

Generominos

generative ideation cards by GalaxyKate

www.galaxykate.com/generominos

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Generominos are here to help you design your interactive artwork, alt-control game, or generative art experiment!

Each card represents a step in a generative pipeline that transforms **input data** into **output data**. Inputs and outputs have **data types**, and not all data types are compatible! If you have a card producing **geolocation** data, and want to use that in a card that needs **text** input, you'll need a card to convert that data into the right output type.

To design a pipeline, connect some number of **input cards** (they have a blue bar at the top) to some number of **output cards** (with a red bar at the top), passing vertically through as many conversion cards as you need to along the way.

Is your design not quite exciting enough? Add **input modifiers** (white cards with a blue bar at the top) horizontally next to your input cards. The input icons at the top will suggest ways that these can link together.

Or add **output modifiers** (white cards with a red bar at the bottom) next to your outputs. What if the output were giant? Or on your body? Or hidden somewhere?

If you need inspiration, draw one of the **scenario cards**, each of which has a real-world design challenge on it. You can also use these cards to play a "Cards Against Humanity" variation, where one player acts as the granting agency with a design need, and the other players attempt to propose designs to get their approval.

I hope you enjoy using these, they were a lot of fun to design. -Kate Compton (galaxykate)

Pro-tip! Data with the same symbol is compatible. Data in the same family (with the same color) is often compatible with a little tweaking



person



content



sensor



value

A number changing over time



waveform

A digital or analog recording of a sound's vibration



event

Events are things that happen instantaneously, like a key press or button click



state

Whether something is true or false, over time, between starting and stopping points



geolocation

A location somewhere on the Earth



shape

Shapes mathematically defined by curves or straight lines



graph

A set of edges and nodes



curve

A set of points describing a path. May also have control points for smooth curves



particle

Points with properties like mass, velocity, size, and color



vector

A three- or two- dimensional point in space



text

Letters, numbers, words or other symbols. May be emoji or non-English characters



trimesh

A triangle mesh represents a 3D scene or object as a set of triangular faces (which may have texture or color)



voxel

A 'volumetric pixel' that represents volume in space



color

A color represented by RGB (or HSLA) values



depthmap

A greyscale image of a scene, where the brightness of each pixel shows its distance from a hypothetical camera



image

A picture, represented by pixel data (which may be RGB or HSL)

An art installation for a hospital atrium

Make an installation that can be interacted with quickly, or just appreciated as people walk through an atrium

- The environment is stressful and noisy, design something calming
- For sanitation, no touching the art is allowed

Everybody recycle!

An commission to be installed in a recycling can in a park

- Make recycling fun
- Ideally: get people to tweet about recycling

Public park bench

Outdoor long-term installation of an interactive bench

- Maximum durability, weatherproofness, resistance to theft
- Has to be powered by a small solar panel
- Needs to still function as a bench

Creativity for senior centers

Creativity is linked to positive aging outcomes. Design a way for seniors to make art, and feel proud of their work

- Design for limited mobility, eyesight, strength
- Design for no prior video game experience

Stair game

A game or artwork to be installed in the back staircase in your office

- Get more people to take the stairs
- Don't impede people who don't want to play
- Installed for a day, or over months?

Airport game

A game that can be played while waiting at the luggage carousel

- Played on a screen or other sculpture in the center of the carousel
- Everyone has luggage with them, can you use that?

Science Museum installation

Teach something about science maximum durability, loud boisterous environment

- Usable by children age 4-16 (consider height, control-complexity, and number of interactors)

Indiecade 'soaker'

Indiecade has commissioned you to show a game

- It has to absorb 100 players per hour
- You can choose whether its played at day or at night

Finals Week Stress Relief

Your college wants you to make a stress relief game to be played by students each day at 6pm during finals week

- Should handle 200+ students
- Budget \$200

A game for orangutans

Orangutans are enormously strong (they can snap an iPad) and can be dangerous to trainers

- Orangutans can recognize shapes, but have to be trained to understand cause-and-effect logic
- They have good hearing, color vision, and love to touch strange objects

Gym game

A gym has commissioned an digital game to attract people to the gym

- to be installed next to the cardio machines
- It should make working out fun
- It should stand up to sweaty, energetic people

Seventh Inning stretch

A game to be played on a big screen at a ballpark during a break

- How many people can play at a time?
- Many people are sitting with their families and friends
- Consider the 'kiss cam'

An enrichment game for bored pigs on farms

Playable by pigs and networked humans (or just pigs)

- Low maintenance
- Pigs can follow bright lights, but don't understand images

An installation for a department store window

Usable by passing people from behind the glass window

- Attract attention from across the street
- The funders want people to engage the brand on social media
- How will people realize it's interactive?

