# UNREAL ENGINE

## Exploring AI Depth Estimation

## in Compositing

@dpredie

# AI Depth Map

1. Generate depthmap from video using Google Colab

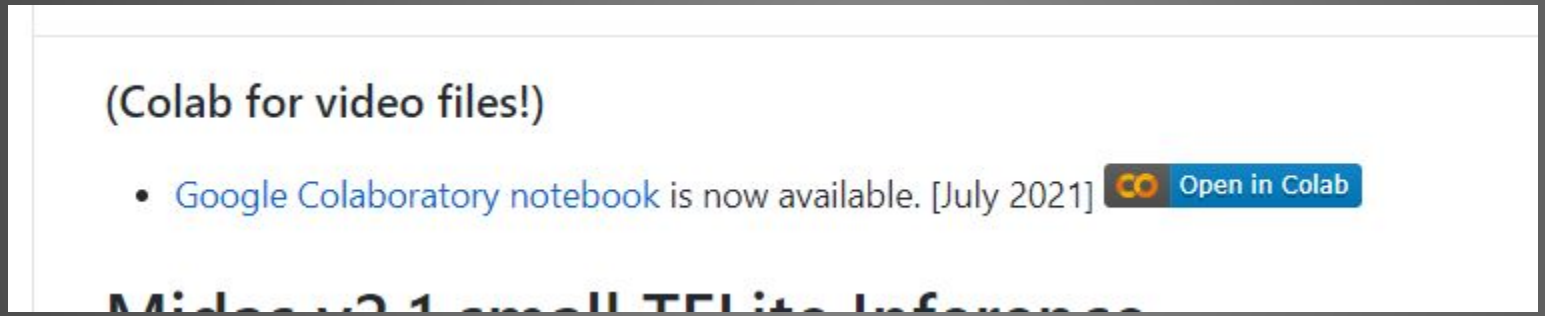
2. Depthmap as procedural garbage matte

3. Depthmap to generate Normal map for relighting in UE

@dpredie

