

## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

**10:00 – 11:15**

Experimental Media Art & Design : Stefan Kraus

Touchdesigner @ Monomango : Lois Kainhuber

Touchdesigner on Stage : Wieland Hilker

**11:15 – 11:30**

Coffee Break I

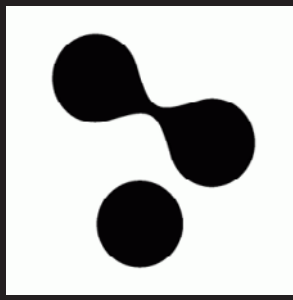
**11:30 – 13:30**

Introducing Touchdesigner

Rendering an animated 3D Scene

**13:30 – 14:30**

Lunchbreak / next door



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

**14:30 – 15:45**

A (very) simple audiovisual synthesizer

**15:45 – 16:00**

Coffee Break II

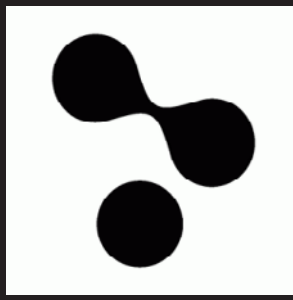
**16:00 – 18:00**

A live Video Mixer with audio driven Effects  
Building an analogue clock with Instancing

**18:00 – 18:30**

Questions and Answers

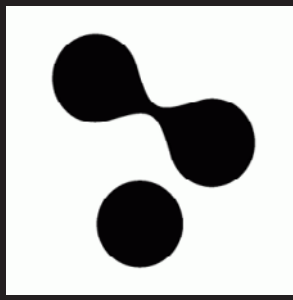
Documents and Files : [https://github.com/MXZEHN/TD-WRSHP-BERLIN-2\\_2019](https://github.com/MXZEHN/TD-WRSHP-BERLIN-2_2019)



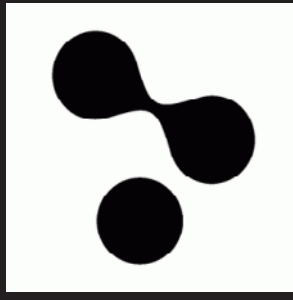
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

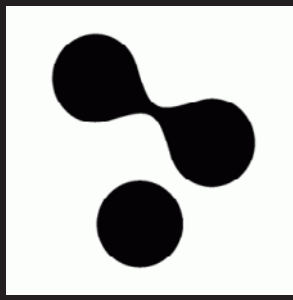
# Experimental Media Art and Design for Beginners



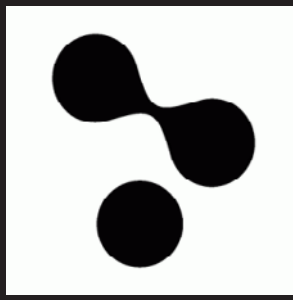
**Media Art explores and exploits the narrative potential of new technologies**



**Interactive media systems  
can be controlled / performed  
in real time**



**Media in this sense  
includes everything  
that can be controlled  
by us**



## TOUCHDESIGNER WORKSHOP 101

Experimental Media Art and Design for Beginners

### Art:

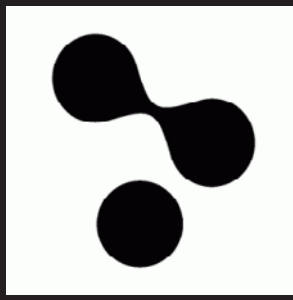
**has no commercial goal but hopes to enlighten through experience**

### Experimental:

**an open result process of exploration**

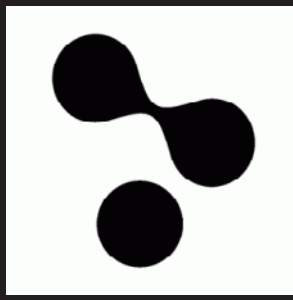
### Design:

**puts the same tools and skills to a commercial use based on a (customers) brief**



# INPUT PROCESS OUTPUT

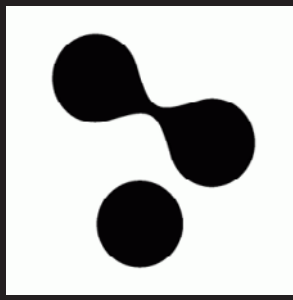




TOUCHDESIGNER WRSHHP 101

Experimental Media Art and Design for Beginners

# Programming Production Tools Creative Coding



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### Creative Coding

Processing / <https://processing.org>

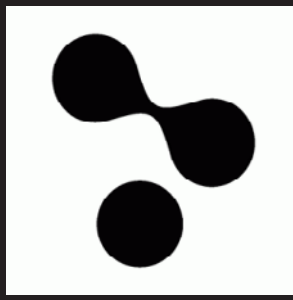
OpenFrameworks (C++) / <https://openframeworks.cc>