An installation for a cat shelter

Playable by many cats at the shelter, for a few hours at a time (with human supervision)

- Should make the cats look cute on webcams to encourage adoption
- Can humans play with the cats remotely?

Decrease loneliness in senior centers

Make an installation to be installed in many senior centers to help seniors socialize with each other

- Design for limited mobility, eyesight, strength
- Design for no prior video game experience

Rock concert game

A game to be played on a big screen by crowds at a rock concert if the band is late

- Assume 4000 drunk, loud players and 4000 drunk loud non-players
- It is dark, loud, and everyone has a cell phone

Rollercoaster queue game

A game to be played while in line at an amusement park

- People will be moving though the space for an hour or more
- Consider groups of friends, families or strangers

Stroke rehab game

A commission for an installation in a stroke rehab center

- Encourage people of many different physical abilities (and wheelchairs) to move more

Musical improv

A string quartet (or rockband, or jazz trio) wants some digital art to respond to their music

- Should respond to their music
- Should be engaging to the audience
- Will only be played during a few concerts

County Fair game

You have a booth at a county fair for one day

- Bright sunshine, large crowds of families
- You can charge \$1 per play
Can you earn money?



touch-table or tablet (iPad)

touch happens touch position is touched



time

A value that always ticks forward



webcam

Camera that creates images



Rock Band guitar

Harmonix plastic guitar with buttons and a tilt sensor

activate star power fret buttons strum up strum down



DDR Pad

A pressure-sensitive dance pad

foot down foot up currently pressed



microphone

Audio input



satellite location

Where is this sensor in the world?



accelerometer

Which way is this sensor tilted?

accelerationX accelerationY accelerationZ



gyroscope

Measure the rate of rotation

X rotation Y rotation Z rotation





magnetometer

Which way is north?

direction



keyboard

Make text or key-events

key pressed



MIDI keyboard

A piano keyboard, or other midi controller

key pressed



key intensity



synthesized music



mouse

pointer position



left mouse button



right mouse button



mouse being held



pseudorandom number generator

Generate a random value!



generative text

Use a grammar, neural network, or a Markov chain to create generative text when an even occurs.

generated text



Twitter feed

Detect when someone tweets with this hashtag, or tweets to this account

when tweeted



tweet contents



stock market data

Current value of the stock market



Google trend value

Current search ranking of keywords



music

MP3s, OGGs, and WAVs



text

Books, poetry, newspapers, or other writing



Leap Motion

Commercial hand-tracking camera

joint positions



hand model



Neurosky MindWave

EEG headset that detects 5 kinds of brain waves

alpha wave



gamma wave



beta wave



delta wave



theta wave



Kinect

Commercial infrared depth sensor by Microsoft

camera depth per pixel



graph of joint positions



gamepad

Gamepads have many different configuration, but most of them have the same kinds of outputs

joystick



button



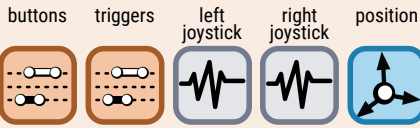
trigger





Oculus Touch

Positional controls for the Oculus VR set



photoresistor

Detect ambient light through a variable resistor (may detect infrared, ultraviolet, or visible light)

amount of light detected



heart-rate sensor

Detect the user's heartbeat over time (light-based or electrocardiograph with electrodes)

pulse

beats per minute



breathalyzer

Detect the amount of alcohol in someone's breath

Blood Alcohol Content



bend sensor

Bending the sensor changes resistance. You can make your own out of anti-static bags!

amount of bend



sound sensor

Detect ambient noise, wind, or someone blowing

sound amplitude



speed detector

Detect the speed of cars, bikes, or pedestrians

speed



piezo sensors

Creates an electrical charge when tapped or squeezed or vibrated

resulting electrical output



laser-beam switch

Fire a laser and use a light sensor to detect whether the beam is disturbed

whether the laser is currently disturbed

disturbance detected!



potentiometer

A knob to turn, like a stereo tuner

amount rotated



button

It's a button! Press it, hold it, or click it

touch happens

is touched



distance sensor

Detect distance from the sensor to an object. Works better with hard objects than soft objects.

calculated distance

time of flight



tilt switch

A simple mechanical switch that closes when tilted

close happens

open happens

is closed



swing

A 'smart' swing that can detect when it is swinging, and how fast

speed

is swinging

changes direction



shadows

Something casts shadows on a surface. A camera detects the shadows and how dark they are.

black & white image of the shadows

calculated shadow borders





spinnable wheel

A wheel that can tell how fast it is being spun

speed



is spinning



changes direction



conductive object

An object that can sense touch by using the user's skin conductivity to close a circuit

touched!