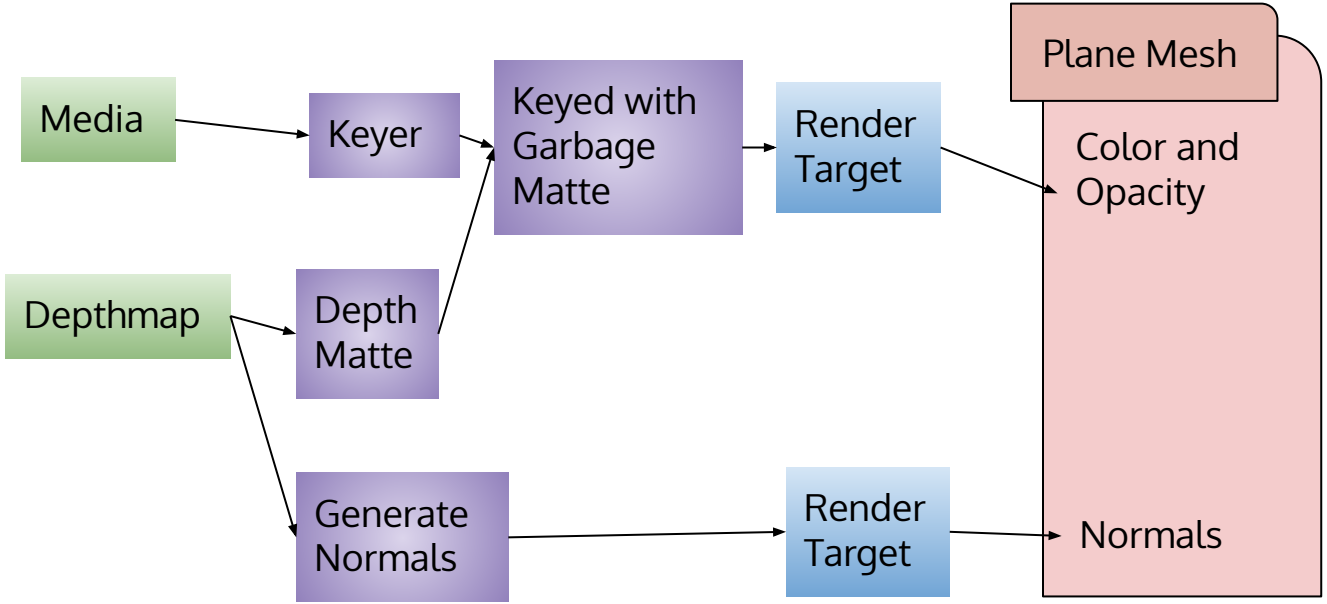
# 1. Depthmap from Colab

https://github.com/dpredie/Midasv2_1_small-TFLite-Inference



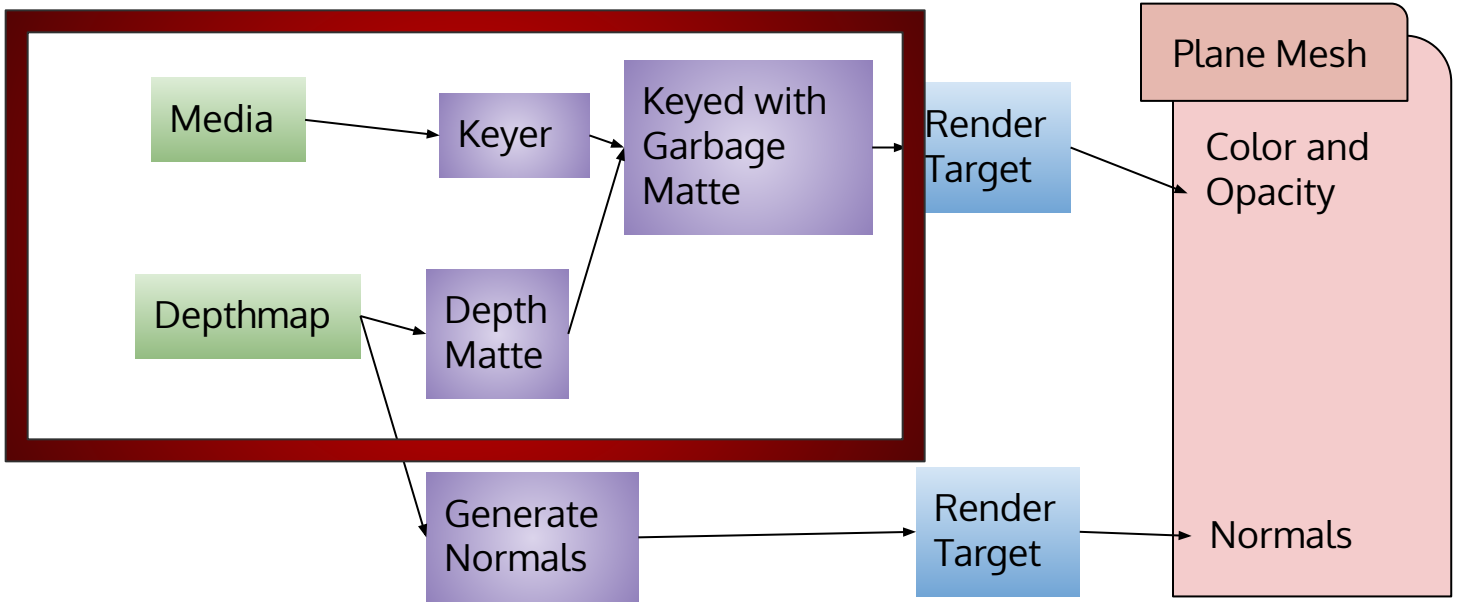
# 2 & 3. Compositing Overview

https://github.com/dpredie/UE4DepthMapCompositing



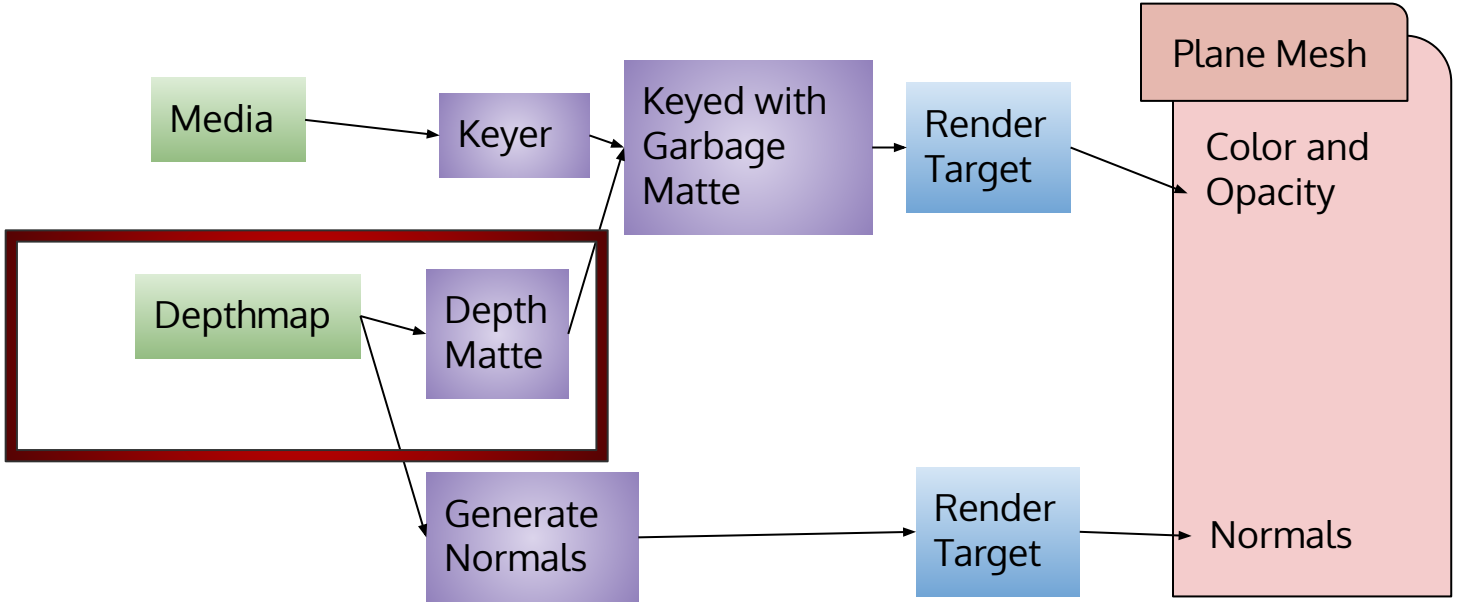
