



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

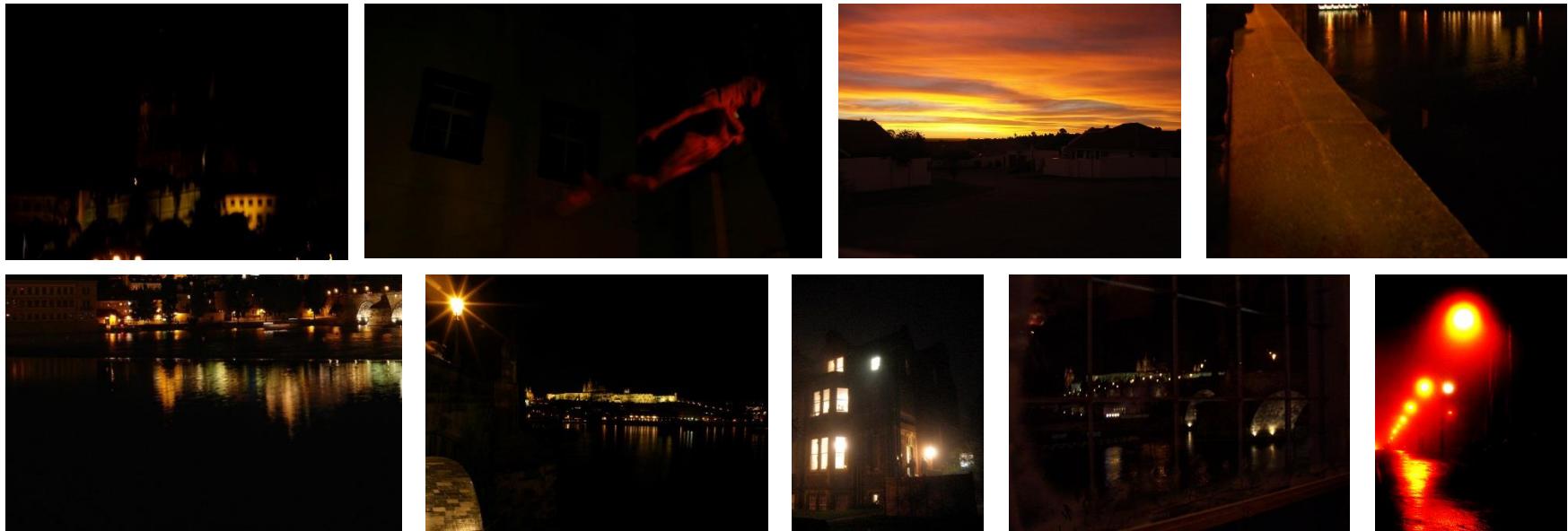
ETH zürich

From Dusk till Dawn: Modeling in the Dark

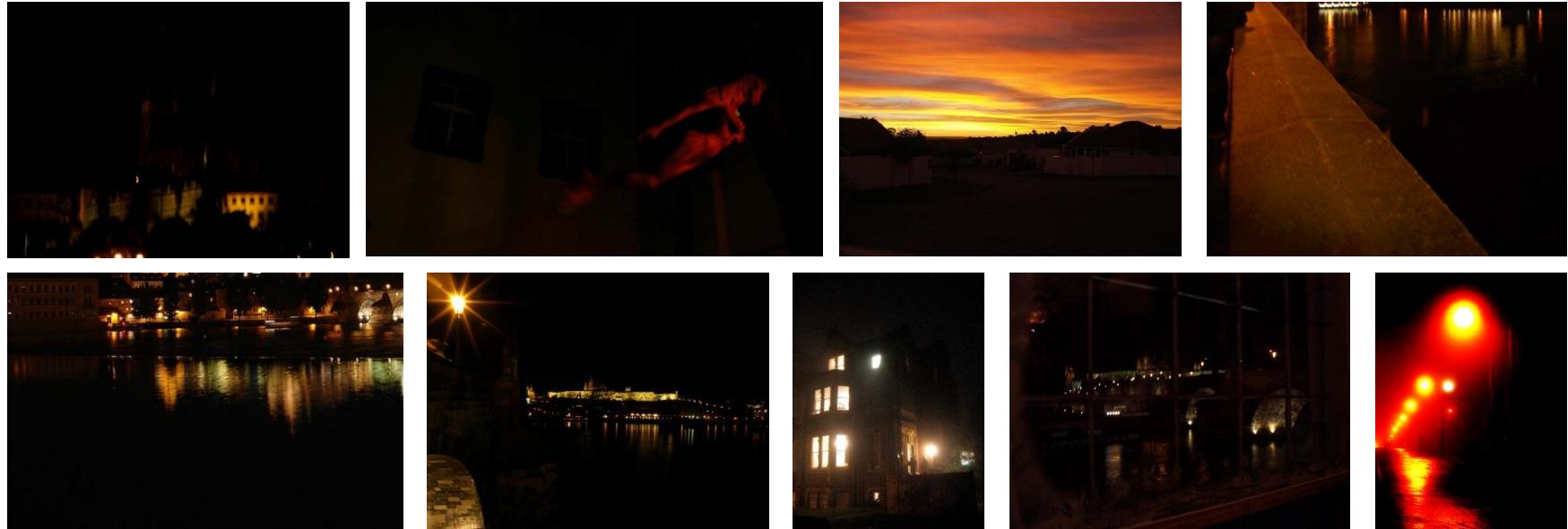
Filip Radenović Johannes L. Schönberger Dinghuang Ji
Jan-Michael Frahm Ondřej Chum Jiří Matas

