UNREAL ENGINE

Exploring AI Depth Estimation

in Compositing

@dpredie

AI Depth Map

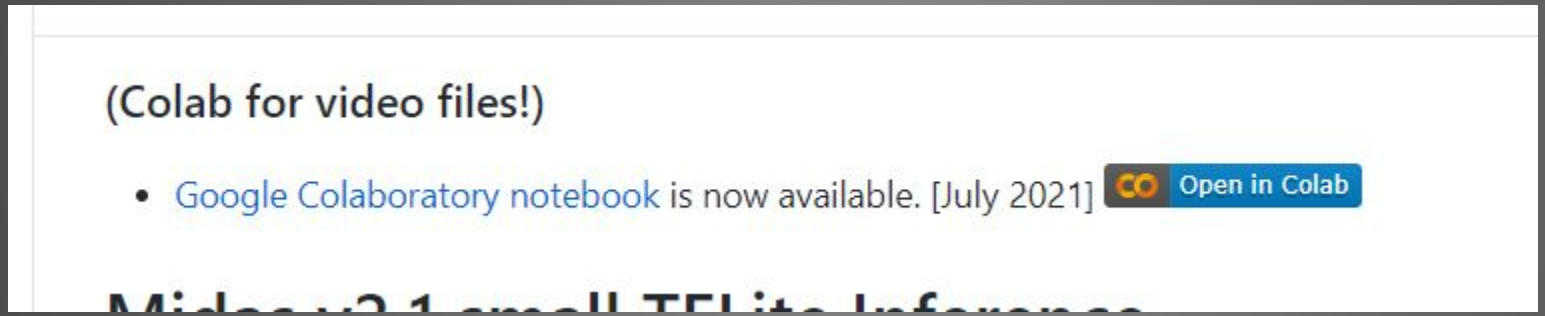
1. Generate depthmap from video using Google Colab
2. Depthmap as procedural garbage matte
3. Depthmap to generate Normal map for relighting in UE