Cinder (C++) / <https://libcinder.org/about>

### Game Engines

Unity / <https://unity3d.com>

Unreal / <https://www.unrealengine.com>



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### VJ Software

Resolume / <https://resolume.com>

VDMX / <https://vidvox.net>

Modul8 / <http://www.garagecube.com/modul8>

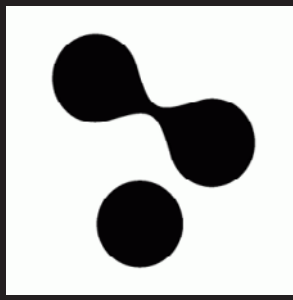
MadMapper / <http://www.garagecube.com/madmapper>

COGE / <https://imimot.com/cogevj>

Millumin / <https://www.millumin.com/v3/index.php>

HeavyM / <https://heavym.net>

SMODE / <https://smode.fr>



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### Media Server

D3 / <https://www.disguise.one/en/products>

Pandoras Box / <https://www.coolux.de/de>

Green Hippo / <https://www.green-hippo.com/hippotizer-media-servers>

Wings / <https://avstumpfl.com/en/server-control-systems/software>

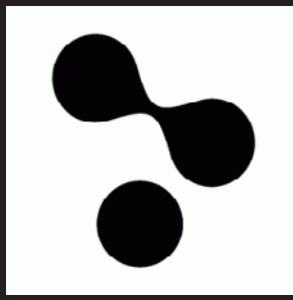
Watchout / <https://www.dataton.com/products/watchout>

### Lighting Hard- & Software

E:cue / <https://www.osram.de/ecue>

Madrix / <https://www.madrix.com>

GrandMA / <https://www.malighting.com/de>



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### Node based Programming

VVVV / <https://vvvv.org>

Max+Jitter / <https://cycling74.com/products/max>

Pure Data / <https://puredata.info>

Isadora / <https://troikatronix.com>

Notch / <https://www.notch.one>

Ventuz / <https://www.ventuz.com>

XOD / <https://xod.io>

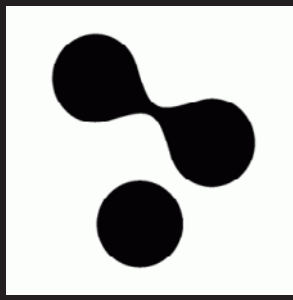
### Nodes in other interesting software

Nodal – Musik / <http://nodalmusic.com>

Nuke – Compositing / <https://www.foundry.com/products/nuke>

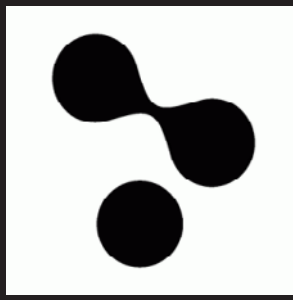
Houdini – 3D FX / <https://www.sidefx.com/products/houdini>

Substance Designer - Materials / <https://www.allegorithmic.com>



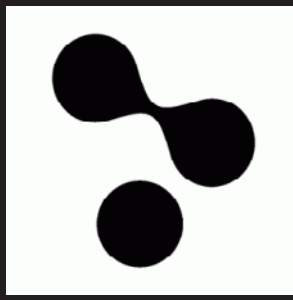
# So what about Touchdesigner?