CVPR 2016

Modeling in the Dark



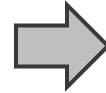
Modeling in the Dark



We **cannot** do this, **BUT...**

Separate Day & Night Dense Reconstructions

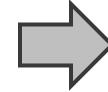
Day & Night Images



Standard Dense

Separate Day & Night Dense Reconstructions

Day & Night Images

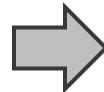


Standard Dense

Artifacts

Separate Day & Night Dense Reconstructions

Day & Night Images



Standard Dense



Artifacts

Day Dense



Clean

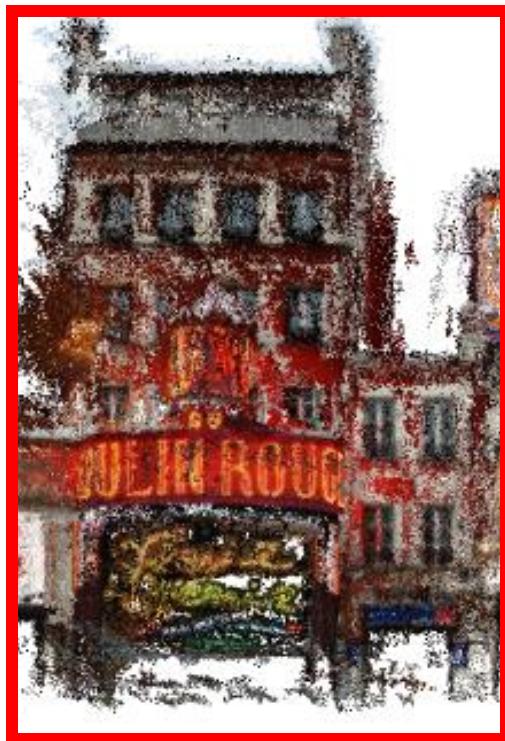
Night Dense



Clean

Separate Day & Night Dense Reconstructions

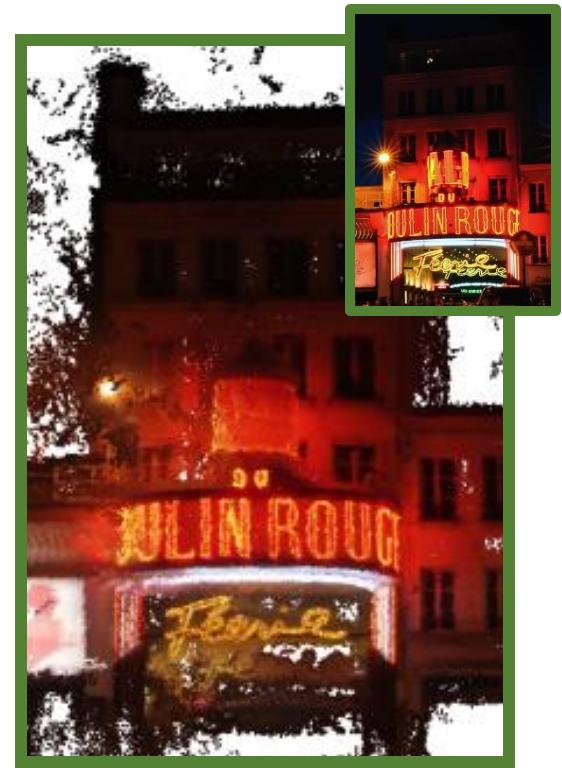
Standard Dense



Day Dense