https://www.youtube.com/watch?v=-QO_ARniQCA

@dpredie

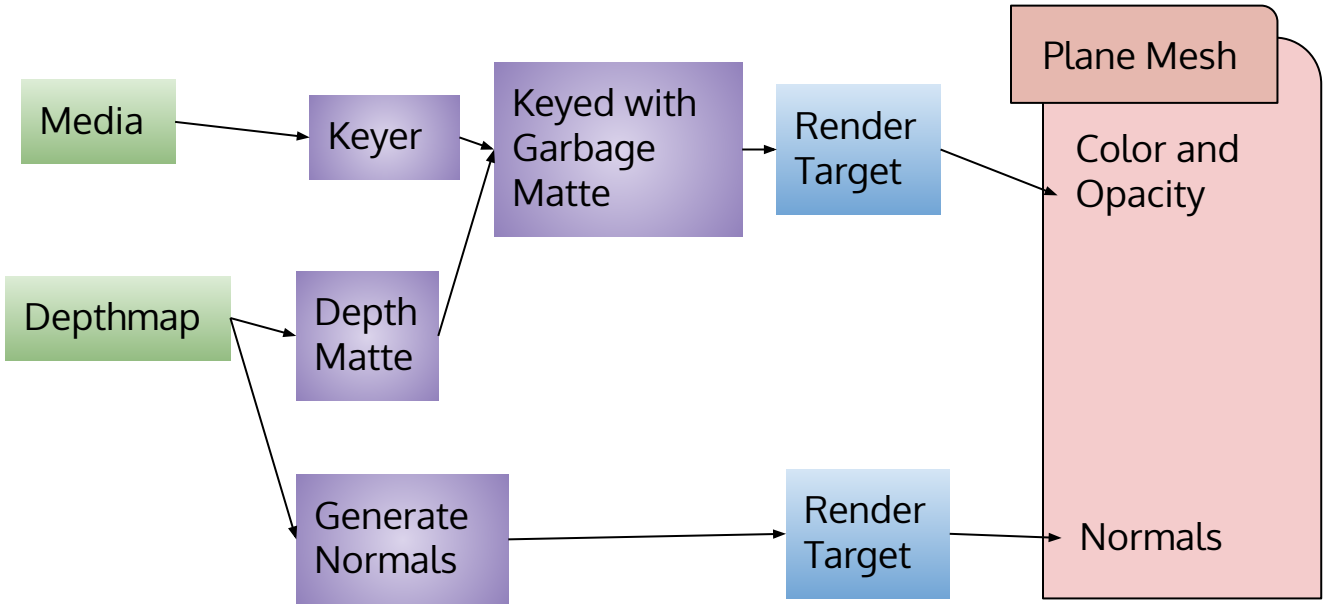
1. Depthmap from Colab

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