# 2. Procedural Garbage Matte

https://github.com/dpredie/UE4DepthMapCompositing



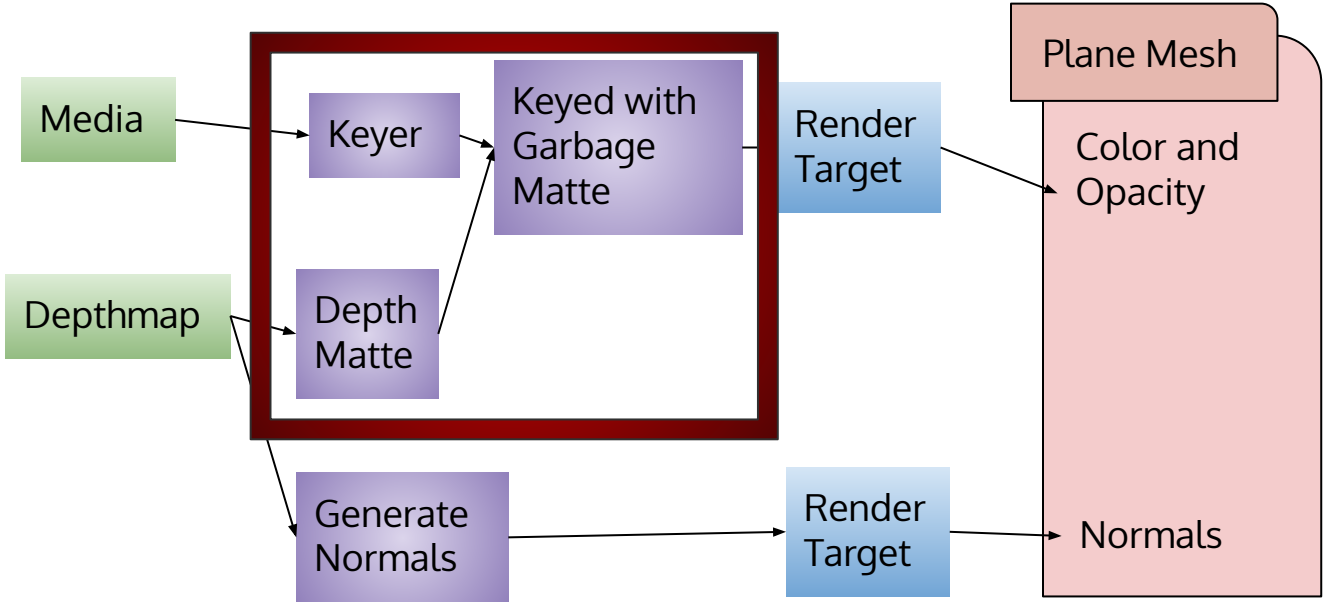
# 2. Procedural Garbage Matte

## M_DepthMatting



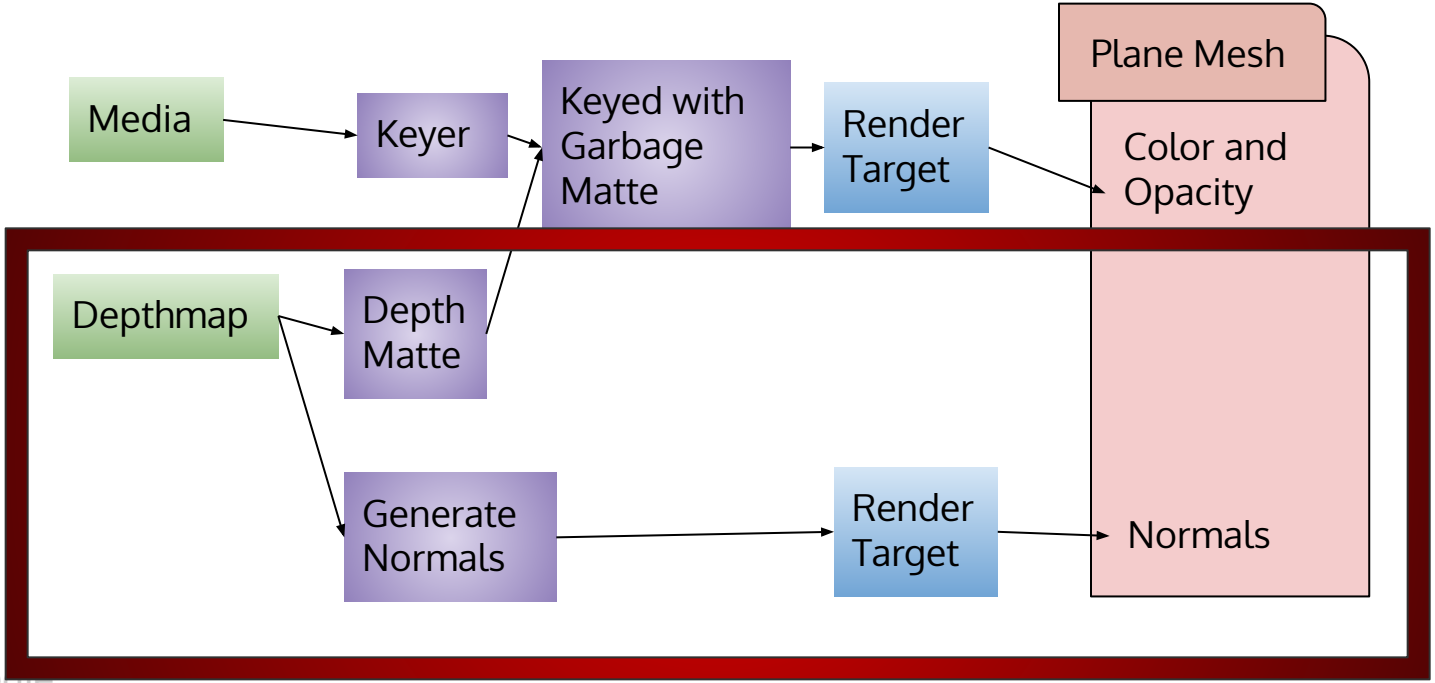
# 2. Procedural Garbage Matte

## M_Passthrough, M_DepthMatteComp



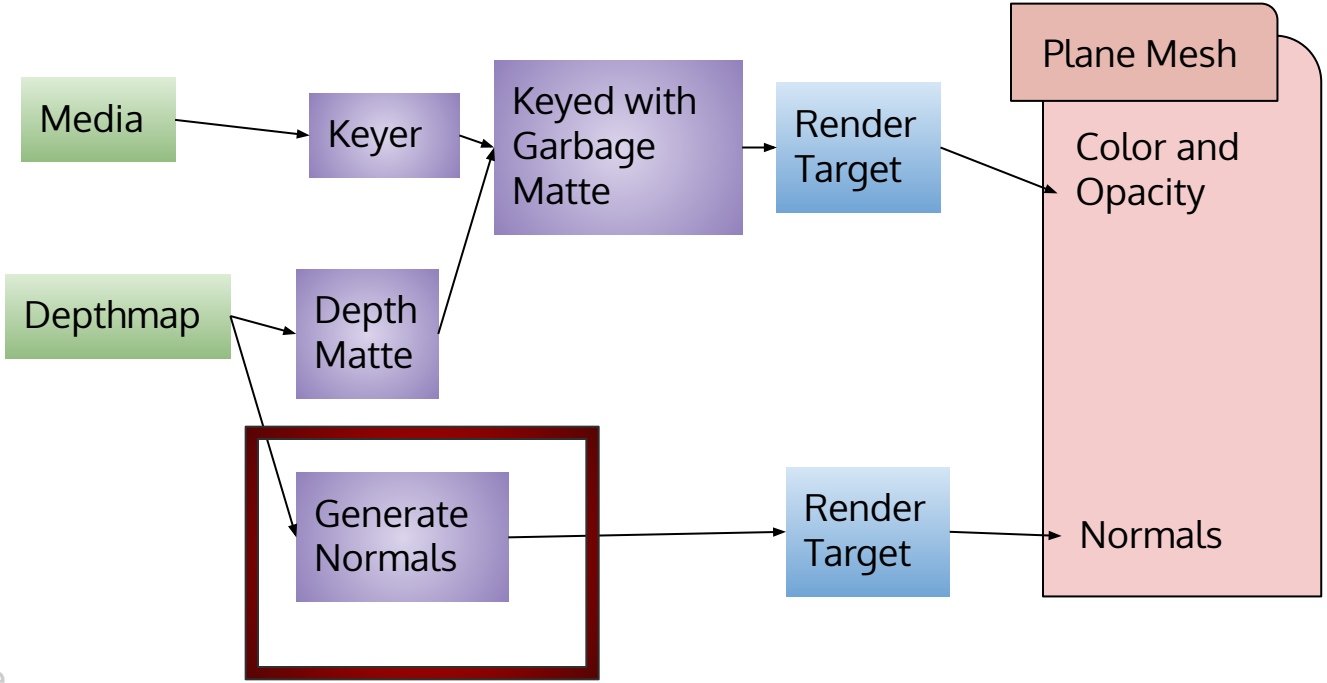
