

Introduction of Touchdesigner

- **开始之前的提问：**

- “我的想法是什么？想达到的效果是什么？”
- “为了实现我的想法我要采取什么方法？使用什么工具去实现？”
- “别人在做类似的事情吗？他们是怎么做的？”
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- **TouchDesigner 是什么？**

- 百度：[TouchDesigner 百度百科 \(baidu.com\)](#)
- 起源：
 - [TouchDesigner - Derivative](#)
 - [Derivative : A 20 Year Retrospective - Part 1 | Derivative](#)
- 轻量、实时、扩展性强 —— 面向新媒体艺术的IDE工具？

- **TouchDesigner 能做什么？**

- 官网说明：[Realtime 3D and Compositing | Derivative](#)
- 案例：
 - [Dave & Gabe \(daveandgabe.care\)](#)
 - [实验场 - Digital FUN的网站](#)
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- **TouchDesigner 优质学习资源汇总**

- 官网：[Derivative |](#)
- 官方维基：[Learning TouchDesigner - Derivative](#)
- ALLTD：[AllTouchDesigner – TouchDesigner Community & Learning \(alltd.org\)](#)
- Touchdesigner Aisa：[TouchDesigner 中文社区](#)
- Github 仓库
- 一些国外大神：
 - [bileam tschepe - YouTube](#)
 - [The Interactive & Immersive HQ - YouTube](#)
 - [exsstas - YouTube](#)
 - [Matthew Ragan - YouTube](#)
 - [noonessimg - YouTube](#)
 -
- 【最干的干货汇总，还是得看官网】

User-Contributed Tutorials

A list of previous user-contributed tutorials from around the interwebs.

[allTD](#) - A curated collection of all known (and some unknown) TouchDesigner tutorials from around the interwebs - Thanks Jan!

[Bileam Tschep's TouchDesigner Beginner Course](#) - A great series of beginner tutorials for those looking for a complete introduction to TouchDesigner

[Matthew Ragan's Make Some Noise Workshop 2017](#) - A reconstruction of Matthew's *Make Some Noise Workshop* in April 2017, plus a bonus technique.

[Matthew Ragan's TouchDesigner Tutorials](#) - A practical look at using TouchDesigner, over 100 topics.

[Ian Shelansky's TouchDesigner Tutorials](#) - A set of extremely useful tutorials including "Twitter in TouchDesigner".

[Dr. Indae Hwang's TouchDesigner Video Exercises](#) - A wide range of animated graphical design approaches and general techniques with .toe file examples.

[Jarrett Smith's 3D Techniques Tutorial](#) - Workflows for 3D rendering and compositing.

[TouchDesigner Concepts and Python by Jessica Palmer](#) - An easy-to-follow birds' eye view of the ideas and structure of TouchDesigner, and how Python is deeply integrated in TouchDesigner empowering both experienced and new python programmers.

[Peter Walker Sexy Phong](#) - Learn all the controls of the Phong material in TouchDesigner (and it also applies to the PBR material), including multi-colorbuffer rendering.

[VR Development Environment](#) - Jarrett Smith's Best Practices for VR and TouchDesigner in general.

[Scott Pagano Online Course at lynda.com](#) - (a paid-for course) Learn to create beautiful-looking imagery with an end-to-end production workflow that includes real-time 2D and 3D rendering, importing FBX assets, recording movies, controlling via an iPad and using TouchDesigner in VR (using Jarrett's Smith's VR framework).

[Maotik Workflow using TouchDesigner with Ableton](#) - Watch Maotik's workflow while developing visuals alongside Ableton Live. From a Master Class at Projection Week, Norway 2016. Full of useful techniques.

[Grady Sain's TouchDesigner OP Tutorials](#) - A resource for technical artists that explains individual operators via videos with detailed transcriptions.

[Alex Czetwertynski's Videos](#) - Here are some practical workflows and techniques with TouchDesigner.

[Elburz Sorkhabi Sessions](#) - TouchInNYC at Live X, [video 2]

[Josh Michael's TouchDesigner for Absolute Beginners](#) - A glance in.

• TouchDesinger 基础知识

• 工作方式【直观思维逻辑的可视化】

• Nodes —— 节点的概念

- 封装一定功能、存储与传输数据的对象（节点 ≠ 元件），对象是在某一层级上的对象，对象之中仍然可以有对象。

• Network —— 逻辑网络

- 组织与运用各个对象，形成的可以实现某一项或者多项目标的可视化网络。

• Code —— 底层编码

- Python：数据处理、调用外部库、表达式
- GLSL：Shader、图处理流程
- C++：定制自己的元件

• 【优点/局限？】

• 基础操作

- 鼠标/键盘快捷键

• 原件 (Operator) 分类

- COMPs/TOPs/CHOPs/SOPs/DATs/MATs

Operator

Operators are the "Nodes" in TouchDesigner networks, and they output data to other operators. Each operator is customized with its [Parameters](#) and [Flags](#).



Operator Families

There are six **Families** of built-in **Operators**. Of the six families, five are basic operator families and one is the **Component** family which can further contain networks of operators. Components containing components form the TouchDesigner hierarchy and give rise to the operator **Paths**.

