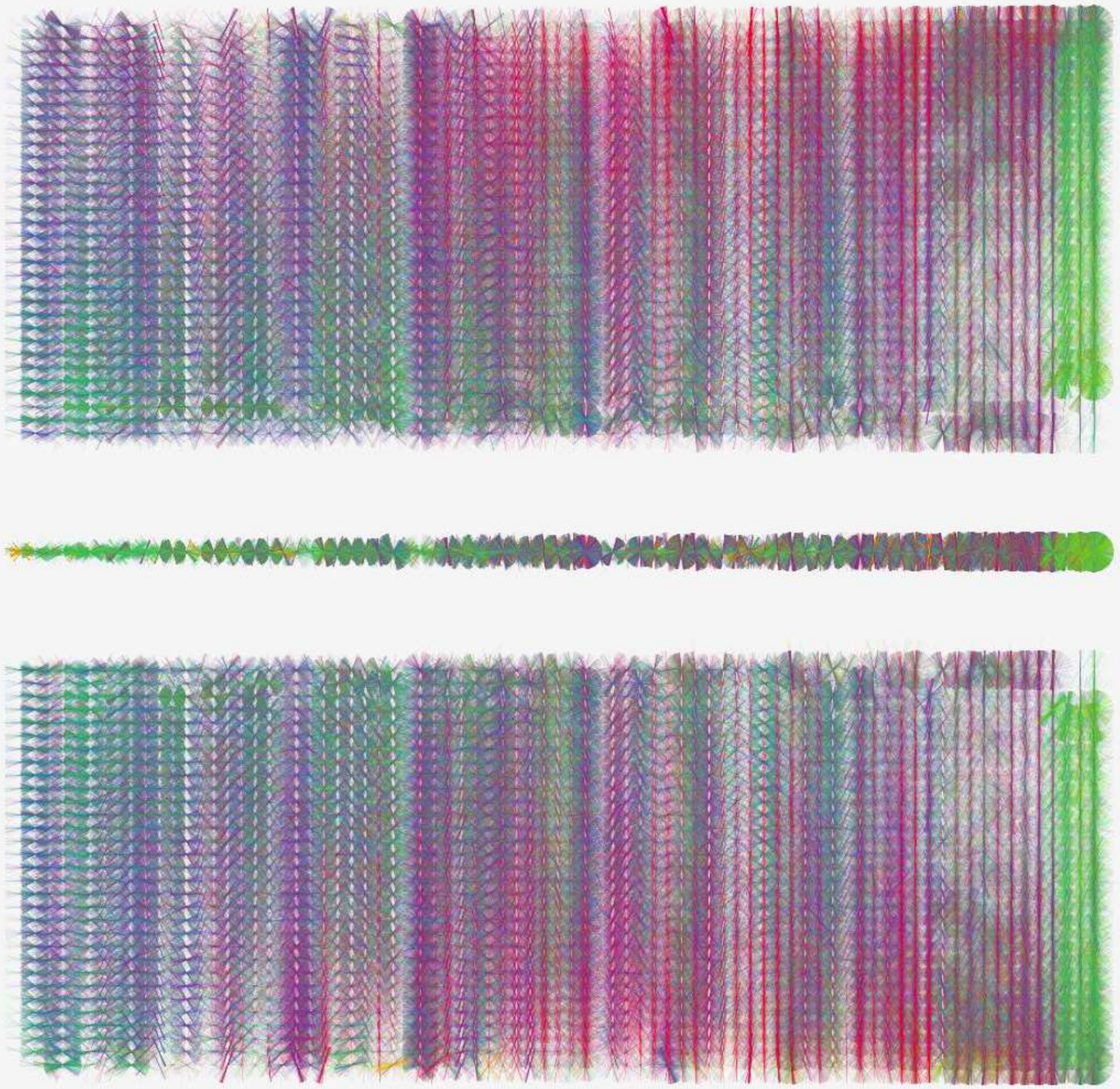
Texture: uniform



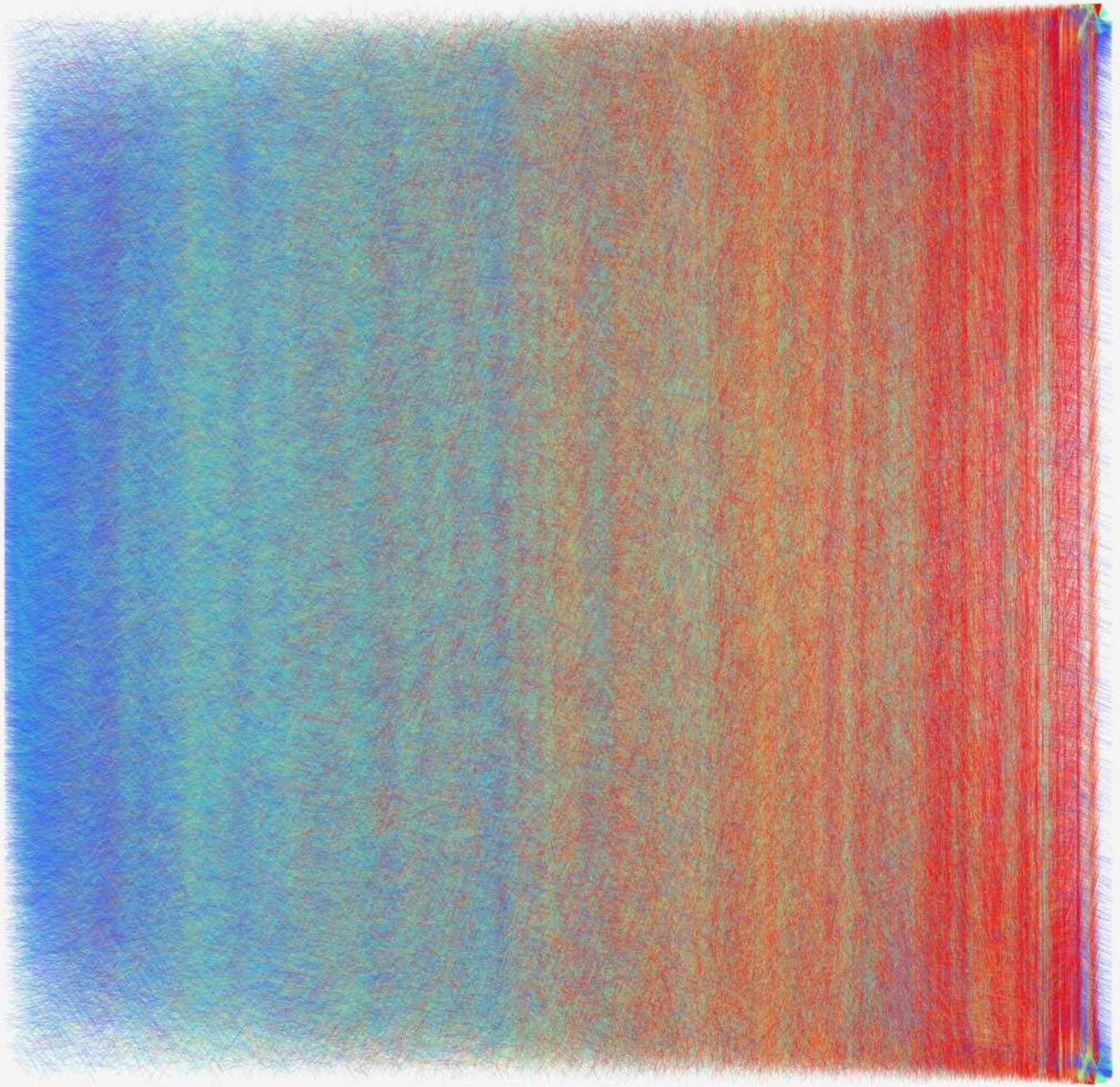
Texture: uniform



Texture: matrix

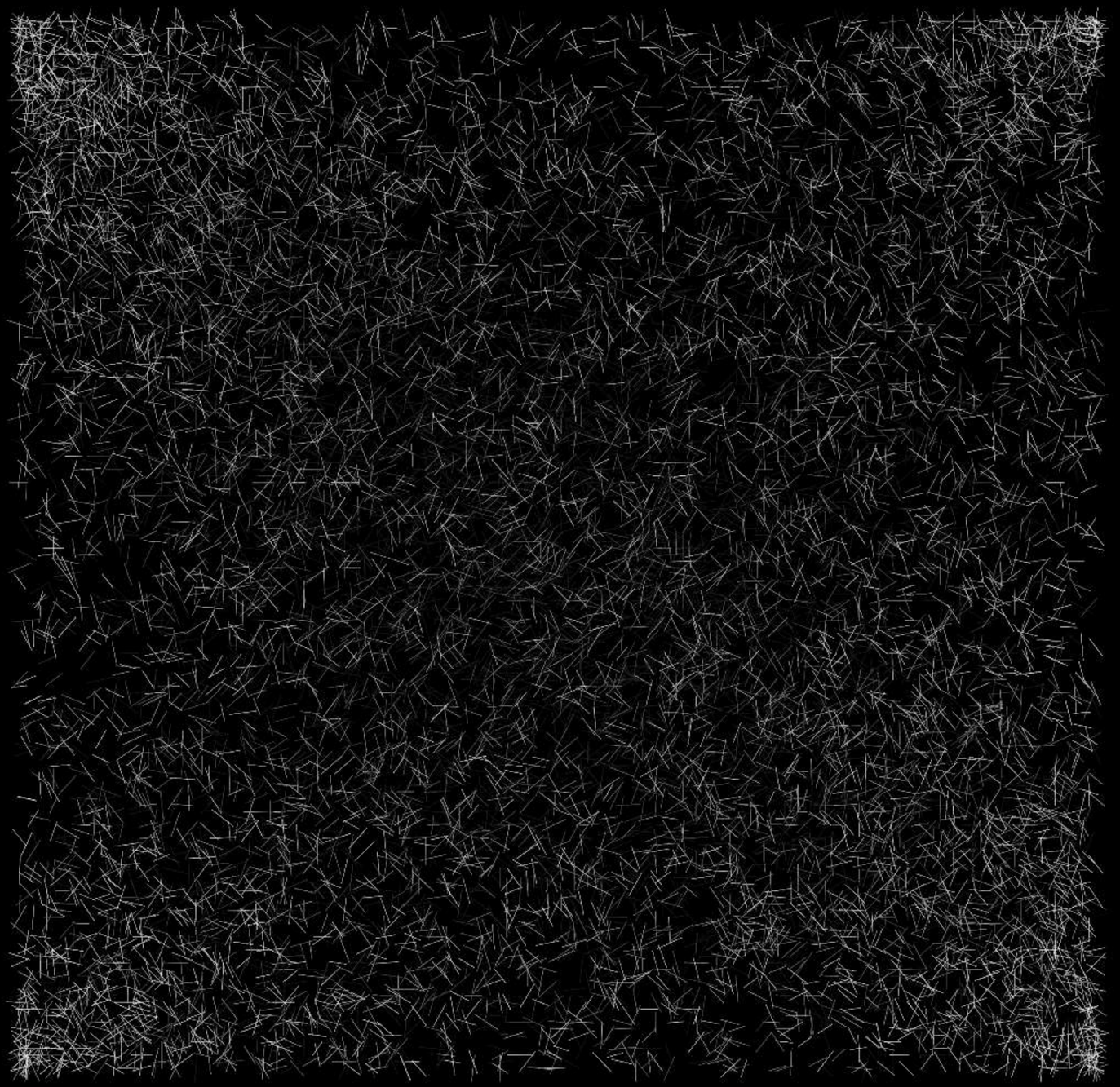


Texture: suede



I hope viewers would look for rules within the chaos.
Finding rules is like searching for alpha within noisy financial data.

Texture: sonar



Traits in detail

Data source

Data source are data that I used in creating *useless*. It is largely divided into three categories: On-chain Data, Centralized Exchange Spot Data, and Centralized Exchange Perpetual Data. I mostly use Perpetual Data when trading.

An exact data source are not included in traits. However, they are recorded in metadata for viewers to know the data behind each work and the meaning behind it.