# 3. Normals & Relight

https://github.com/dpredie/UE4DepthMapCompositing



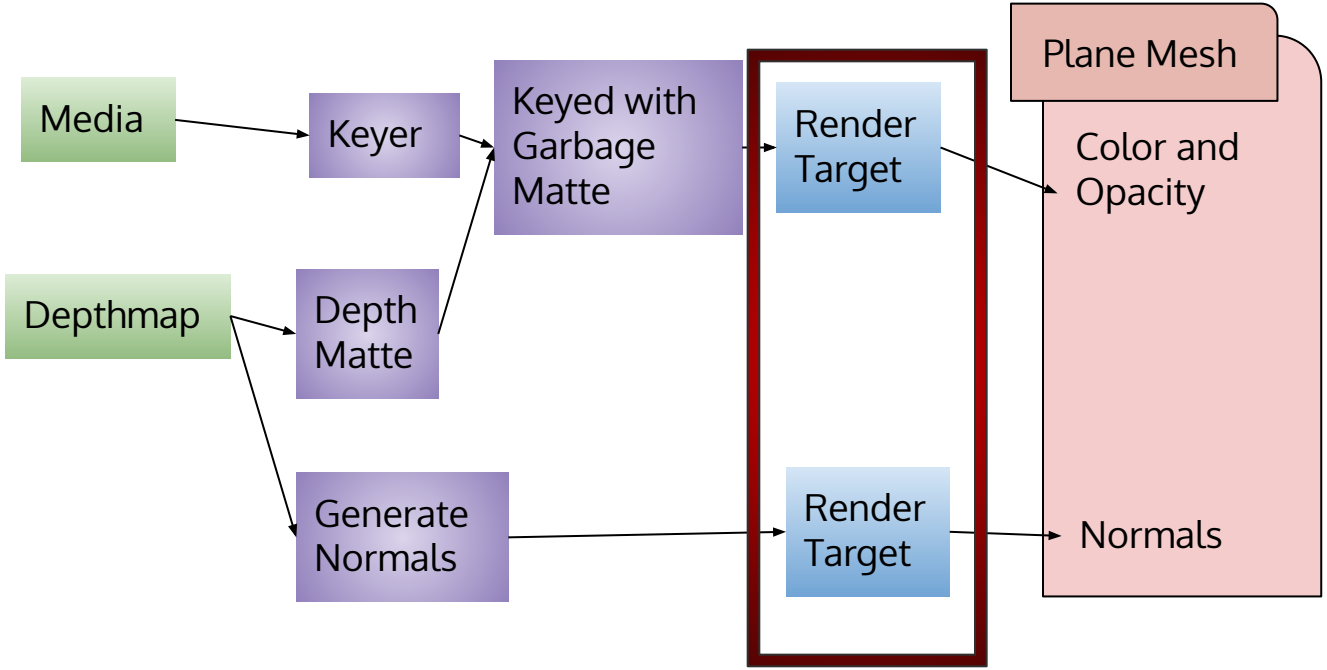
# 3. Normals & Relight

## M_RescaleDepth, M_BlurDepth, M_NormalFromDepth



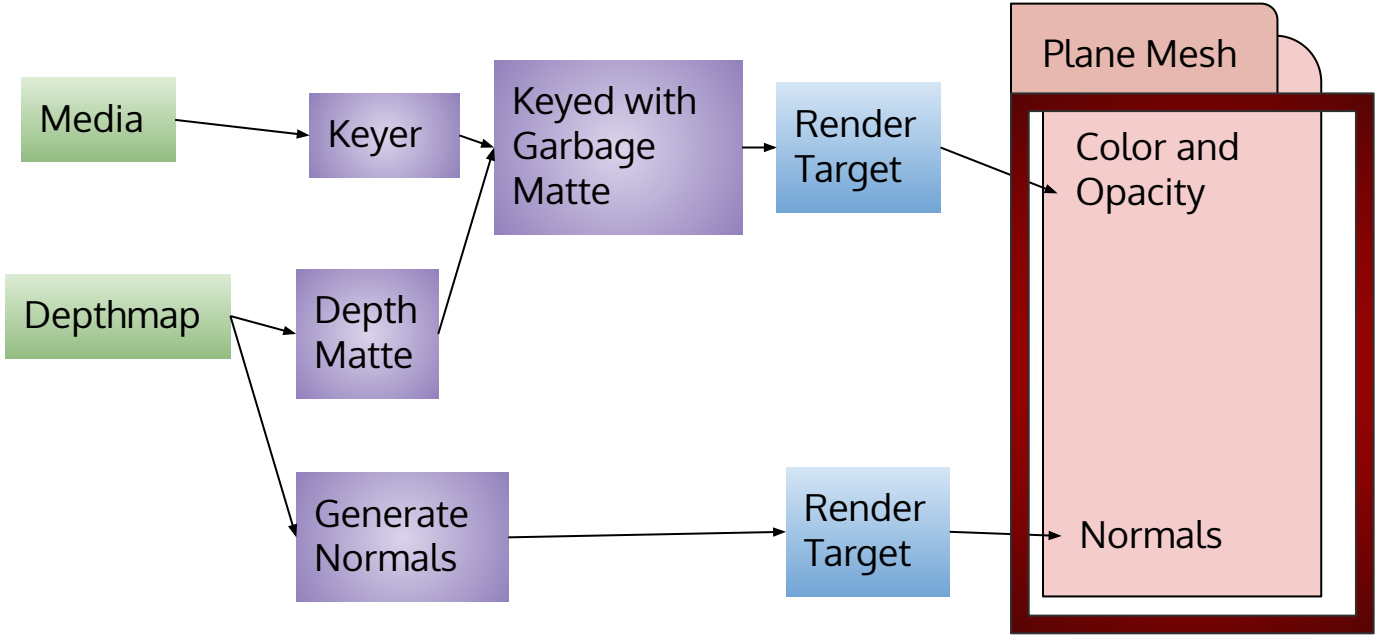
# 3. Normals & Relight

## Output to