## Applications & Examples



# CONNECT EVERYTHING WITH EVERYTHING





## TOUCHDESIGNER WRSHOP 101

Experimental Media Art and Design for Beginners

**read, translate and send everything**

**DMX, Artnet, MIDI, OSC, JSON, Serial, TUIO, RS322, Audio, Video, Text, Sheets, Web, Mobile, Light, Ableton, CV**

**build custom applications**

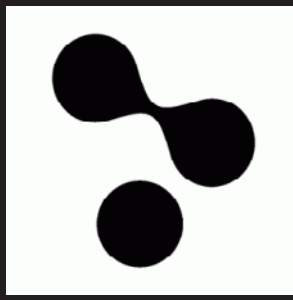
**make your programs private for reselling**

**with a pro license, e.g. GeoPix / <https://www.enviral-design.com>**

**build custom media servers with multiple outputs**

**e.g. Luminosity / <https://github.com/IntentDev/Luminosity>**





## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### realtime animation

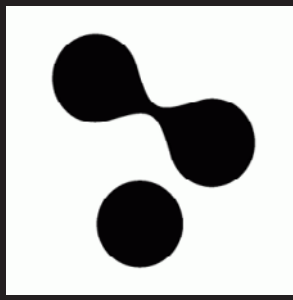
Effects, Motion Design, 3D Animation, Mixing and Routing, Data driven visual content (Music, Data Base, Sheets, Interaction) and Simulations (Physics, Particles) output to wild formats incl. 360°

### lighting & laser design

Moving Lights, LED Fixtures, Lasers, LED Sculptures

### virtual & augmented reality

prototype VR experiences with VIVE, Oculus, Hololens



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### web & mobile interaction

connect to users via the internet

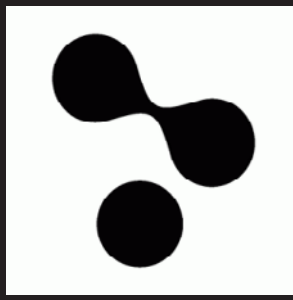
use mobile Apps to control Media Installations

use Web Content in AV Installations

Connect to APIs to gather Data

### tracking

Use Kinect, Intel RealSense, Leap Motion, OpenCV and more to learn about the environment and enable touch free interactions



**extend the functionality**

**use scripting and coding to extend functionality**

**Shader Authoring (GLSL)**

**scripting in Python allows to use numerous Libraries  
from within Touchdesigner**

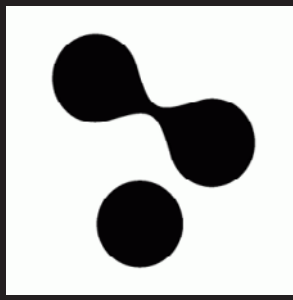
**programming custom nodes in C++ (z.B. Vincent Houze)**

**projection mapping**

**keystoning with Stoner**

**creative mapping with Kantan Mapper**

**projector calibration with CamSchnappr**



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

**live design & performance**

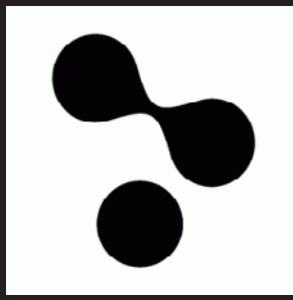
**Show / Concert / Event / Exhibition / Fair / Theater**

**research and development**

**Data Visualisation / Research / Education / Prototyping**

**experimental**

**...**



## what hardware do we need?

**PC over MAC**

**NVIDIA over ATI & INTEL**

**QUADRO over GTX**

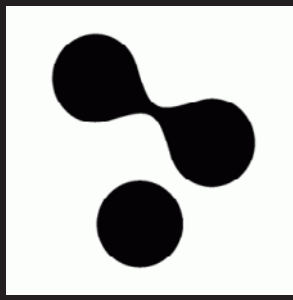
**external sound card over internal sound**

for video playback

**hard disc > memory > CPU > GPU**

for generative content

**GPU > Memory > CPU**



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### Share Video between Apps:

Syphon / <http://syphon.v002.info>

Spout / <http://spout.zeal.co>

NDI / <https://www.newtek.com/ndi/tools>

### Hardware IO:

Arduino / <https://www.arduino.cc>

Enntec DMX / <https://www.enttec.com>

Datapath FX4 / <https://www.datapath.co.uk>

Magewell USB Capture / <https://www.magewell.com/capture/usb-capture>

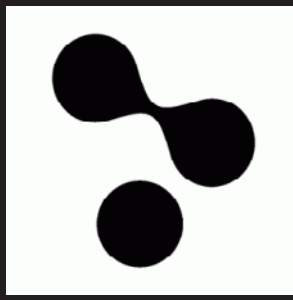
Wacom / <https://www.wacom.com>

Leap Motion / <https://www.leapmotion.com>

Real Sense / <https://software.intel.com/en-us/realsense/d400>

ZED / <https://www.stereolabs.com/>





## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### Helpful Software:

Ableton Live / <https://www.ableton.com/de/live>

Audacity / <https://www.audacityteam.org>

Blender / <https://www.blender.org>

OBS / <https://obsproject.com>

Mapping Matter / <http://www.mappingmatter.com>

### OSC / MIDI

TouchOSC / <https://hexler.net/software/touchosc>

Lemur / <https://liine.net/en/products/lemur>

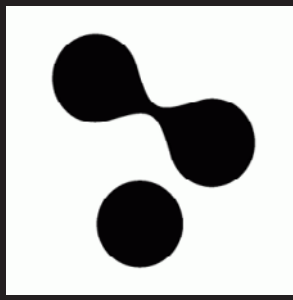
Open Stage Control / <https://osc.ammd.net>

Vezer / <https://imimot.com/vezer>

OSSIA / <https://ossia.io>

RTP Midi / <https://www.tobias-erichsen.de/software/rtpmidi.html>

MIDI Ox / <http://www.midiox.com>



## TOUCHDESIGNER WRSHIP 101

Experimental Media Art and Design for Beginners

### Free Learning Resources

Matthew Ragan / <https://matthewragan.com/touchdesigner-workshop-yale-2017/>

The WIKI / [https://docs.derivative.ca/Category:Tutorials#First\\_Things\\_to\\_Know\\_about\\_TouchDesigner](https://docs.derivative.ca/Category:Tutorials#First_Things_to_Know_about_TouchDesigner)

### More Learning Resources

Elburz & nVoid / <https://learntouchdesigner.com/>

Lichtpfad Studios / <https://lichtpfad.selz.com/de>

### Where to get help & connect

Forum / <http://www.derivative.ca/Forum>

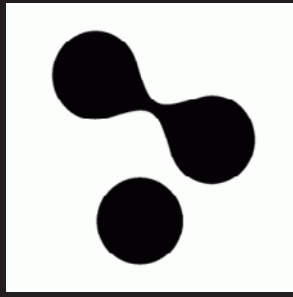
FB Help Group / <https://www.facebook.com/groups/touchdesignerhelp>

TouchDesigner on Discord / <https://discordapp.com>

### More stuff

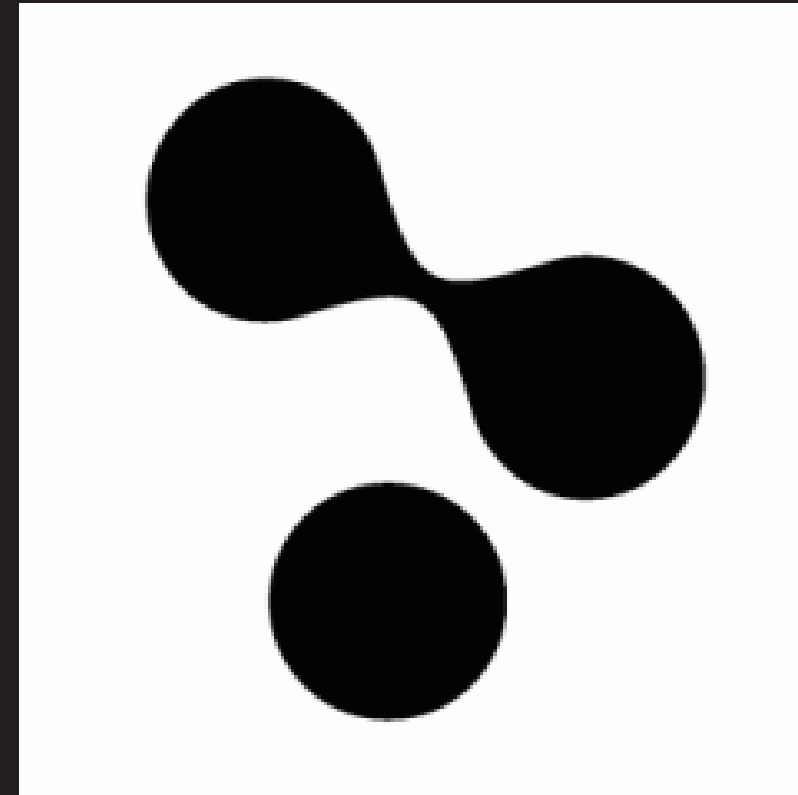
Elburz Templates / <https://template.elburz.io>