On-chain

- Active address
- Hashrate

Centralized Exchange Spot

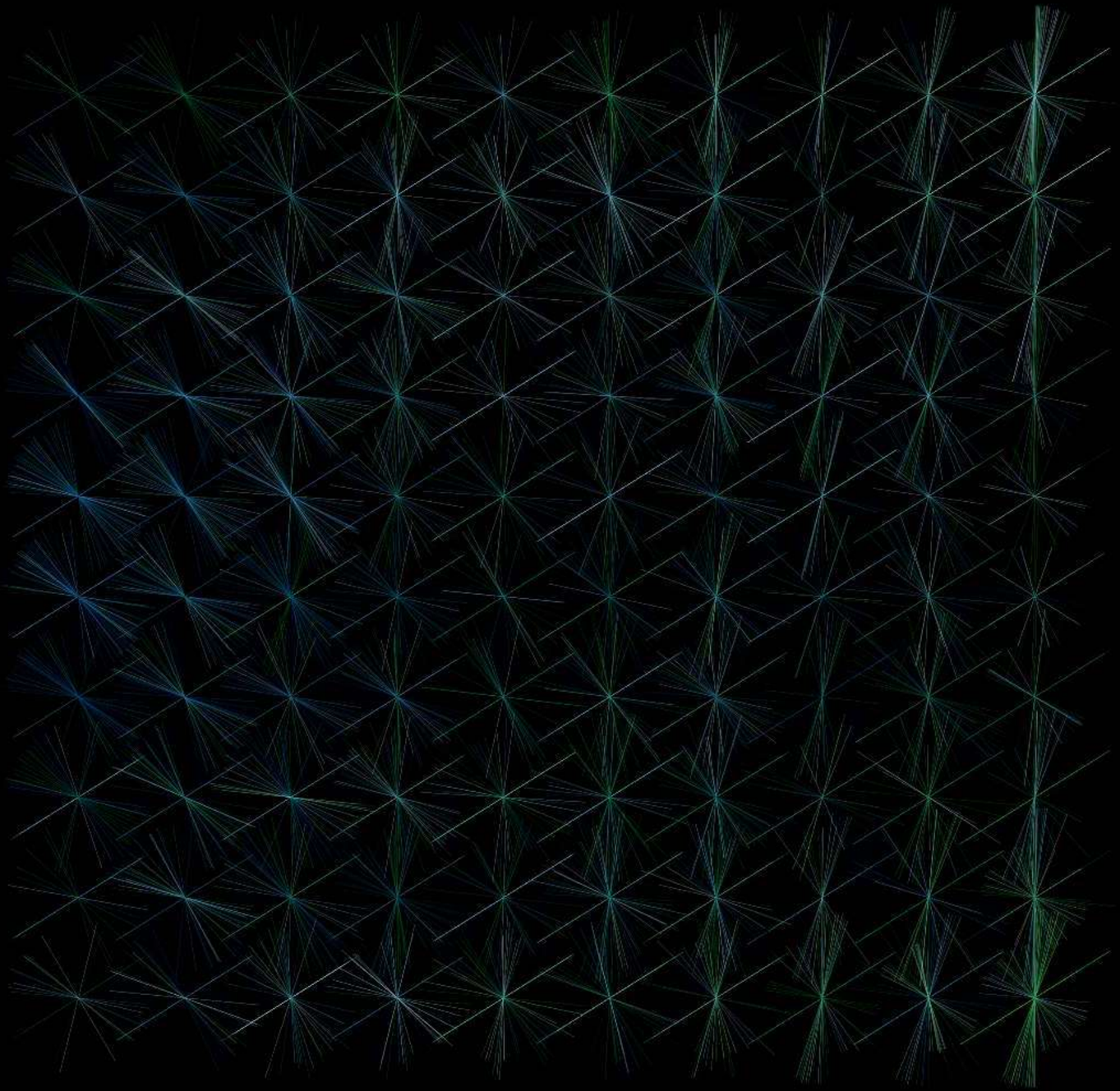
- Dollar volume
- Highest price/lowest price ratio series
- Return series
- Next interval return
- Return standard deviation series

Centralized Exchange Perpetual

- Funding rate
- Long/Short ratio
- Open interest
- Perpetual premium index
- Futures taker buy/sell ratio

Hidden Grail: funding rate

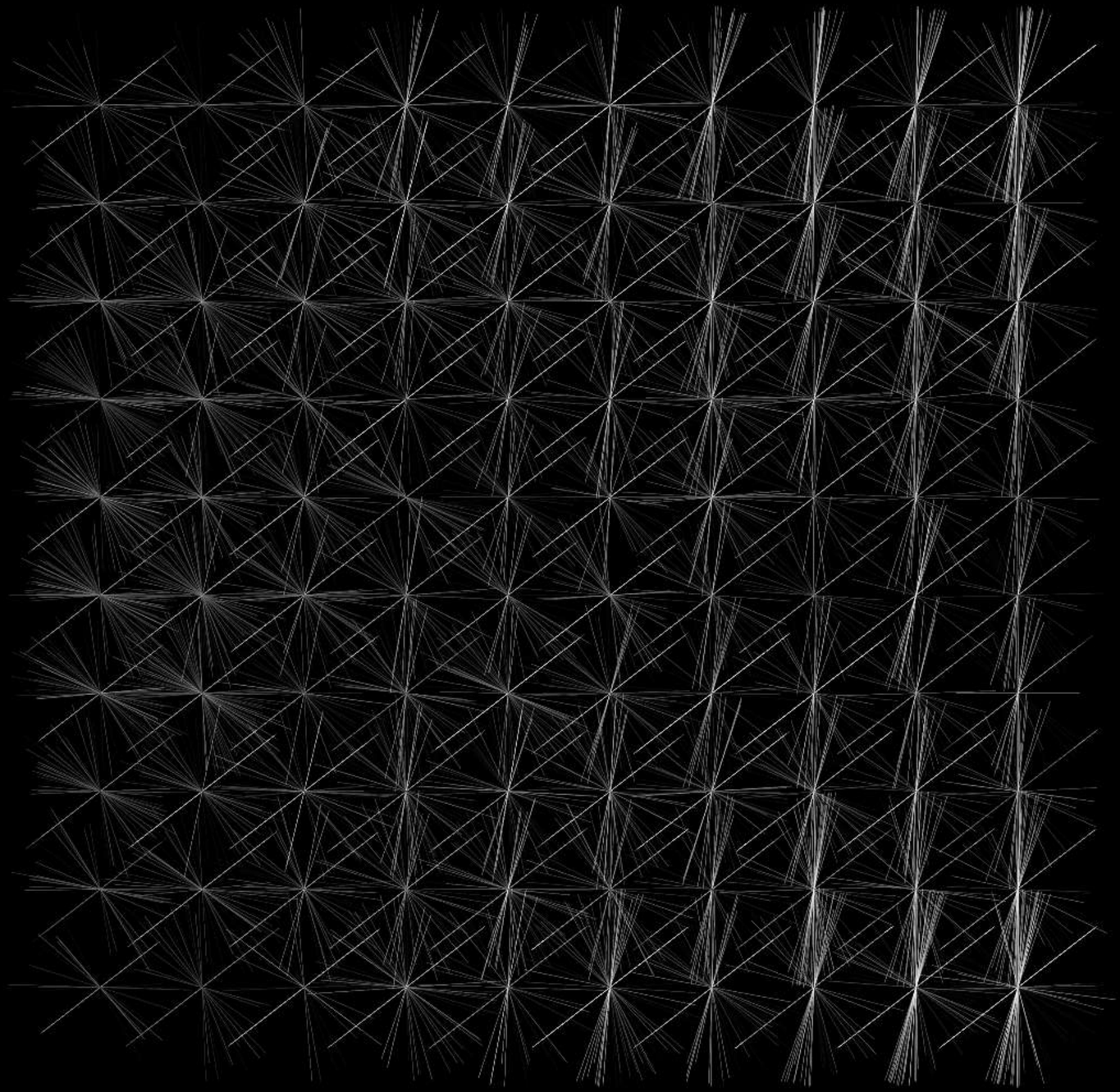
Funding rate: The rate of fees that traders of one side pay to their counterpart. It is used to control the price difference between spot and futures, since perpetual futures have no expiration. It is a feature unique to crypto perpetuals, and is an indicator of how much premium exists on the futures market.