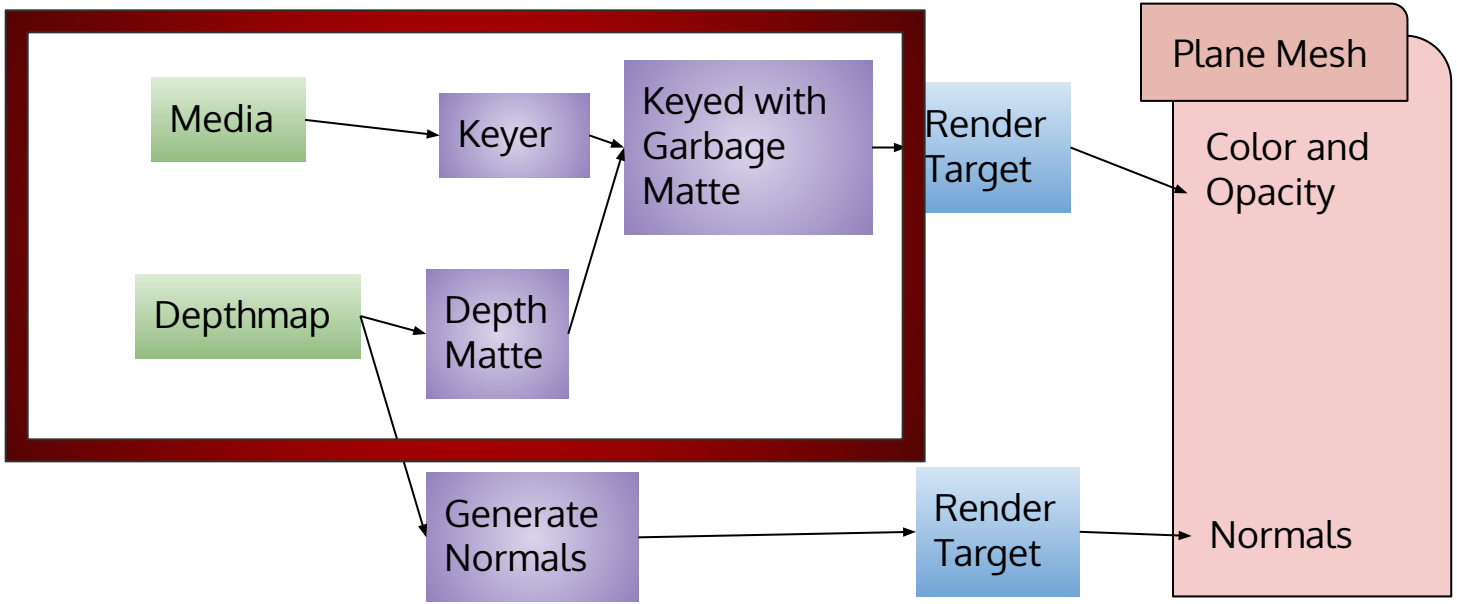
2 & 3. Compositing Overview

https://github.com/dpredie/UE4DepthMapCompositing



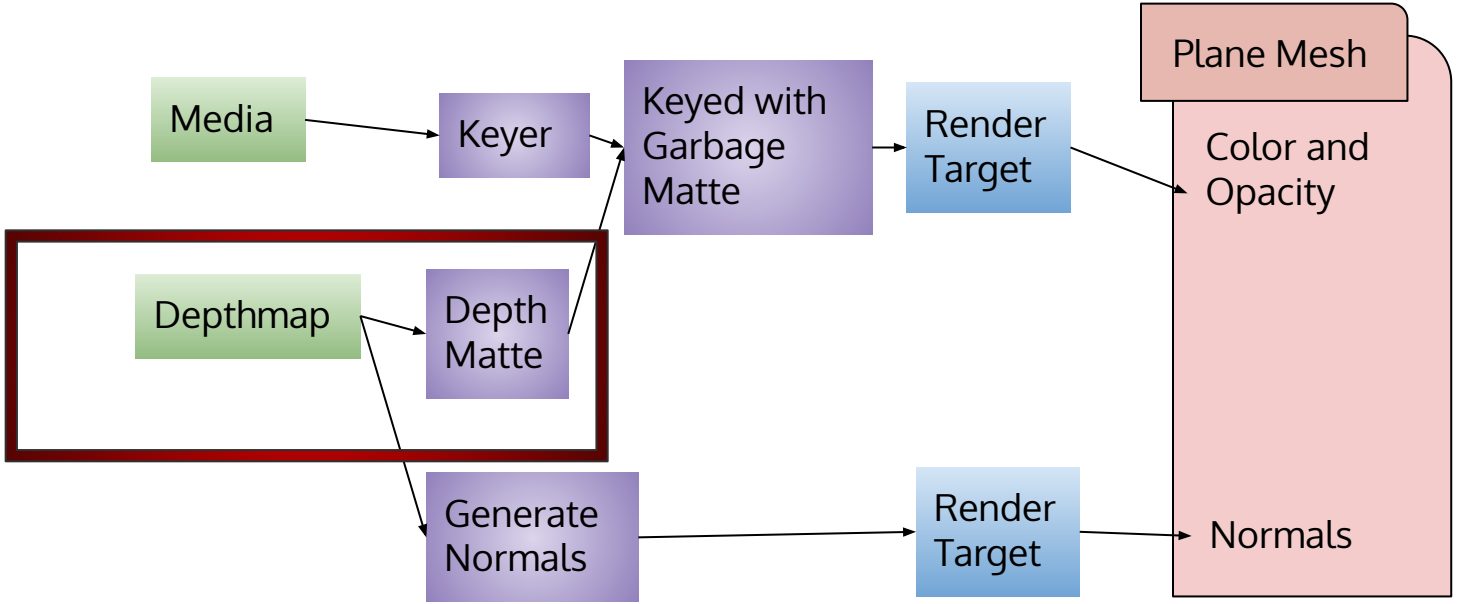
2. Procedural Garbage Matte