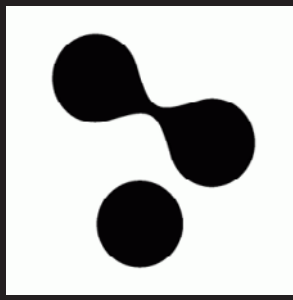




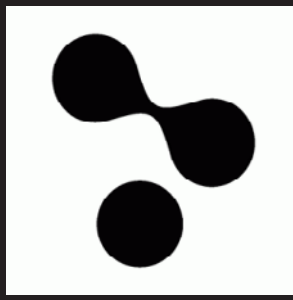
# TOUCHDESIGNER WRSHP 101

## Experimental Media Art and Design for Beginners



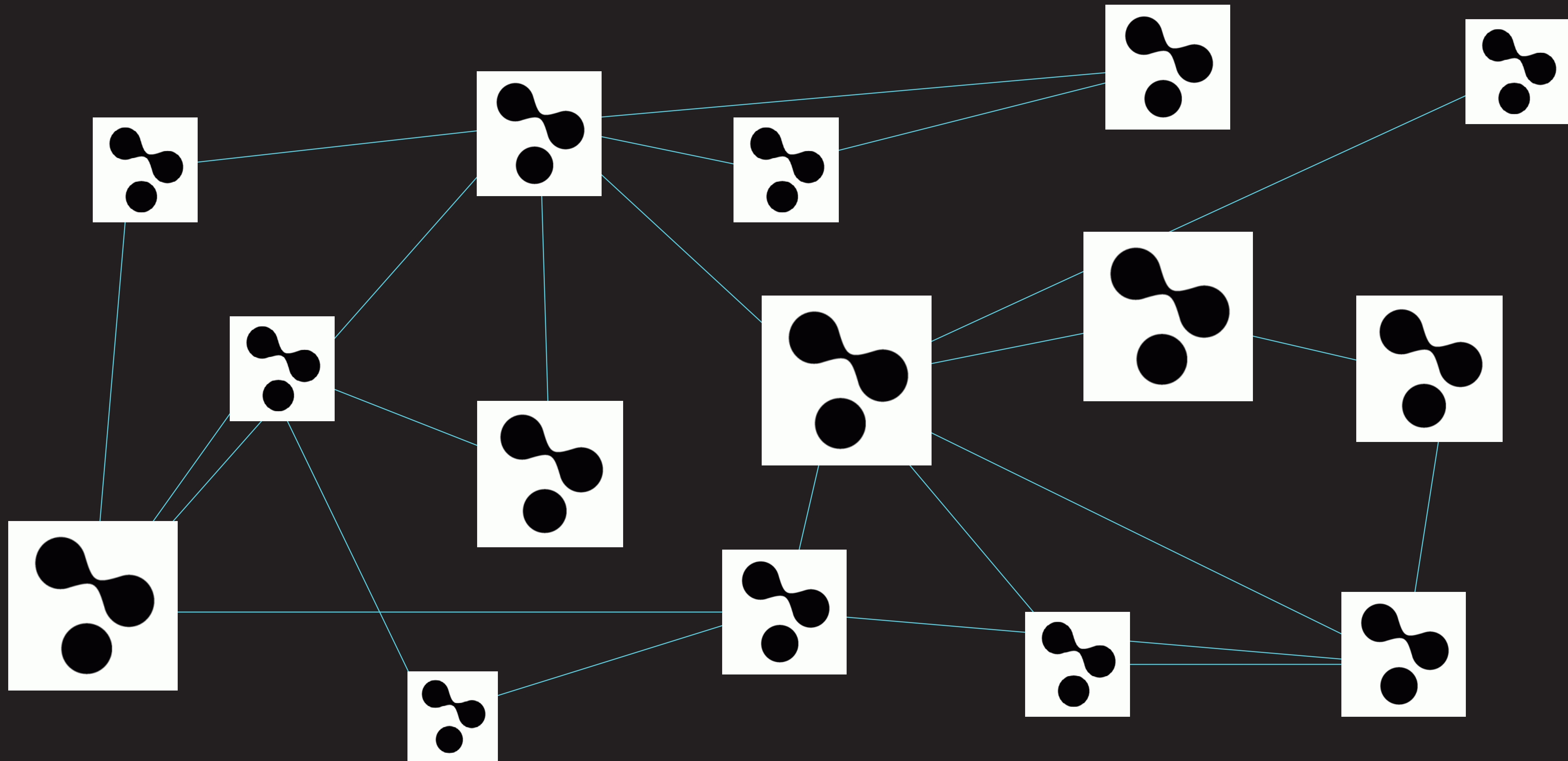


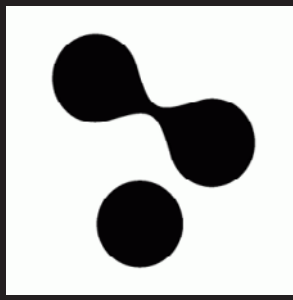
**Do not consider  
yourself a lone  
warrior** Become part  
of a community



# TOUCHDESIGNER WRSHIP 101

## Experimental Media Art and Design for Beginners





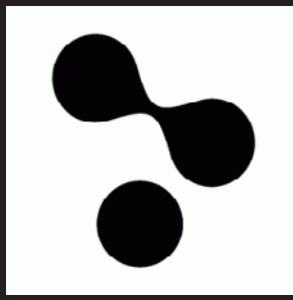
## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### More stuff

Text Editor / <https://www.sublimetext.com>

BPM / FPS Calculator / [https://www.vjamm.com/support\\_av\\_bpm.php%3Flang=en.html](https://www.vjamm.com/support_av_bpm.php%3Flang=en.html)



## TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

### PBR based Materials

The PBR Material / [https://docs.derivative.ca/PBR\\_MAT](https://docs.derivative.ca/PBR_MAT)

The Environment Light / [https://docs.derivative.ca/Environment\\_Light\\_COMP](https://docs.derivative.ca/Environment_Light_COMP)