is touched



conductivity



microbe tracking

Attach a webcam to a microscope to watch microbes moving or mold growing. Look at them go!

microbe positions



mold density



laser pointers

Detected laser point positions via camera

laser pointer positions



Fast Fourier Transform

Turn an audio signal into multiple frequencies



source audio

audio analysis

Detect beats, current pitch, and more

beat happens



current pitch



BPM



state begins or ends

Detect when a state begins or ends



point



direction



velocity

generate particles

Generate particles from a point going in a direction, or generate many random particles all over



masses



strength

calculate gravity

Calculate the attractive (or repulsive) force based on proximity to points



calculate paths over time

Create curves along the path of some points



curve



sample rate



sample pos

DeCasteljau's algorithm

Calculate points or tangents along a Bezier curve

points



tangents



accelerations



sample point



sample radius

find the average mass and velocity

Calculate averages for particles in a neighborhood



frame difference

Subtract each frame's pixel data from the previous frame's data, creating a map of which pixels are changing (white) and which stay the same (black)



split image into color channels

hue

brightness

red

green

blue



positions




region

sample image color


What color is this pixel, or what is the average color of this region?





get color palettes
Use an API like COLOURLovers to get palettes using this color

color 1 color 2 color 3 color 4 name




input color

get color name
Use the webcolor directory or XKCD Color Survey to get a name for this color





closest color name closest named color






target curve image to stamp shape to stamp



Stamp shapes along a path
Make a trail out of stamped images or shapes


positions separation alignment cohesion

Boids flocking
Simulate bird-like flocking behavior



resulting flock

Stipplegen
Generate stippled points based on a depth map (creates newspaper-style half-tone images)



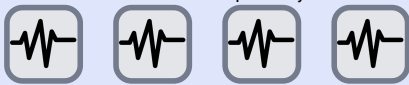


do something here
Throw a party, plant a garden, or hold a rally at this location

location year







population data
Get population data from World Population API

population GDP life expectancy average age

ocean conditions
Get the ocean conditions from NOAA's API

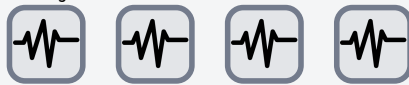
current wind salinity visibility water temperature

number

calculate statistics

average median maximum minimum






two competitors

romantic partners

a family





public domain content

from a historically or politically significant source

who doesn't know they're controlling it



a crowd of strangers



the user is not actually a person, but something like a tree branch or a wave



the user must use the control with an unusual body part



held by a person



attached to something in nature



attached to an animal



who is a different species than the viewer



scraped from social media



from a particular user



the artist themselves



hidden in a public space



a giant version you can stand on



Superformula

Creates an interesting shape from multiple values (non-patented version: superellipse)



shape-point collision

Detect whether points are inside or outside a shape

enter shape

exit shape

inside shape





calculate distance

Detect the distance from a point to a point, or the closest point on a curve, or a shape

distance

closest point





original curve distance to offset




offset curve

Draw a curve parallel to this curve

create smooth curve from points







Calculate a smooth curve, or use the points as bezier control points

Boolean shape logic

Calculate the union, intersection or excluded area of multiple shapes

union intersection exclude












minimum maximum

threshold value


Determine whether the value is above, below, or within a range

enter exits in threshold

sample amplitude




Calculate the current amplitude of a wave





artbrush deformation





Deform the shape along a curve

speed volume pitch

modify sound



Change speed, volume, or pitch

condition sound alternate sound

play sound while true




Play this sound while in the state (or else play the other sound)

get graph data

Given a graph, look at the nodes or edges

nodes edges









sites

Voronoi diagram

Calculate a Voronoi diagram from these points









region edges regions region centers

Delaunay diagram

Calculate a Delaunay diagram from these points




all edges triangles triangle centers

petal count petal size petal width inner color outer color

parametric flower

Procedurally generate a model of a flower (or other 3D shape)










region density of points

distribute points

Distribute a number of points inside a shape

resulting points









hue saturation brightness alpha

generate color

Generate an HSBA color (or an RGB color)




color

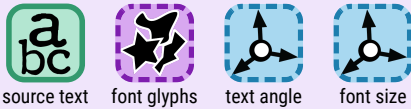



detect gestures

Detect a user's gesture from their joint positions

made a gesture current gesture gesture name

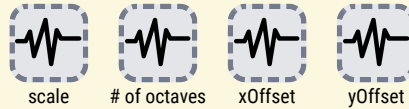






text to shapes

Turn this text into outlined shapes

text outlines



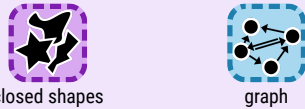
2D Perlin noise

Given a scale and octaves, create Perlin noise



3D Perlin voxel noise

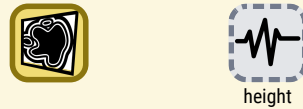
Create thresholded voxels based on the Perlin values at each voxel position