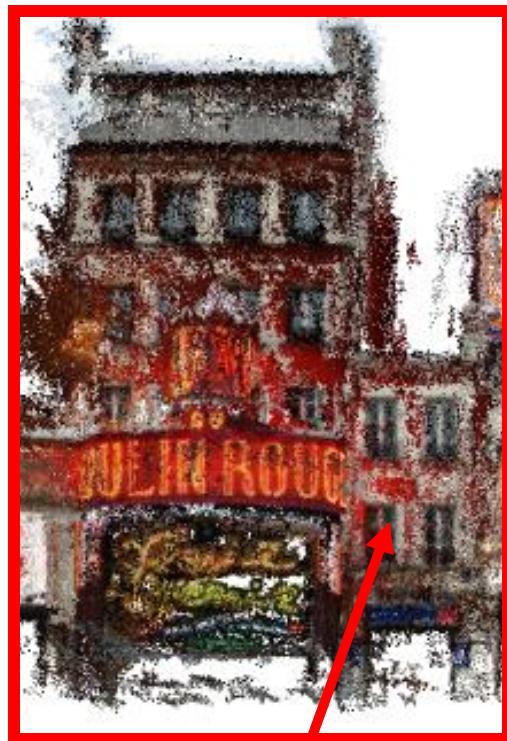


Night Dense



Separate Day & Night Dense Reconstructions

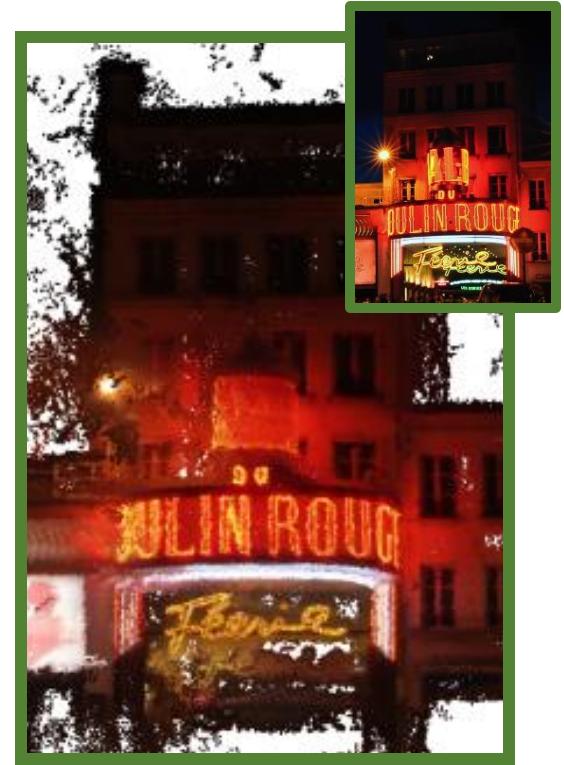
Standard Dense



Day Dense



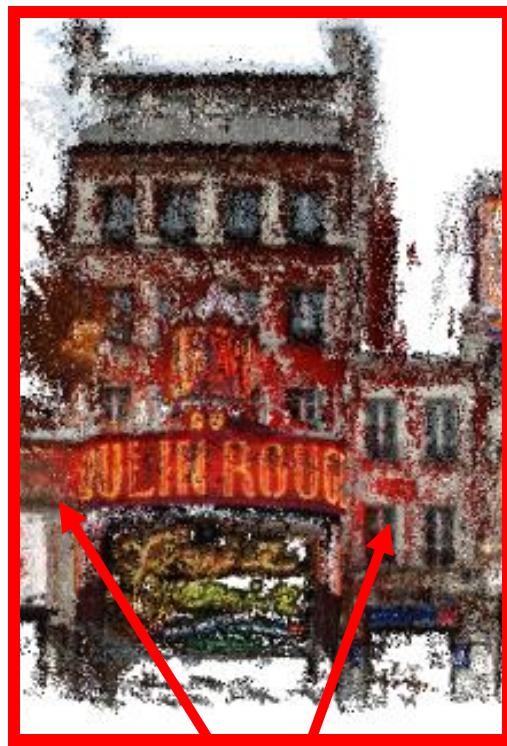
Night Dense



Artifacts

Separate Day & Night Dense Reconstructions

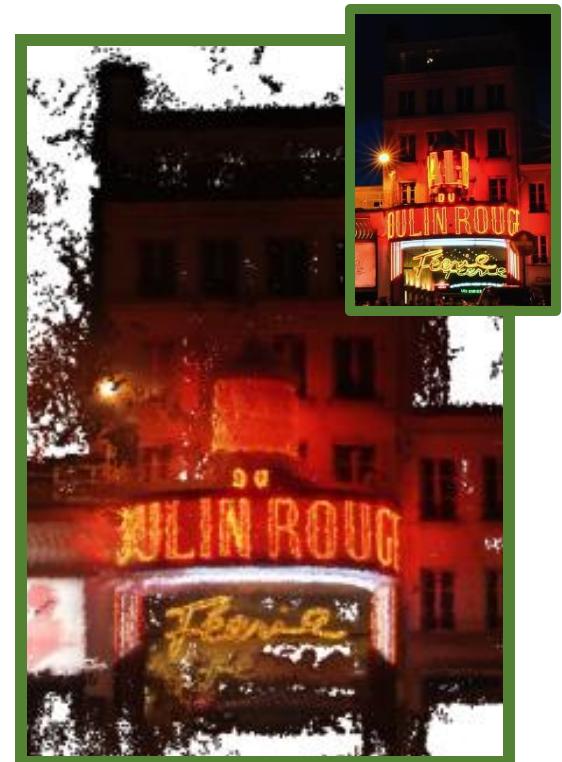
Standard Dense



Day Dense