Hidden Grail: funding rate

Funding rate has a unique stroke when plotted.
A series of slashes are formed due to the unique data distribution of funding rates, where a big portion of data points have 1 basis point (equal to 0.01%) as their value.

Mapping such data values to the slope of lines leads to most data points being mapped to one single unique slope, resulting series of slashes.



Metadata description

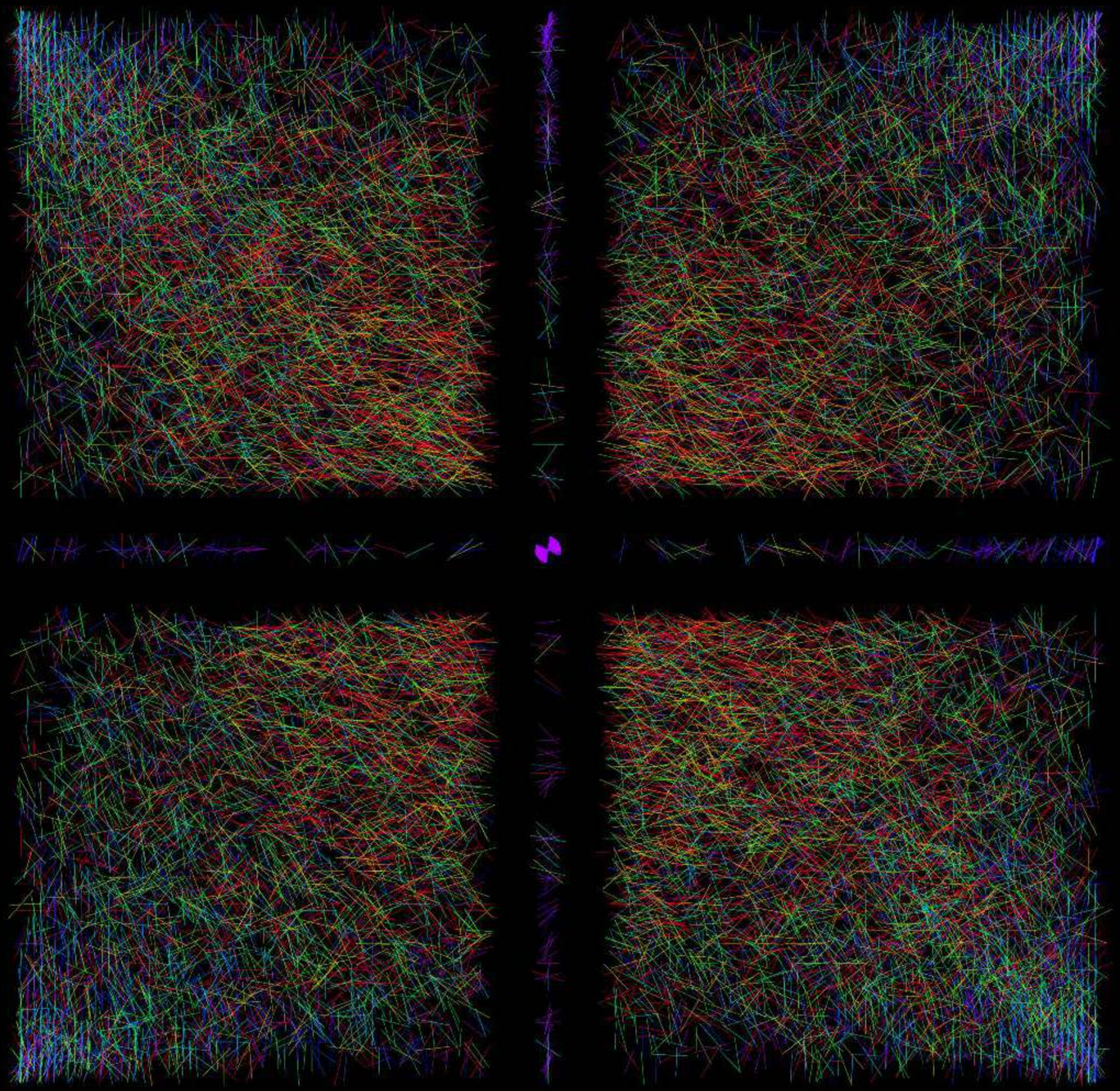
X coordinate: Interval return
- Bitcoin's return at a given time frame. It can be used as an indicator of momentum or mean reversal based on the chosen period and trading algorithm.
- spot data

Y coordinate: Next interval return
- The ultimate goal of trading. The final objective of research and modeling is to forecast future returns and make profits.
- spot data

Color mapping: Active address
- The number of active bitcoin wallets. It is a measurement of how many people are actually using the Bitcoin ecosystem.
- on-chain data

Line slope: 1 month return
- Bitcoin's return at a given time frame. It can be used as an indicator of momentum or mean reversal based on the chosen period and trading algorithm.
- spot data

Line length: Hashrate
- The amount of computational power used to validate transactions on the Bitcoin network. A higher hashrate indicates a more secure and efficient network.
- on-chain data



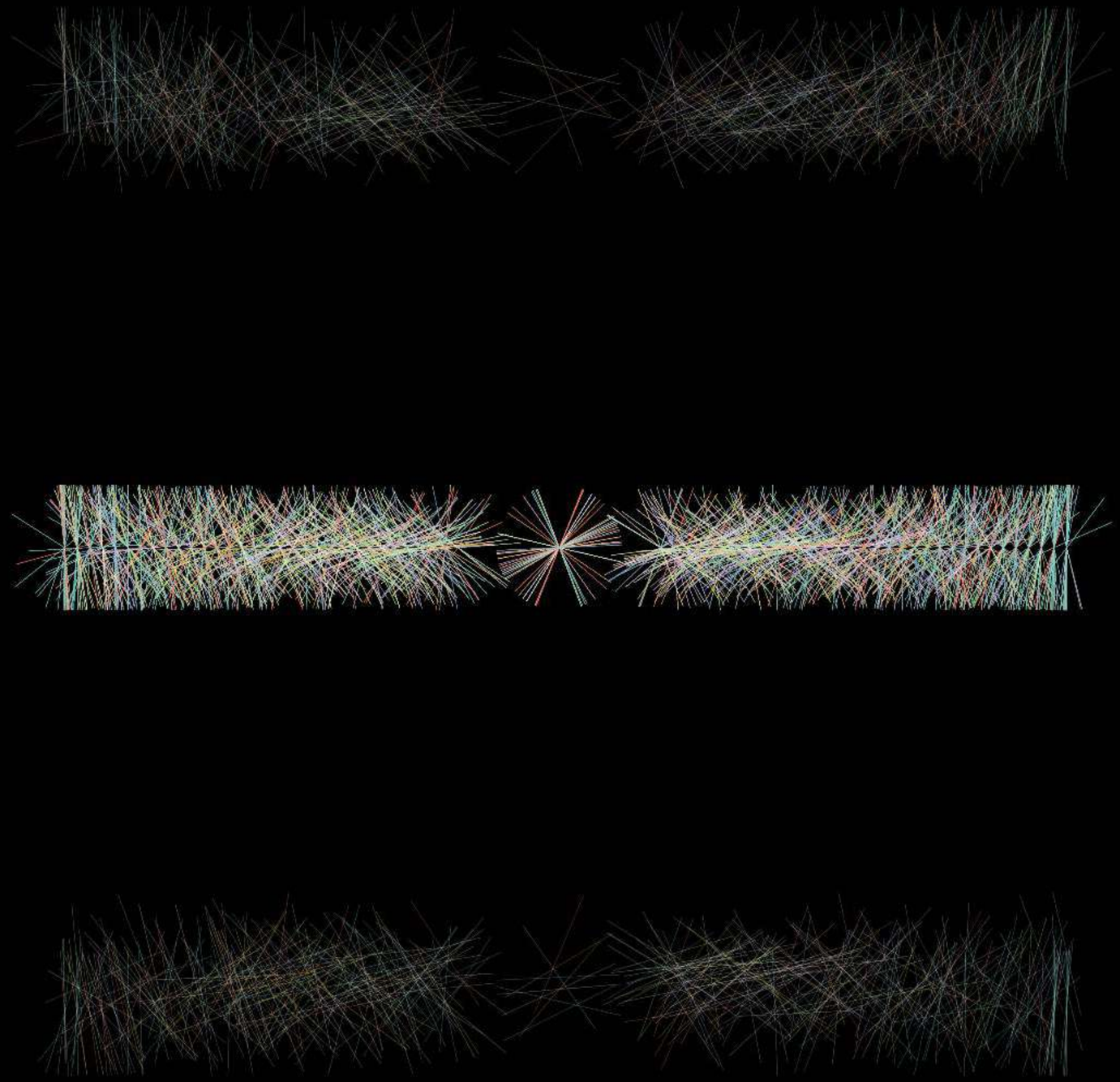
Metadata description

X coordinate: 1 day return
- Bitcoin's return at a given time frame. It can be used as an indicator of momentum or mean reversal based on the chosen period and trading algorithm.
- spot data

Y coordinate: Next interval return
- The ultimate goal of trading. The final objective of research and modeling is to forecast future returns and make profits.
- spot data

Color mapping: 1 month highest price/ lowest price ratio
- The ratio of the highest price and lowest price at a given time period. An indicator reflecting how volatile the market is.
- on-chain data

Line slope: 1 week return
- Bitcoin's return at a given time frame. It can be used as an indicator of momentum or mean reversal based on the chosen period and trading algorithm
- spot data



Traits in detail

Block reward

Interval

Distribution shape

There are three traits in the useless collection that influence the shape and composition of the artwork, namely block reward, interval and distribution shape.