https://github.com/dpredie/UE4DepthMapCompositing



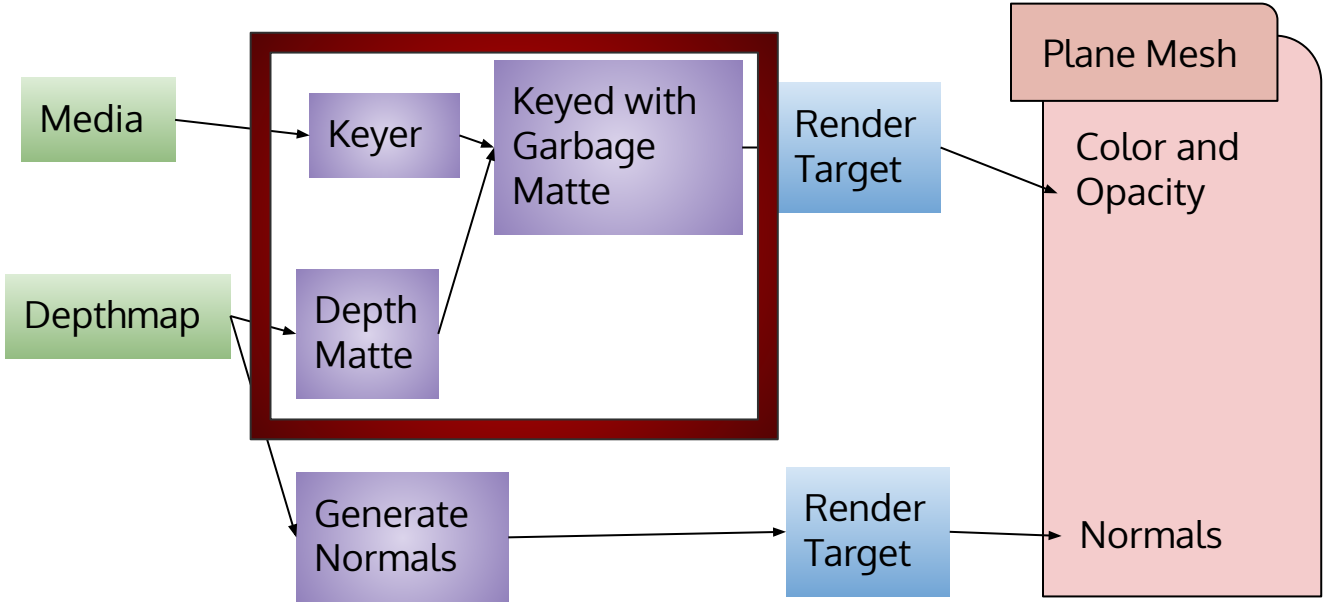
2. Procedural Garbage Matte

M_DepthMatting



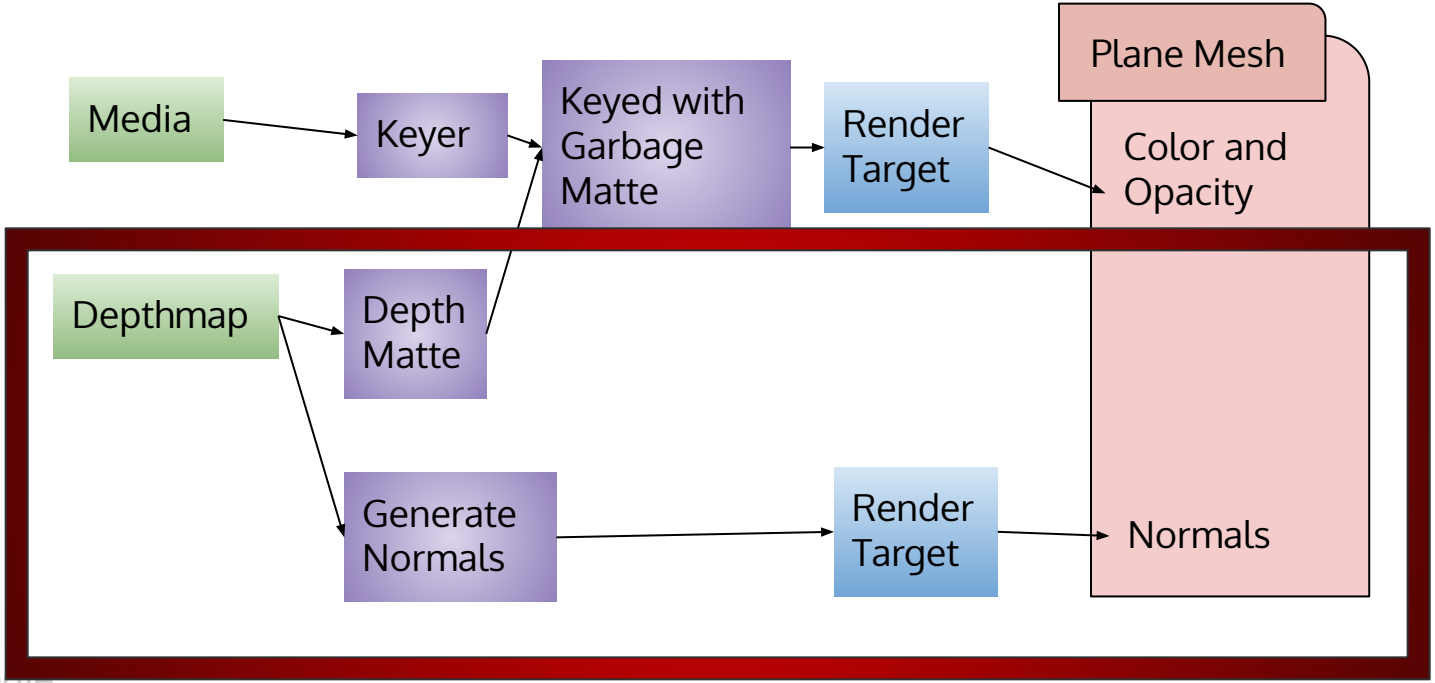