triangulate regions

Tile a polygon with triangles

tiling triangles

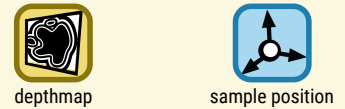


calculate contours

Calculate topographic contours from a depthmap

nested regions

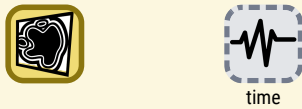
contour lines



sample at points

Calculate the value of depthmap at points

value at this point



cellular automata

Use the color of the image as a map of cells in a cellular automata simulation



get social media from a location

Search for tweets (or other data) geotagged at some location



get social media from a keyword

Search for tweets containing a word



sentiment analysis

Analyse how positive or negative a piece of text is

estimated attitude

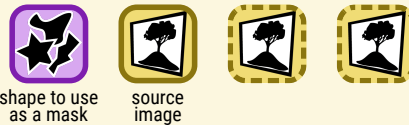


image masking

Mask an image using shapes

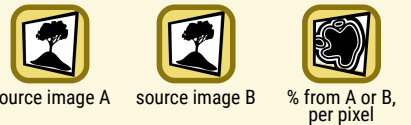
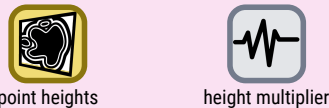


image blending

Blend two images using a depthmap



heightmap geometry

Create a landscape using a heightmap



3D print

Create 3D print of this mesh



3D render

Render this mesh in a 3D engine

image



z-buffer





print as fabric

Print this image to fabric



laser engraving

Use a CNC controlled laser to etch this depthmap to wood, leather, or glass



laser cutting

Use a CNC controlled laser to cut shapes in wood or plastic



source image



region count

image posterization

Calculate the regions in an image according to color similarity



switch images

Switch which image is showing based on states



detect center of mass

Calculate the center and size of shapes



longitude



latitude

construct a location from coordinates

geolocation



face tracking

Facial recognition

face detected



face shape



facial expression recognition

current expression



expression changed



expression name



confidence



shapes



colors to use



positions

draw shapes

Render shapes to a finished image



draw points with image colors

Draw points as colored by the closest image pixel



particles



curves

draw particle trails

Draw the trails that moving particles leave behind, or draw curves



frequency



waveform

vibration motor

Vibrate a motor to shake sand, water, or people



speaker

Amplify a sound



render 3D

Render a 3D scene to an image





render to stereographic VR

Render a 3D scene to a stereographic image or a 3D display like a VR headset



get weather at a location

weather description temperature wind speed humidity



project image on a screen

Or onto fog, water, or plaster heads



move a servo motor

Set a servo motor to move to a certain rotation



spin a motor

Spin a motor at a given speed. Is it turning a wheel, a record player, or screwdriver?



LED

Light an LED with certain brightness



red



green



blue

RGB LED

Light an LED with red, green, and blue values



LED panel

Light a 2D panel of LEDs according to the colors in an image



intensity



color

Fire!

Control the amount of propane (and colorant) of a fire effect



intensity



direction

fan

Control a fan that blows wind



source text



speed



pitch

text-to-speech

Convert text to human-like speech



source sound

speech-to-text

Recognize words in an audio waveform

detected text



LED cube

Light a cube of LEDs according to a set of voxels



triangulate voxels

Compute a triangular mesh from voxels




position and radius

metaballs

Calculate the metaball mesh around these particles

resulting surface mesh







source audio 1 source audio 2 fade

crossfade

Mix sound streams based on a value



resulting audio

profile curve to follow rotation

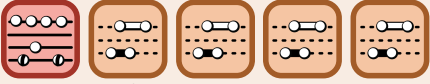
extrude shapes

Extrude shapes along a tube

Ruben's Tube

Vibrate a tube of propane, causing fire to change intensity along the length



button left right up down

play a video game

Super Mario Brothers, Halo and Tetris all require the same kind of inputs



light-changing glass

Glass that changes from clear to opaque

...on a piece of fashion

Jewelry, clothing, shoes, or a ballgown

...on architecture

...on a moving vehicle

Bikes, boats, trains, automobiles

...where no humans can see it

...on someone's body

The face... or elsewhere

...in nature

Embedded in a tree, out in a field, in the ocean

...very, very, very small

...a whole cloud of
these outputs

...very very large

...in a public space



...someplace illegal