- COMPs - Components** - Object components (3D objects), Panel components (2D UI gadgets), and miscellaneous components. Components contain other operators.
- TOPs - Texture Operators** - all 2D image operations.
- CHOPs - Channel Operators** - motion, audio, animation, control signals.
- SOPs - Surface Operators** - 3D points, polygons and other 3D "primitives".
- DATs - Data Operators** - ASCII text as plain text, scripts, XML, or organized in tables of cells.
- MATs - Material Operators** - materials and shaders.

Within each operator family, "generator" operators have 0 inputs and create data, and "filter" operators have 1 or more input and filter data.

Each operator family is a unique color. Only operators of the same family (color) can be **Wired** together. Many operators have parameters that are references to operators in other families: [Links](#). Also [Exporting](#) flows numeric data from CHOPs to all operators.



[Custom Operators](#) of type TOP, CHOP, SOP, and DAT can be created using **C++**, allowing you to extend TouchDesigner's functionality. They will show up in the **OP Create Dialog** under the 'Custom' tab.

See also: [OP_Class](#)

• Operator - Derivative

- 不同类型的元件封装着不同类型的数据，数据之间可以相互转化【核心概念】

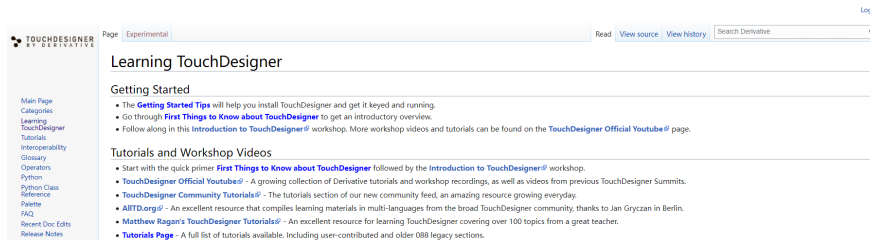
• 帮助文档

• Wiki Documentation

• 各个元件的官方文档

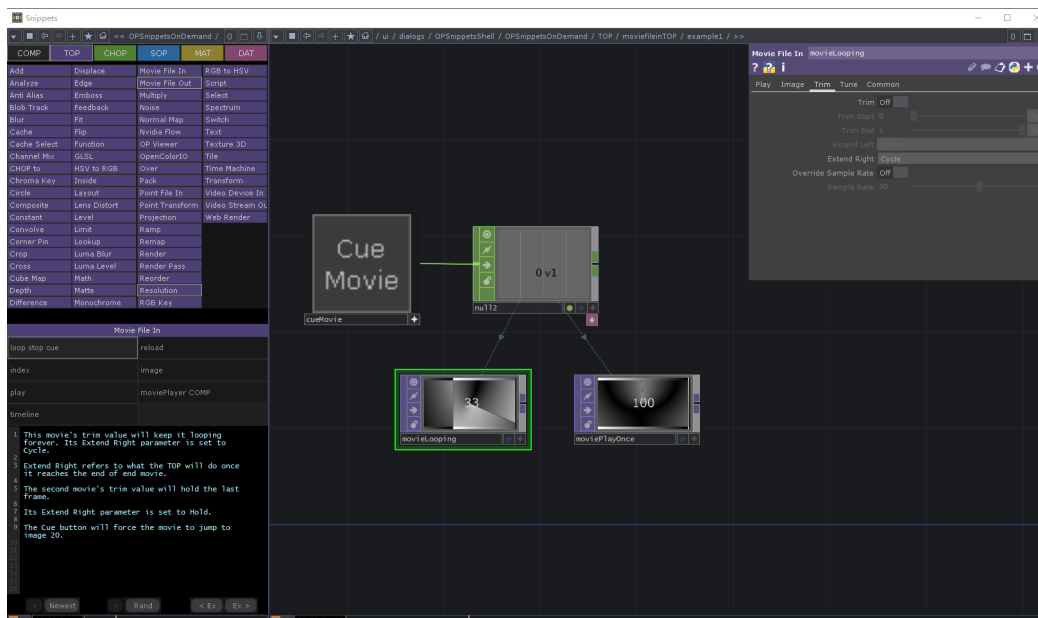


• 维基文档



• Operator Snippets

• 各种元件的用法案例



• 案例学习《描画与隐没》

• 参考案例：

- [Image Stacking – TouchDesigner Tutorial 39 - YouTube](#)
- [TOUCHDESIGNER TUTORIAL - TURN ANY IMAGE INTO WATERCOLOR PAINTING - YouTube](#)

• 图像库的搭建【素材库】

- TOP/CHOP/DAT/COMP 的运用
- 自定义Component的控制参数

• TOP图像处理的常见 workflow 【视觉设计】

- Noise Top —— 变化之源
- feedback Top loop —— 图像处理的循环
- Displace/Slope Top —— 置换与扩散

- Composite Top —— PS图层叠加方式大集合
- *CHOP数据处理与映射【交互设计】*
 - 数据的源头 —— 交互数据的输入
 - 数据的处理 —— 交互数据的选择、取值
 - 数据的映射 —— 交互数据的控制对象
- *最后的调整与拓展创新【进一步的创意？】*
 - 内容源？ 替换更有趣的内容
 - 图像处理方式？ 采用更丰富的变换或改变色彩
 - 渲染方式？ 从平面到三维空间
 - 交互方式？ 使用其他的交互机制/交互数据的输入
 - 视觉处理？ 让作品更完整，具有形式感
 -（回到最开始，“我的想法是什么？”）

以上内容整理于 [幕布文档](#)