2. Procedural Garbage Matte

M_Passthrough, M_DepthMatteComp



3. Normals & Relight

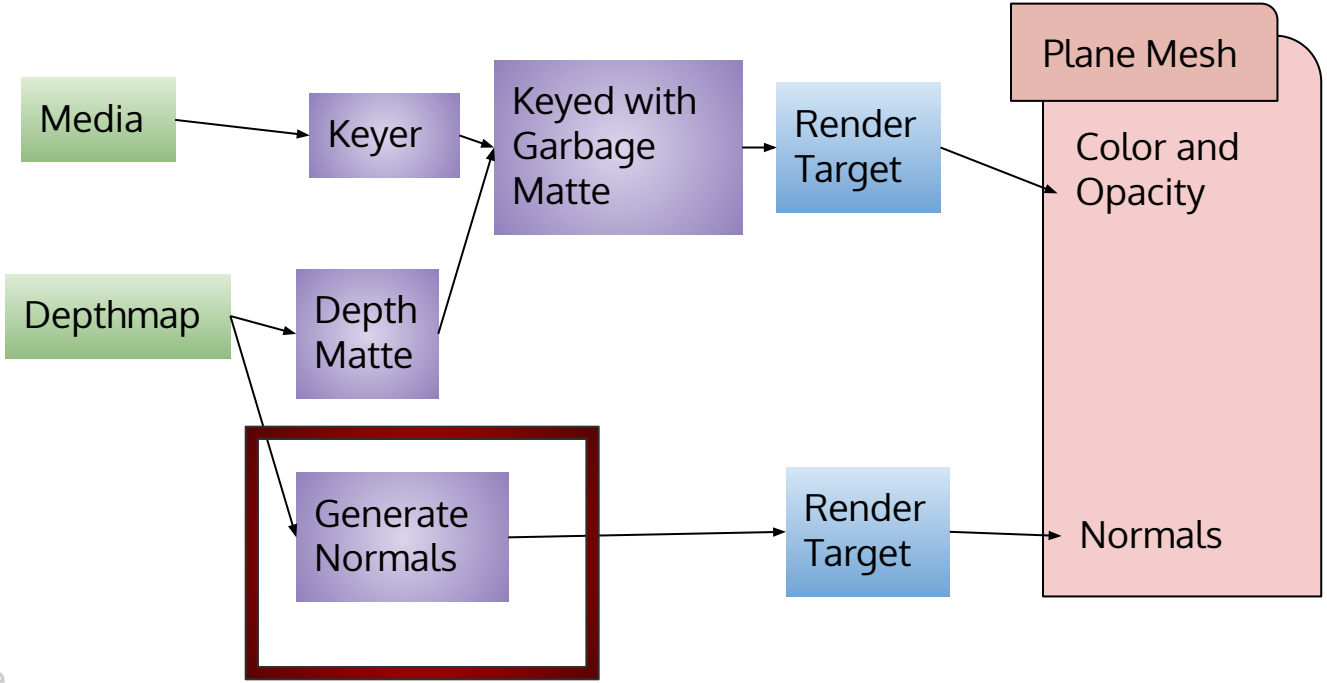
https://github.com/dpredie/UE4DepthMapCompositing