Traits in detail

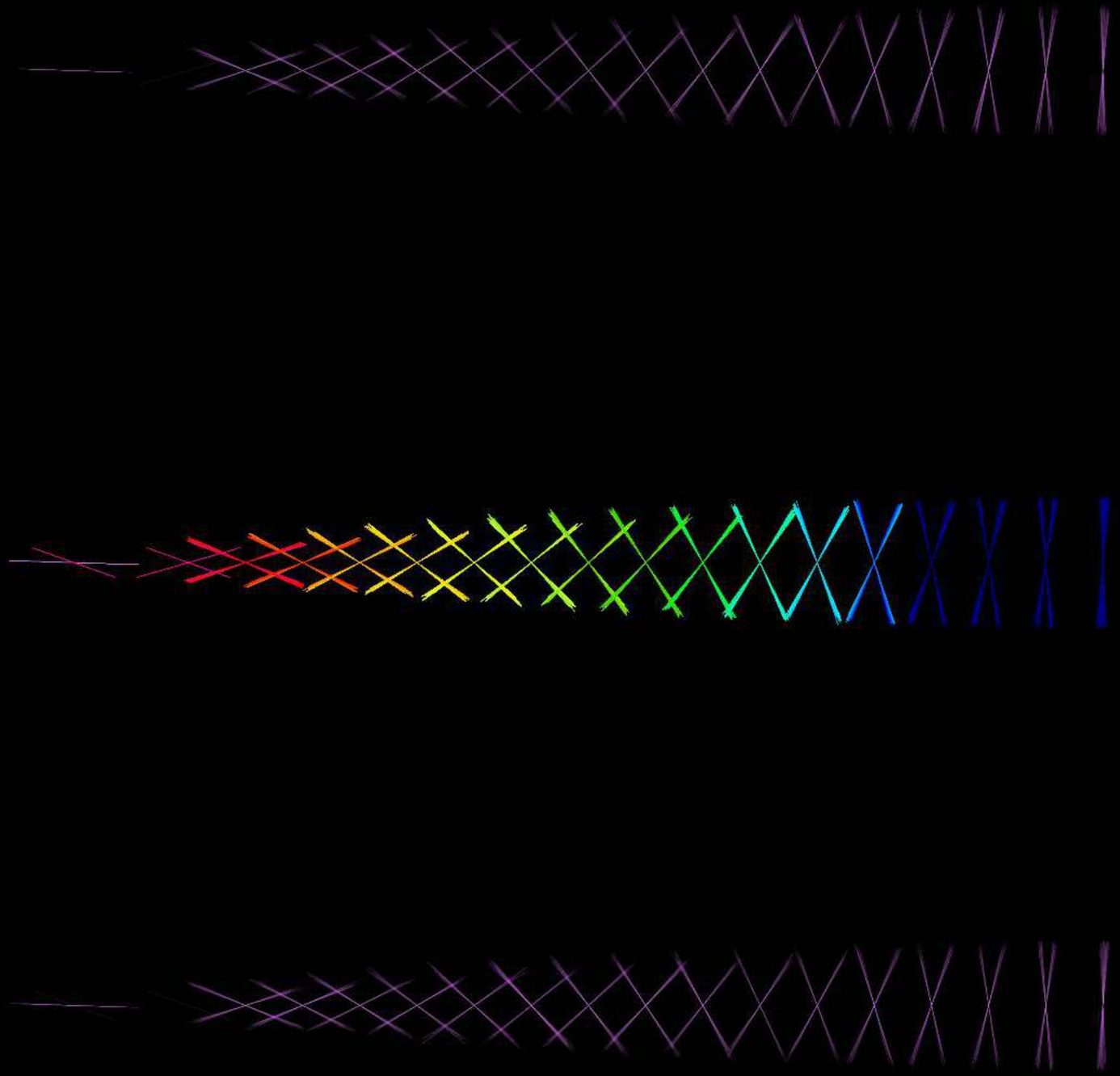
Block reward

Block reward represents data period as the amount of the reward halves roughly every four years.
Block reward in *useless* comprises of 50, 25, 12.5, and 6.25.

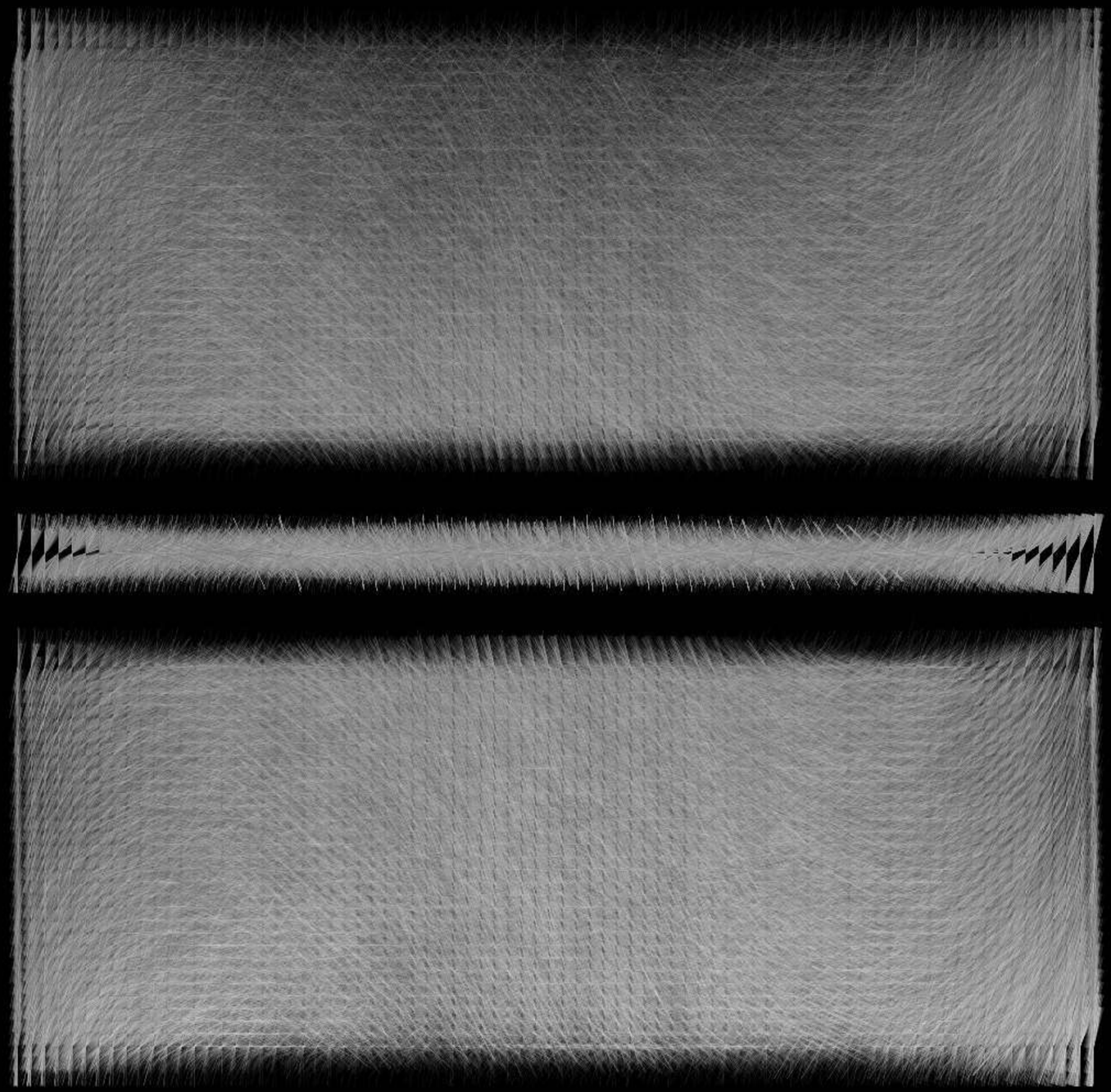
Since I create art based on data, the composition of the artwork is dependent on the amount of data available. The earlier the market data is, the more missing the data points, therefore the more empty the artwork appears. For block reward, it is apparent that spaces between three vertical lines get filled in with data as it transitions from 50 to 6.25.

As time progresses, the artwork becomes more filled in. This reflects the process of the market gradually forming and evolving, which I find very intriguing.