RT_Keyed, RT_ReNormal



# 3. Normals & Relight

## Plane Material : M_DepthMapPlane



# 2 & 3. Compositing Overview

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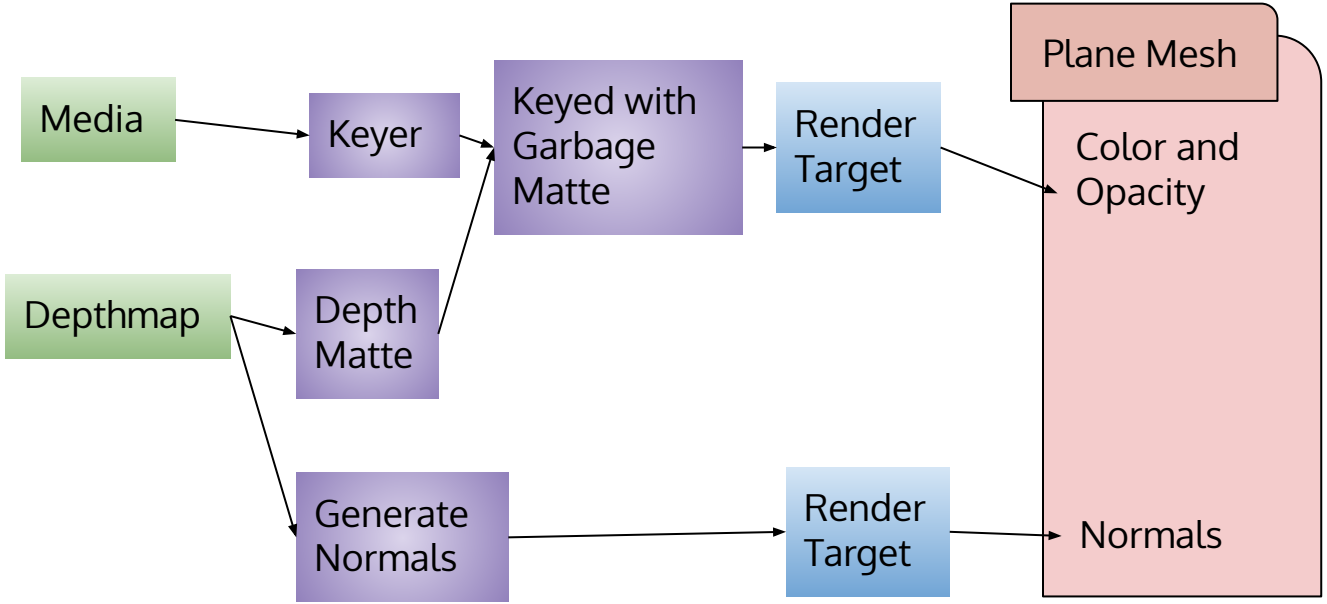

# Limitations

1. Not Panacea ( can't fix bad lighting)
2. Quality, Resolution, and Processing time of Depthmap relies on trained model & source video



# Future Search

1. Realtime solution ( balance between quality and FPS)
2. Absolute Distance to camera ( meters) instead of relative values

# Credits

- Ibai Gorodoro: forked Ibai's implementation of "Small Midas TFLite inference" to create the Colab notebook
  - https://www.youtube.com/watch?v=e161_lZps9c
- 3dsf for discussion on Midas & Depth networks
  - https://www.youtube.com/channel/UC1Sb4l_gCkSRE1JDMAmn2Wg
- Andy Blondin: how to sync different Media Texture using sequencer
  - https://www.youtube.com/channel/UCa1s9Zc1YxGUTlENQ0Nmyrg