@dpredie

3. Normals & Relight

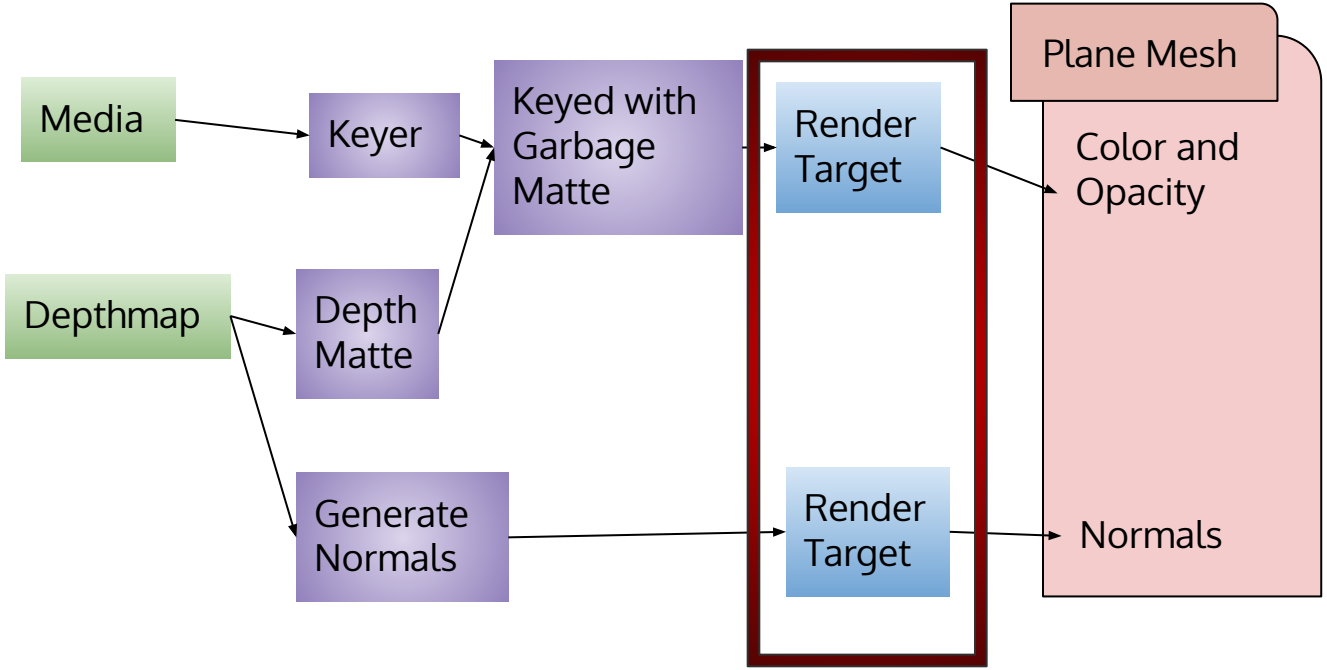
M_RescaleDepth, M_BlurDepth, M_NormalFromDepth