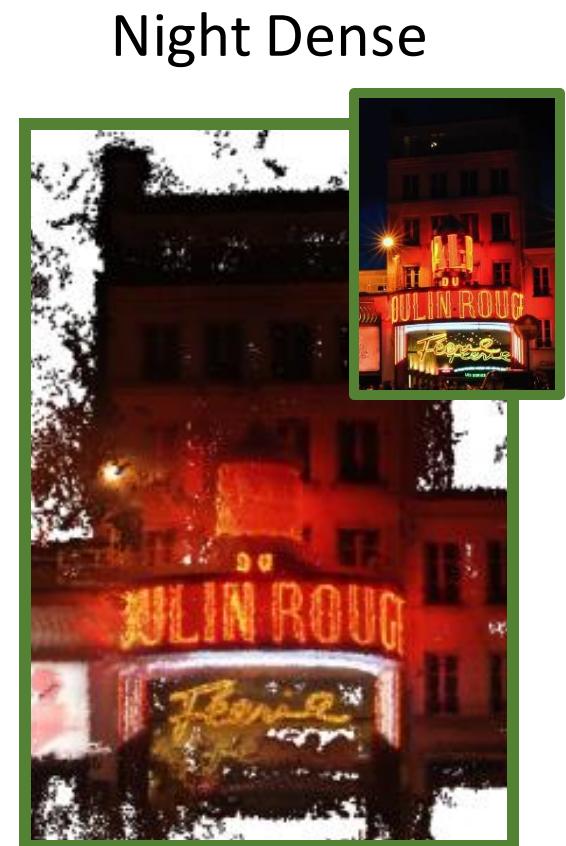


Night Dense



Artifacts

Separate Day & Night Dense Reconstructions



Day & Night Dense Models

Night Model

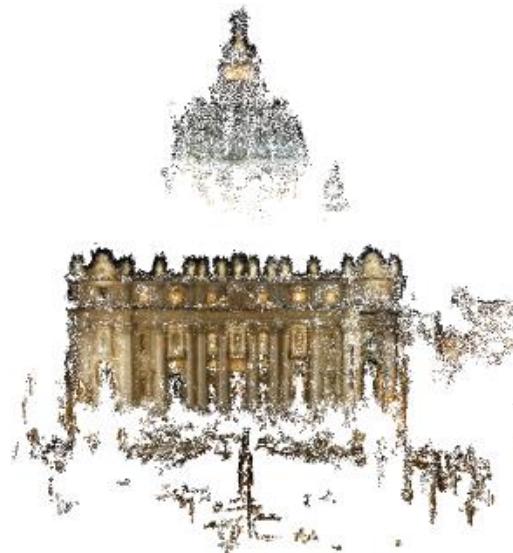


Day Model



Day & Night Dense Models

Night Model

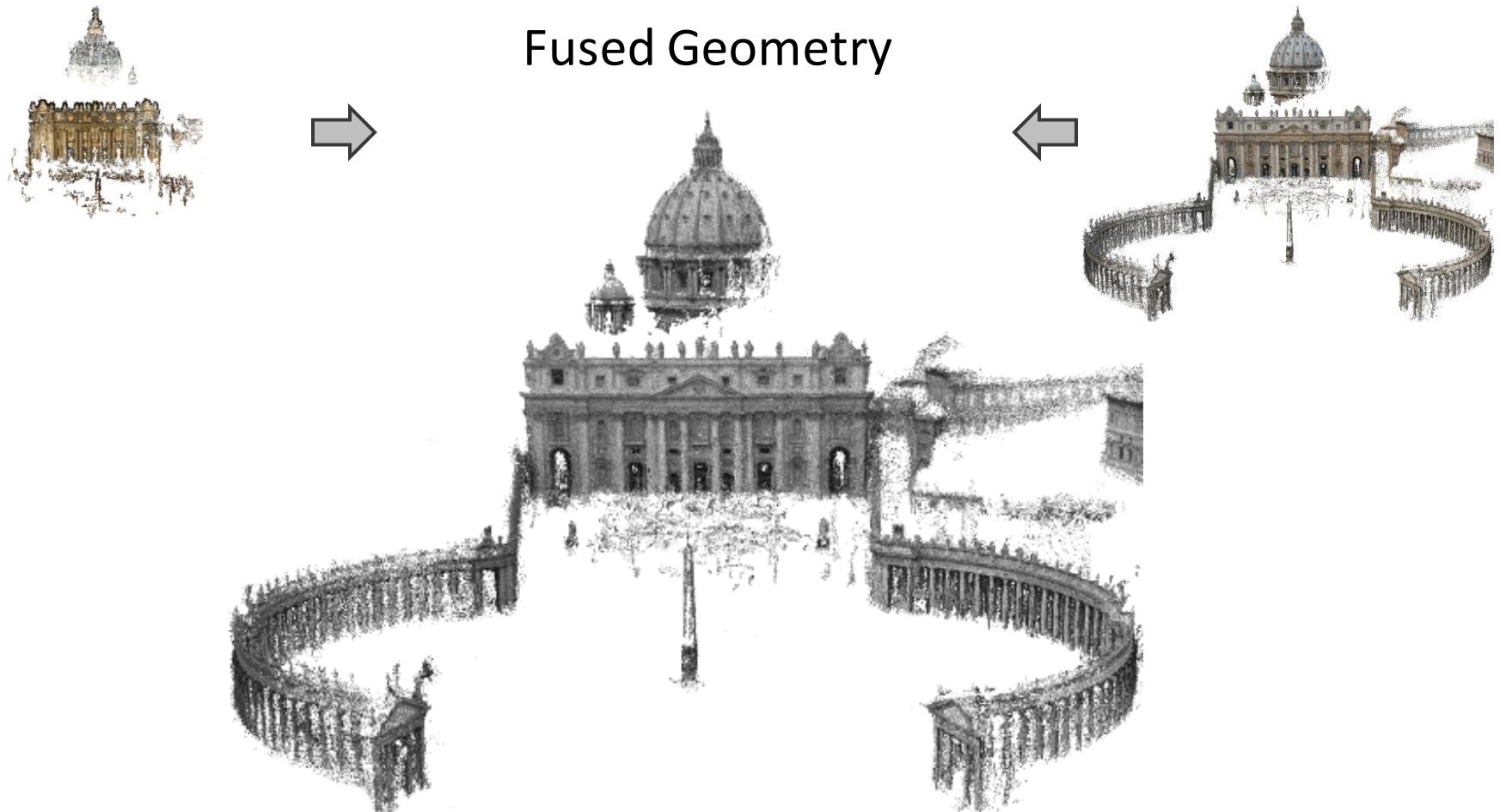


Day Model



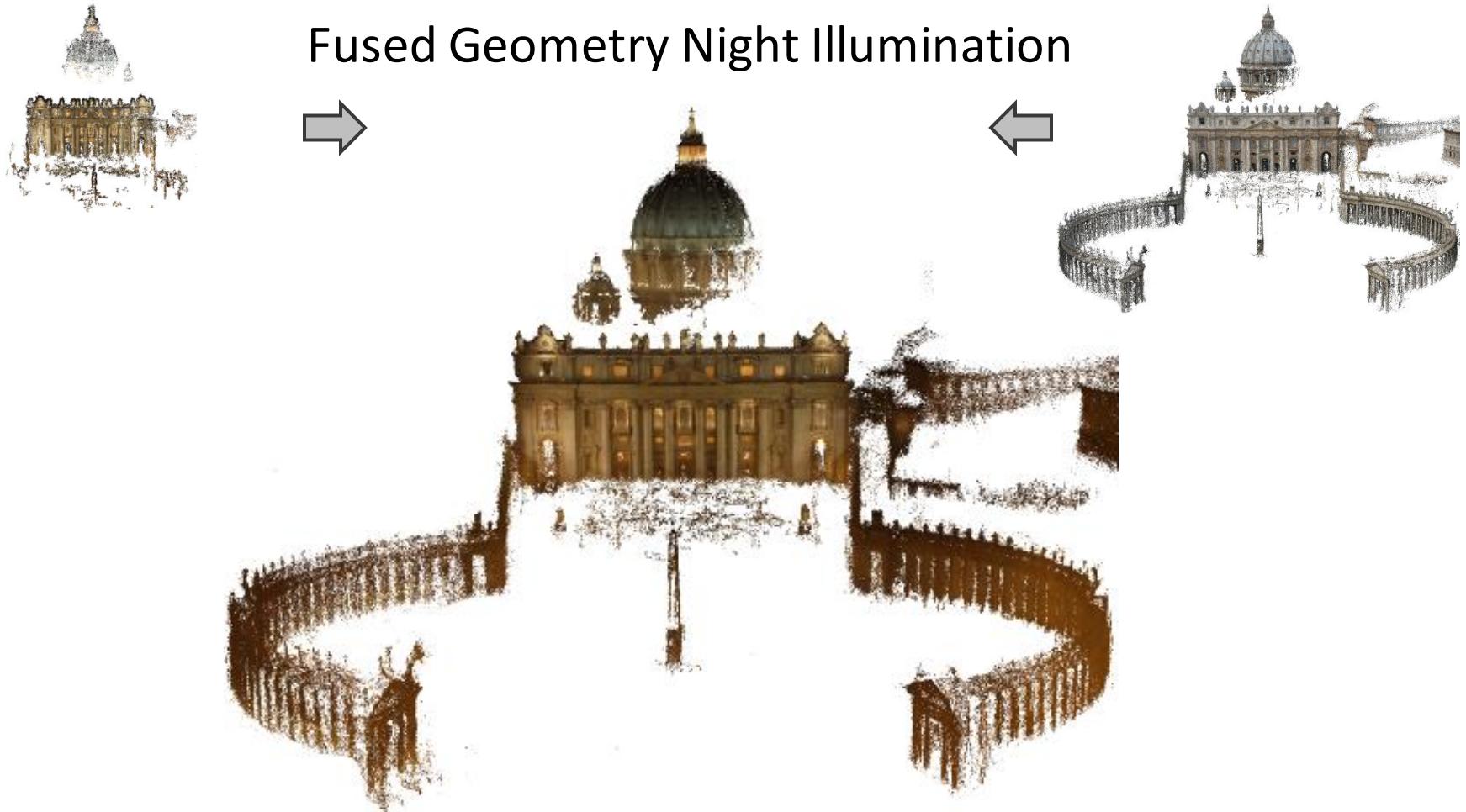