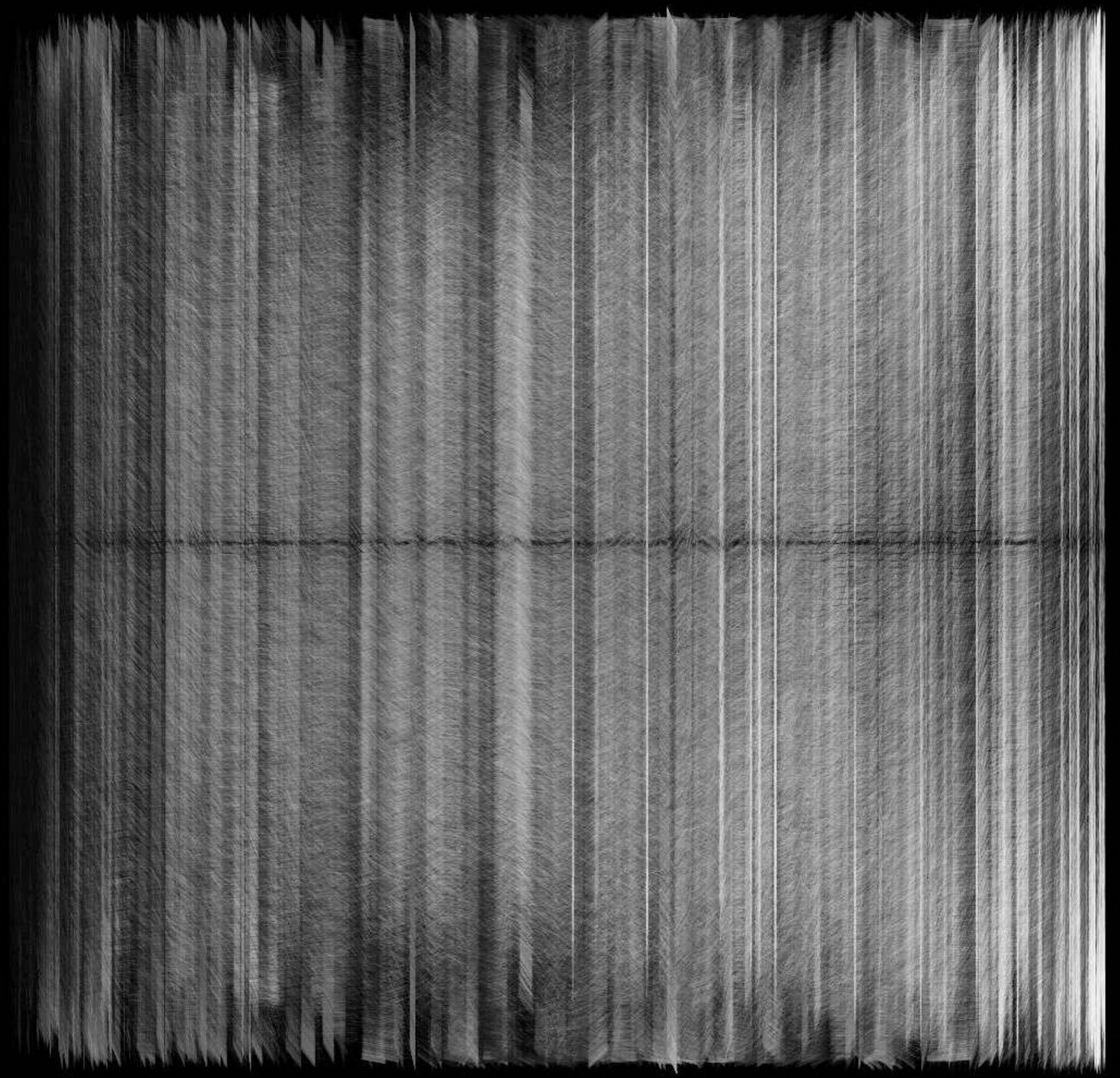
Block reward 50



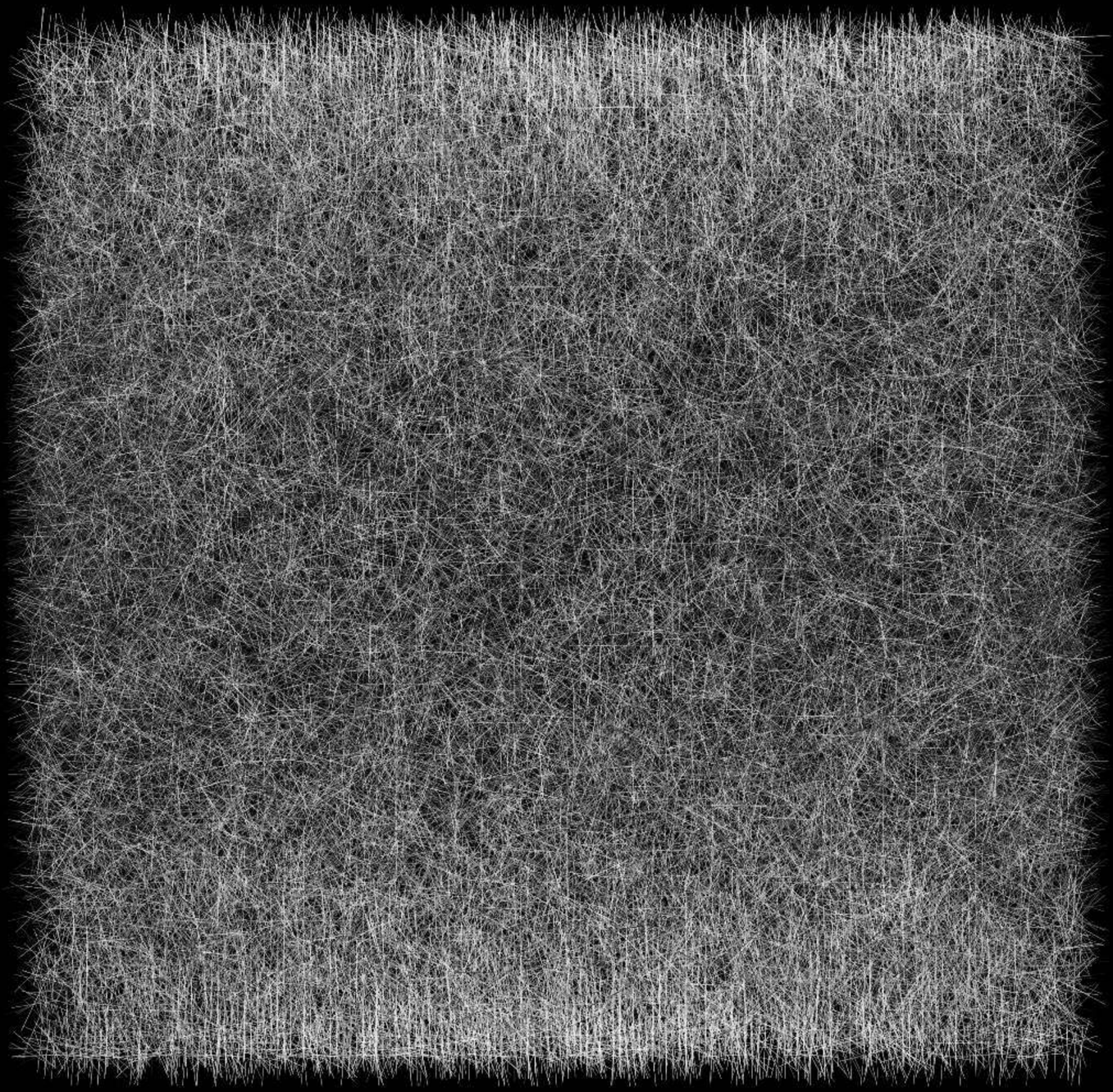
Block reward 25



Block reward 12.5



Block reward 6.25



Traits in detail

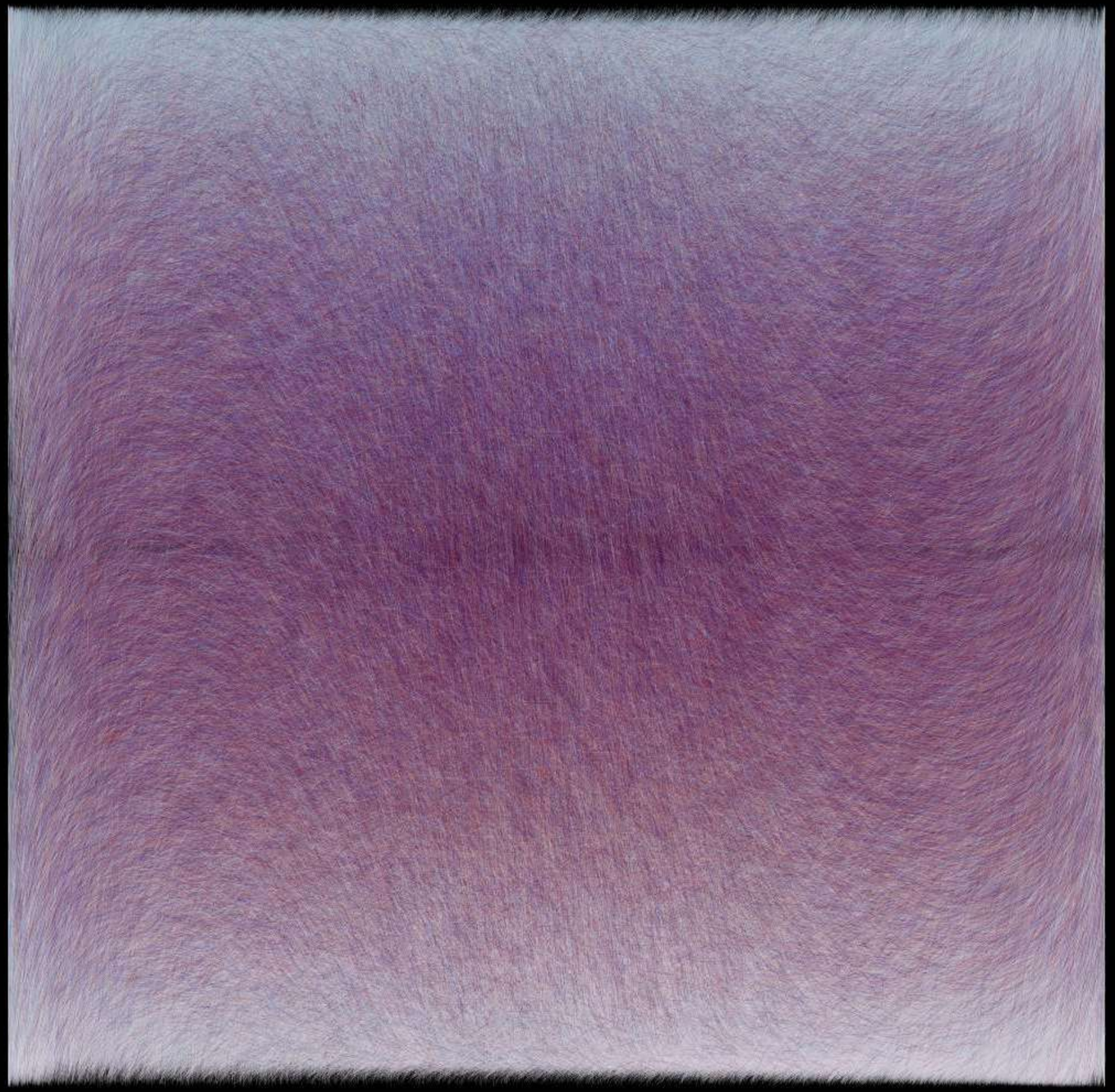
Interval

The data interval refers to the time frame used to observe the market. Traders choose intervals that align with their trading approach to view the market data.