@dpredie

3. Normals & Relight

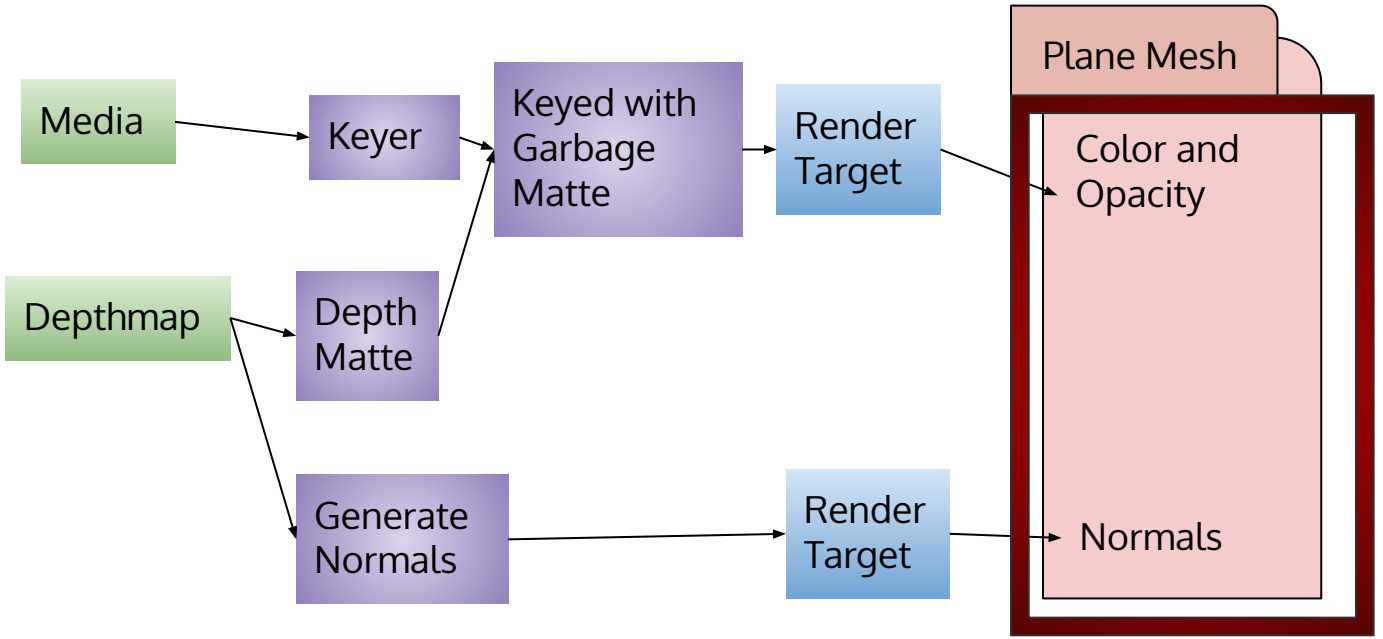
Output to RT_Keyed, RT_ReNormal



@dpredie

3. Normals & Relight

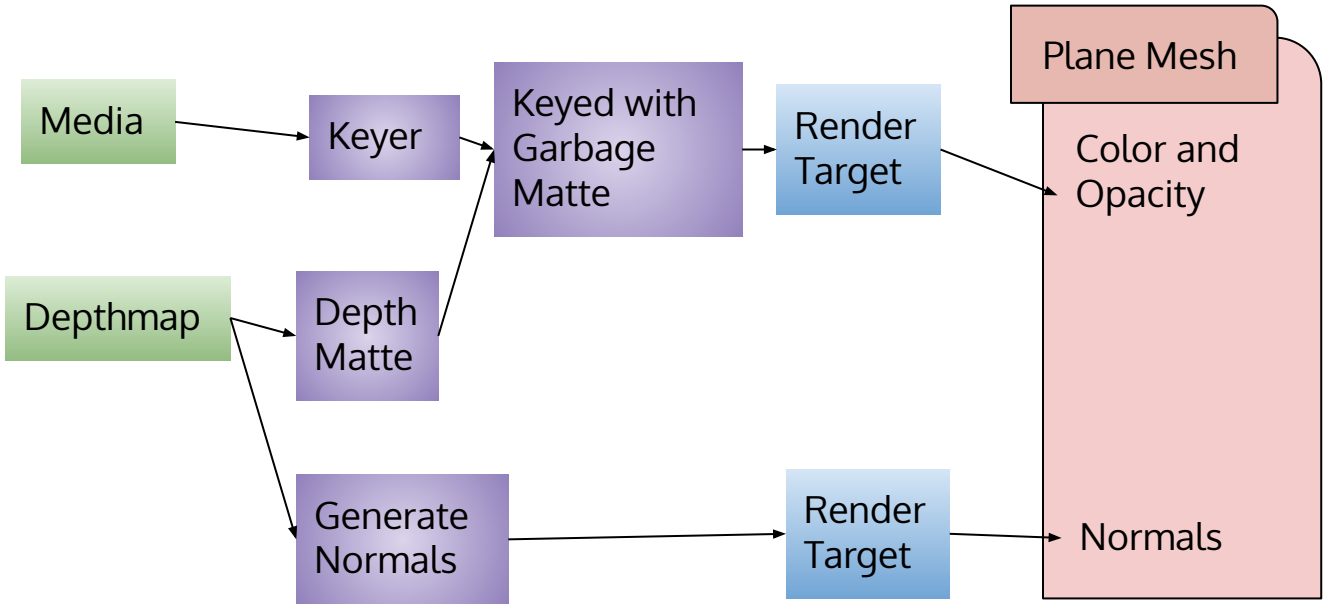
Plane Material : M_DepthMapPlane



@dpredie

2 & 3. Compositing Overview

https://github.com/dpredie/UE4DepthMapCompositing



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