Geometric Fusion

Fused Geometry



Recoloring

Fused Geometry Night Illumination



Clustering into Day & Night

Image Dataset

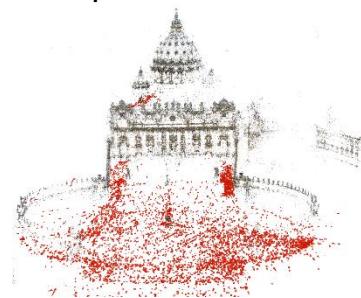


Clustering into Day & Night

Image Dataset



Sparse Model

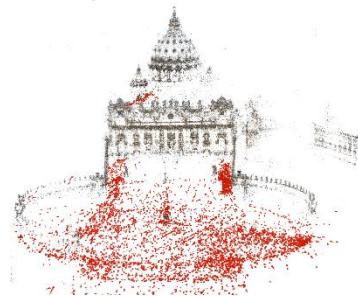


Clustering into Day & Night

Image Dataset



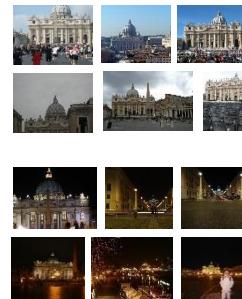
Sparse Model



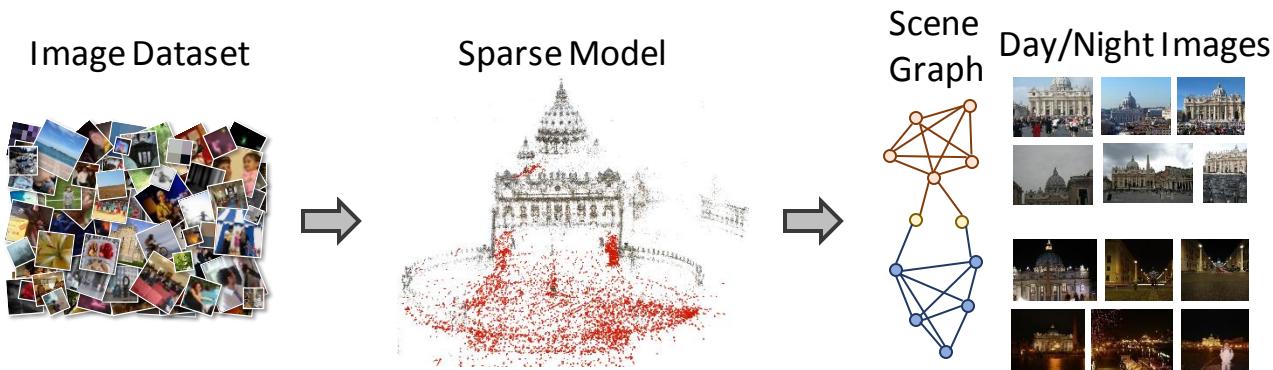
Scene Graph



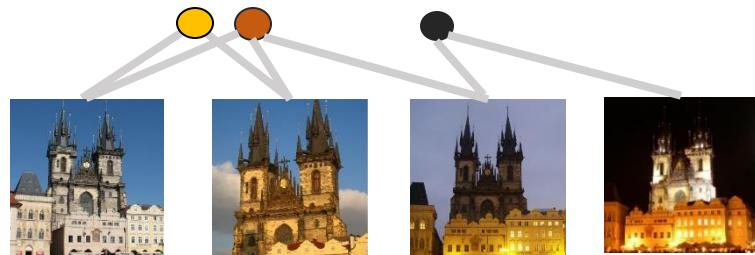
Day/Night Images



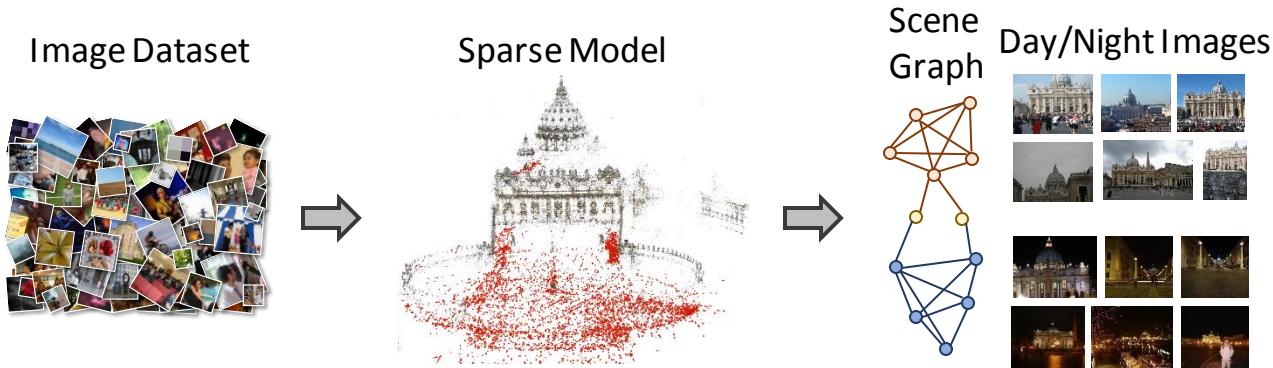
Clustering into Day & Night



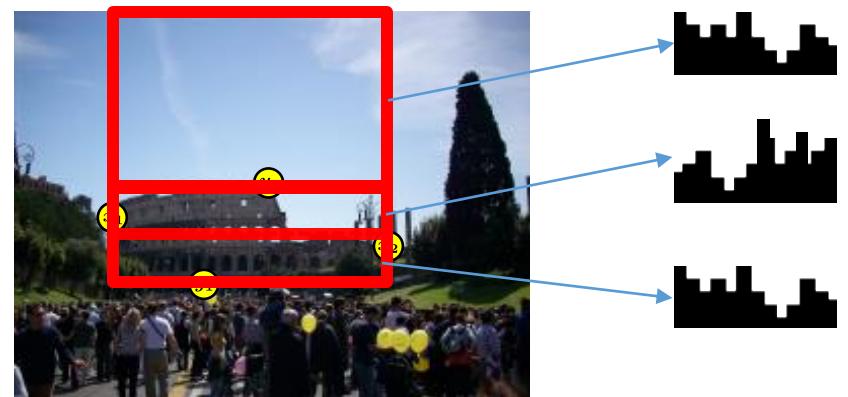
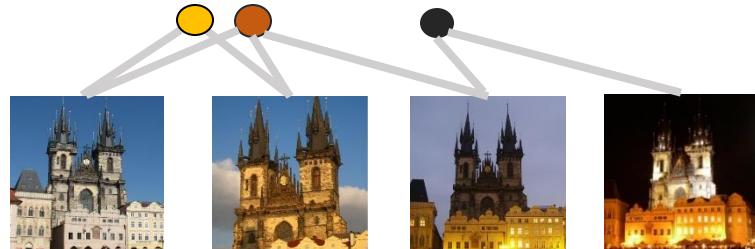
- Images and 3D points in sparse scene graph