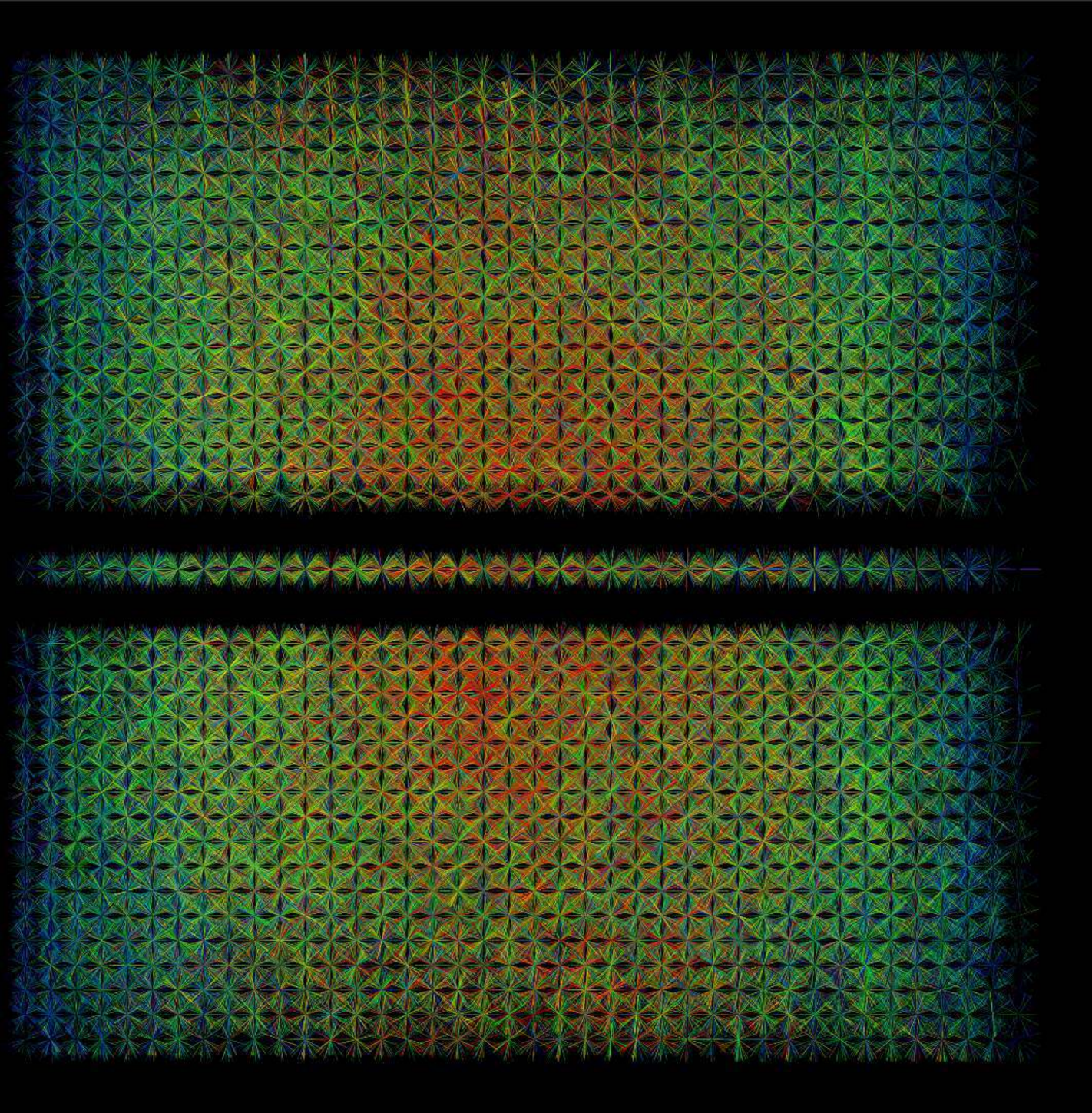
Intervals included in *useless* are 1m(1 minute), 5m(5m minute), 15m(15 minutes), 1h(1 hour), and 4h(4 hours). They are intervals that short-term traders often look at. I do mid-frequency trading, so I frequently examine data ranging from 1 minute to 1 hour.

Intervals have a visual impact on the overall density of the artwork. Shorter intervals mean more data points, increasing noise in data. Conversely, longer intervals result in fewer data points as data is aggregated, reducing noise but potentially sacrificing data freshness.