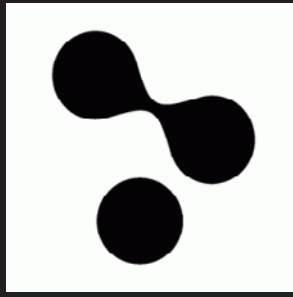
Substance Designer/ <https://www.allegorithmic.com/products/substance-designer>

Free Substance Materials / <https://share.allegorithmic.com>

Free Resources / <https://texturehaven.com>

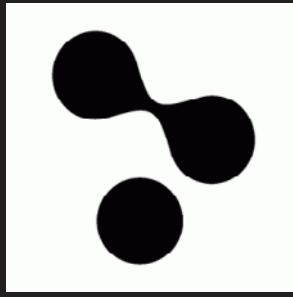
Scans and Tools / <https://quixel.com>

More Materials / <https://www.poliigon.com>



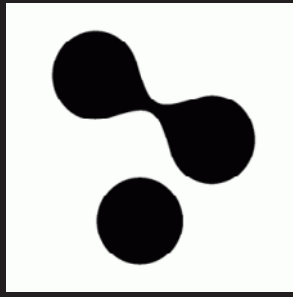
# TOUCHDESIGNER WRSHP 101

## Experimental Media Art and Design for Beginners



# TOUCHDESIGNER WRSHP 101

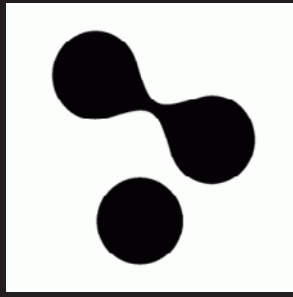
## Experimental Media Art and Design for Beginners



# TOUCHDESIGNER WRSHP 101

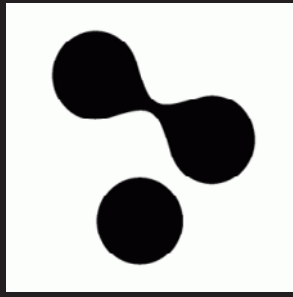
## Experimental Media Art and Design for Beginners





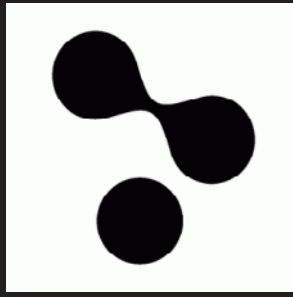
# TOUCHDESIGNER WRSHP 101

## Experimental Media Art and Design for Beginners



# TOUCHDESIGNER WRSHP 101

## Experimental Media Art and Design for Beginners



# TOUCHDESIGNER WRSHP 101

## Experimental Media Art and Design for Beginners