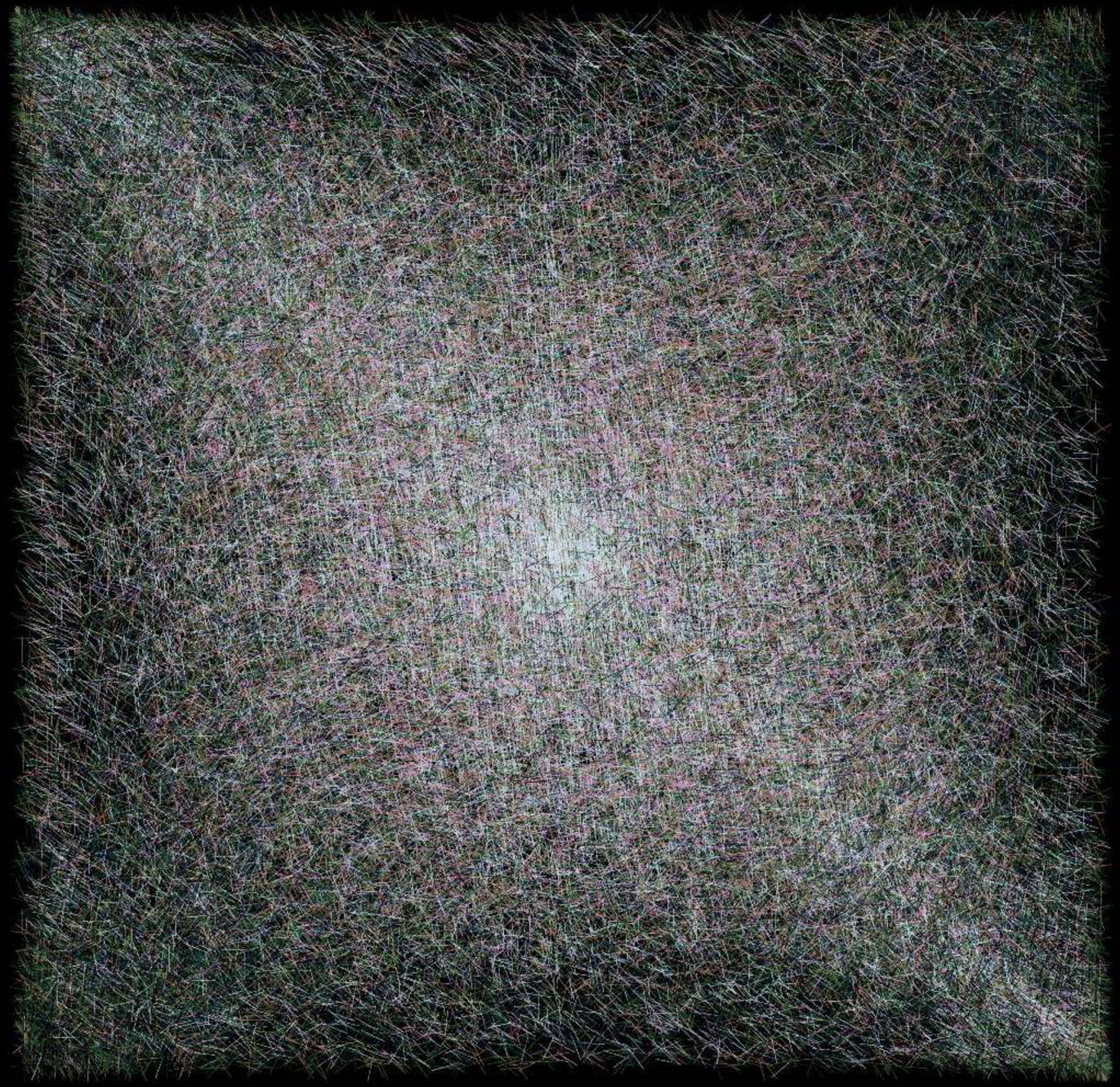
Interval 1m



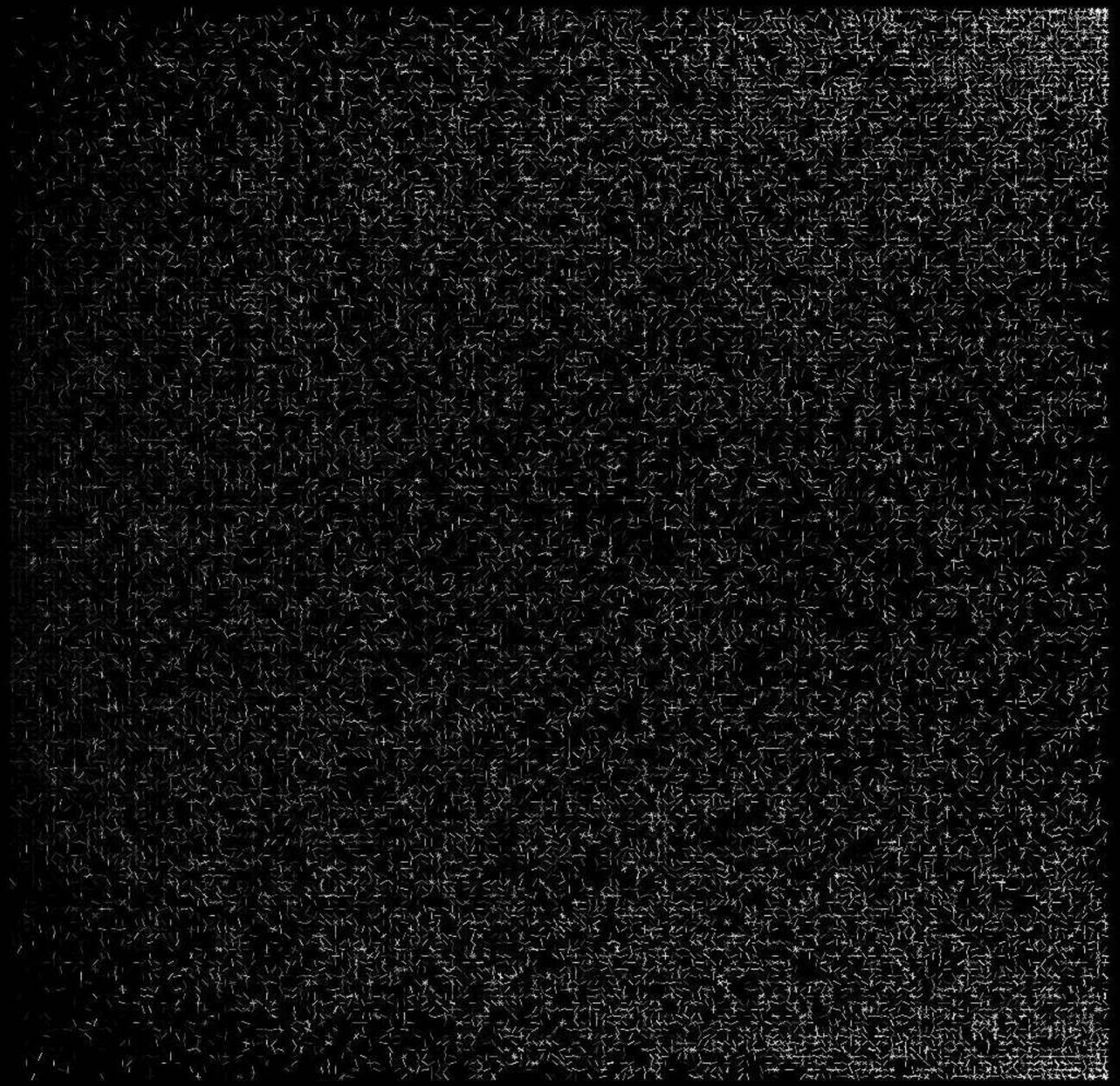
Interval 5m



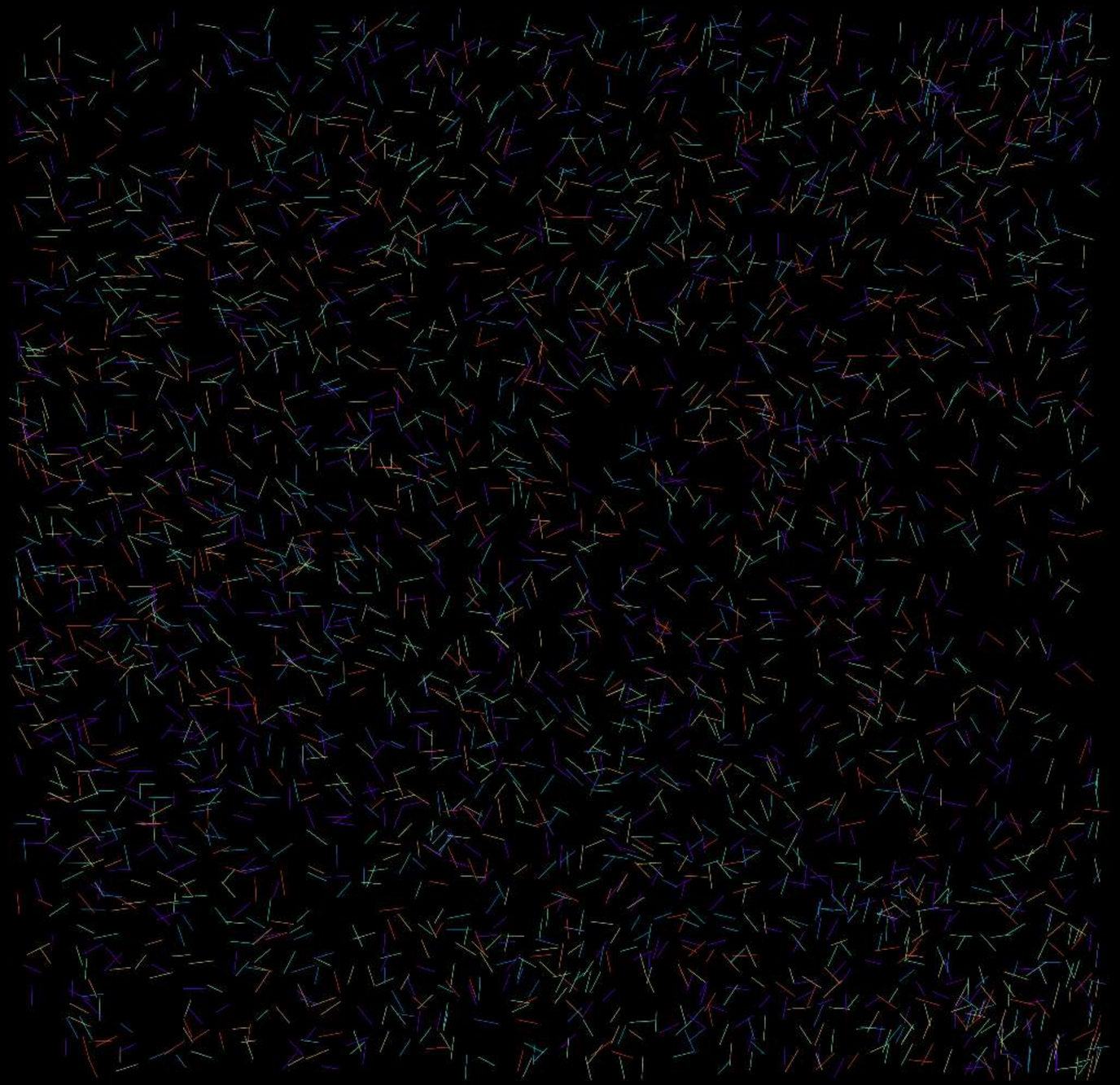
Interval 15m



Interval 1h



Interval 4h



Traits in detail

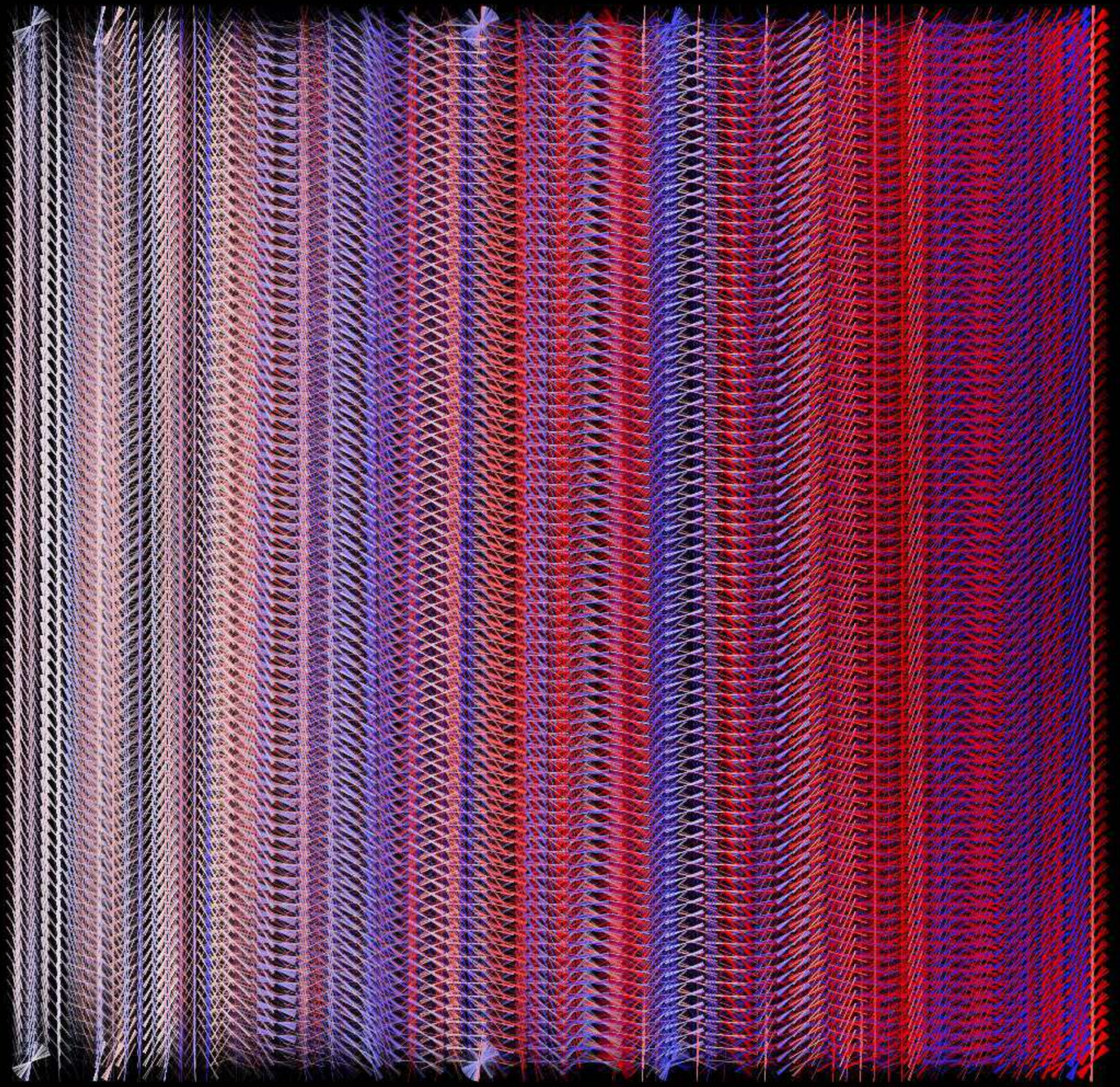
Distribution shape

The distribution shape represents the relationship between X data and Y data.

There are three shapes: vertical, square and parabola. They tell us about different correlations of data.

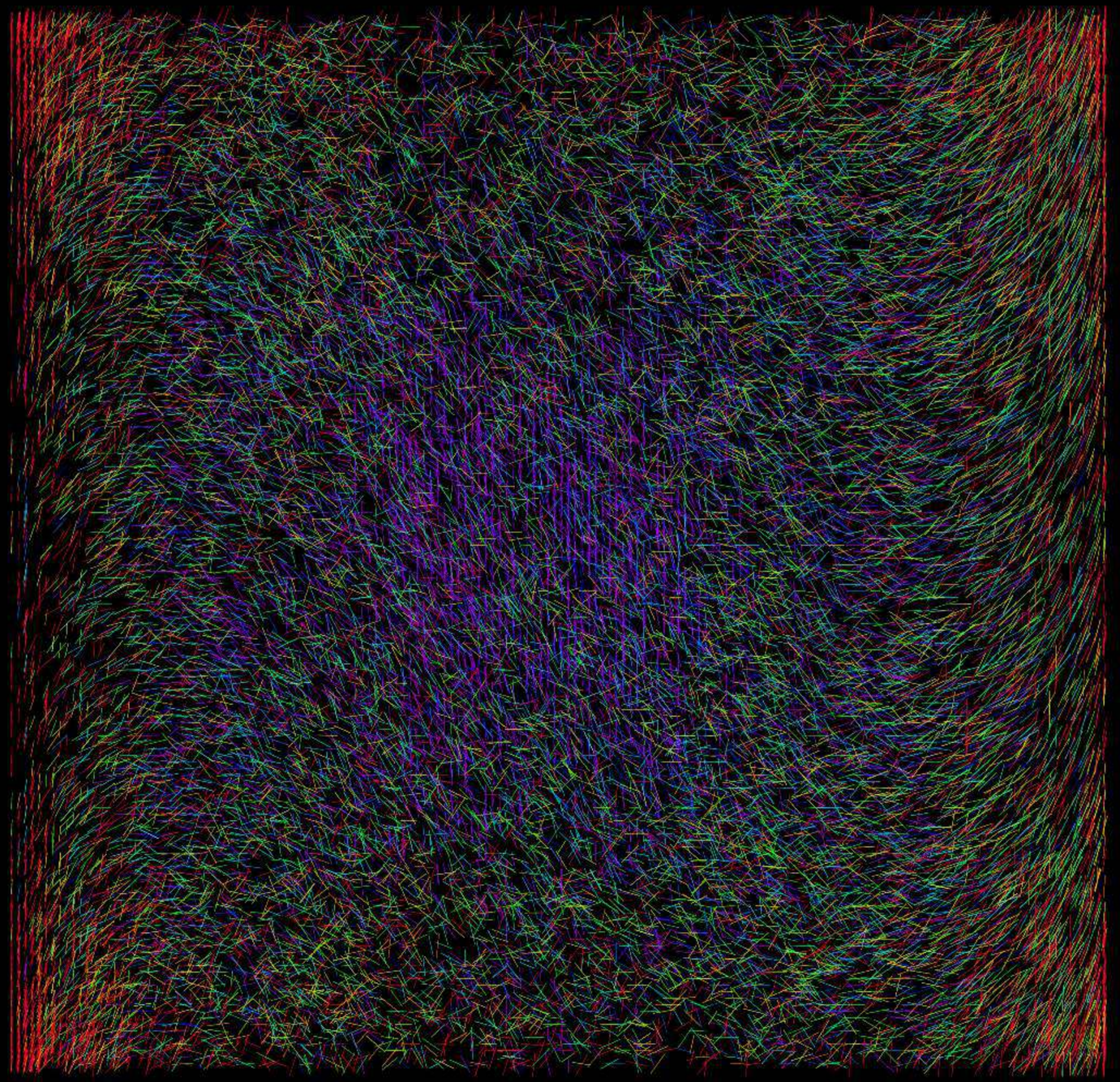
Vertical

The data points of X data form clusters that converge into certain X coordinates, resulting in a distribution with a vertical pattern.



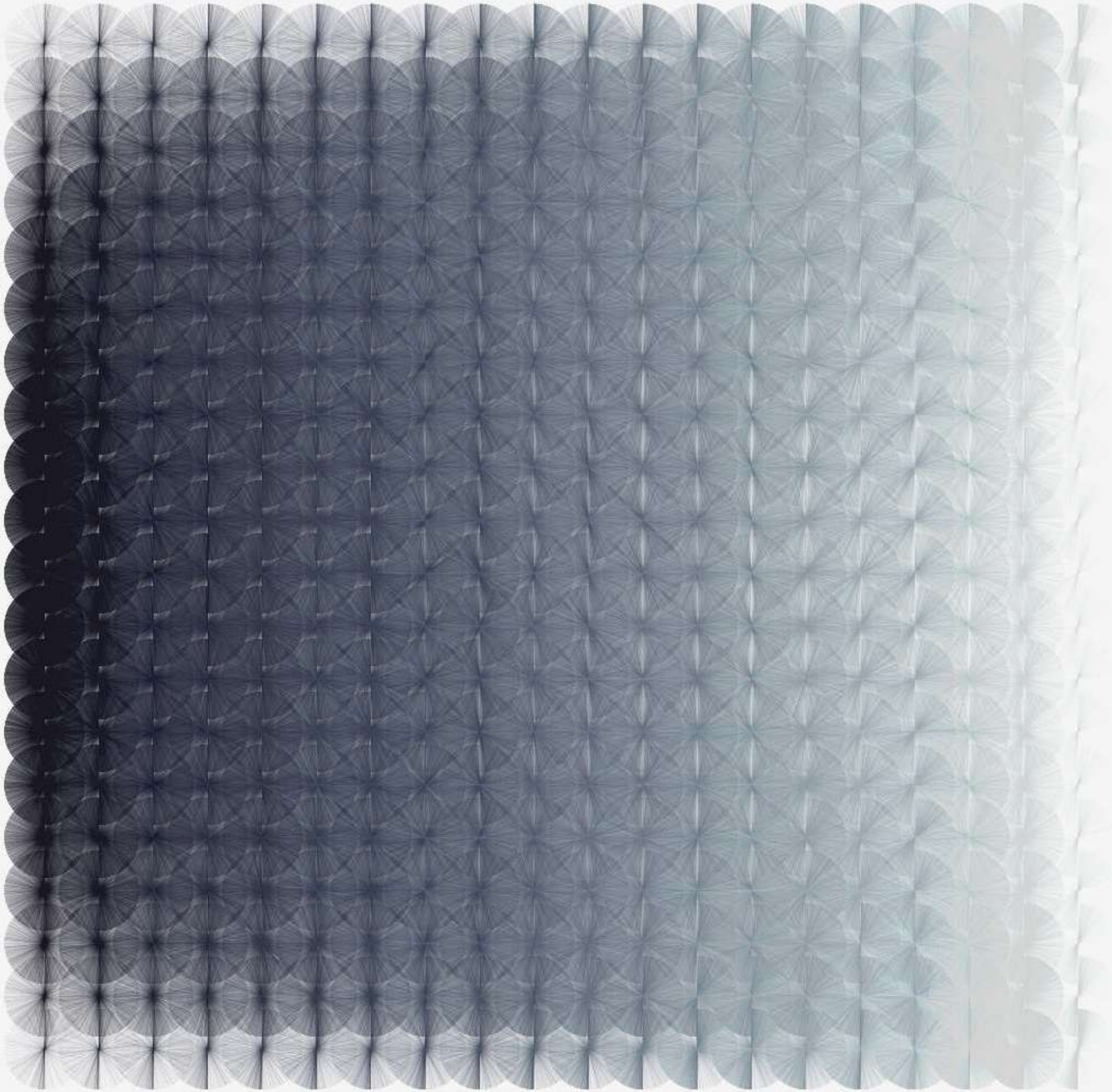
Square

When the correlation between X data and Y data is weak, it results in a noisy pattern.
However, within this seemingly meaningless noise, there may be hints of some underlying relationships.



Parabola

If the absolute values of X data are positively correlated with Y data, it results in a distribution that resembles a parabolic shape.



About

chiko

I plot data.

As a quantitative researcher, who explores the financial domain of data science, I immerse myself in the daily study of data constantly seeking market alpha.

Coming from a multidisciplinary background, having studied Business Administration, Computer Science and Visual Design in Undergraduate at Seoul National University, and currently working as a quantitative researcher, part of me always yearned to find an overlap between finance, computer science and art. An opportunity arose one day upon drawing a graph based on quantitative data, which happened to be aesthetically pleasing. Reminiscing the days of doing Visual Design, I wanted to further develop the visuals of a graph, which led me to stumble upon Generative Art. As I dig deeper into Generative Art, the more I was captivated by it, because it enabled me to express the world I see through data via data and algorithms.

Beyond my role as a quant trader, I am merely another individual who came to crypto to wagmi.

Currently based and working in Seoul.

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