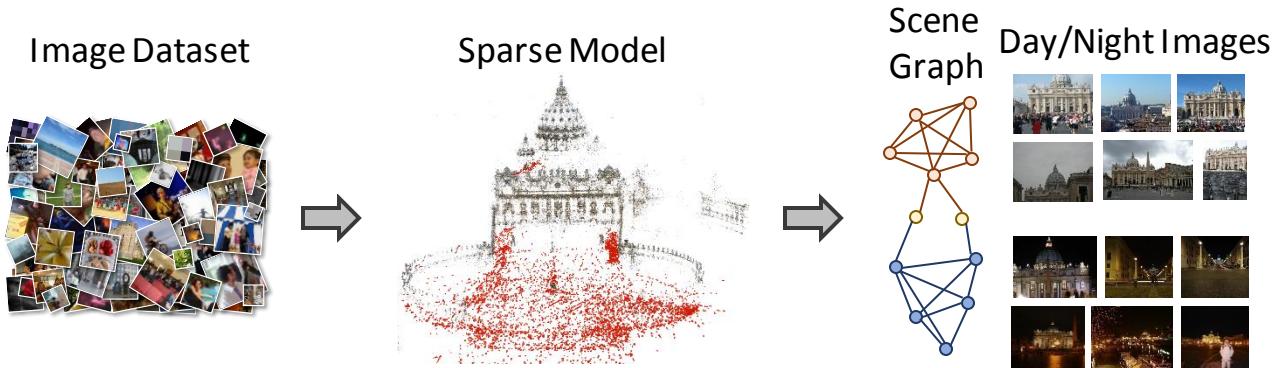
Clustering into Day & Night



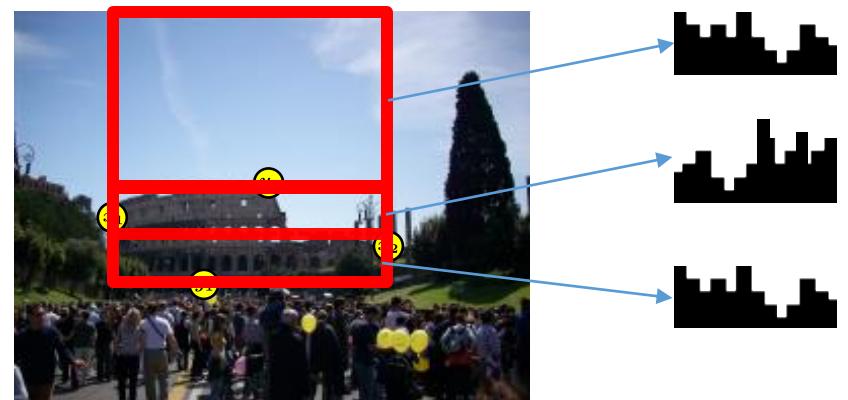
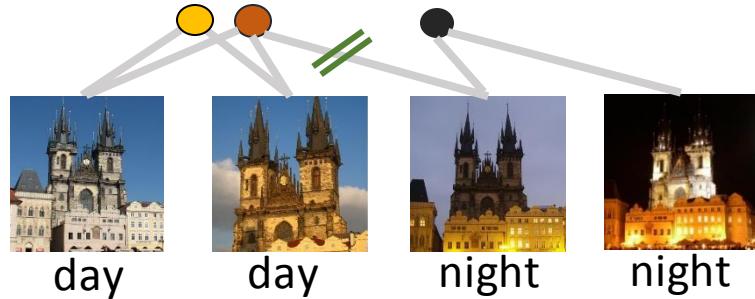
- Images and 3D points in sparse scene graph
- Color histogram of images



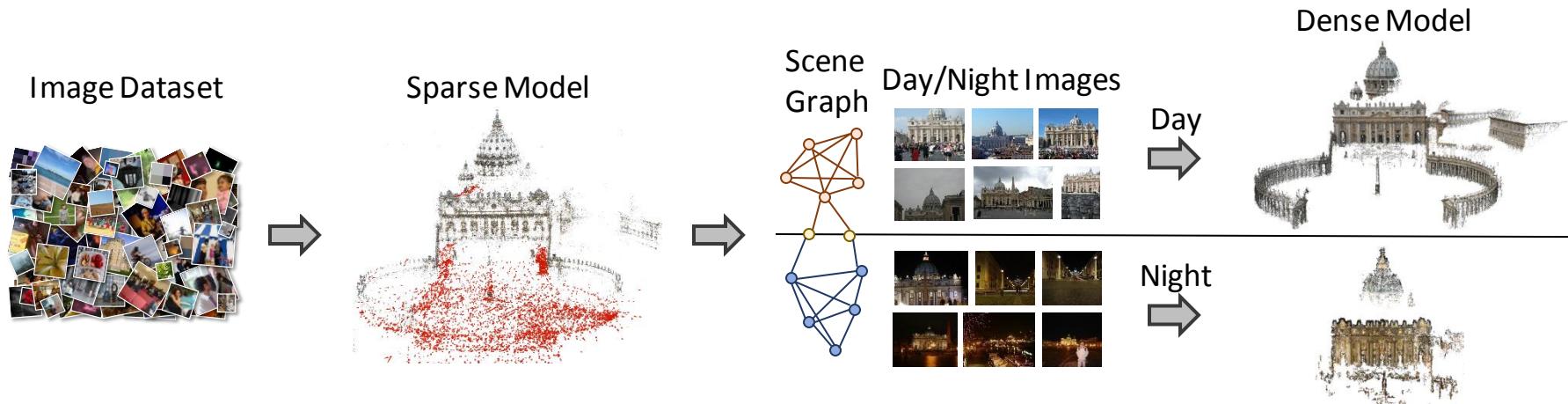
Clustering into Day & Night



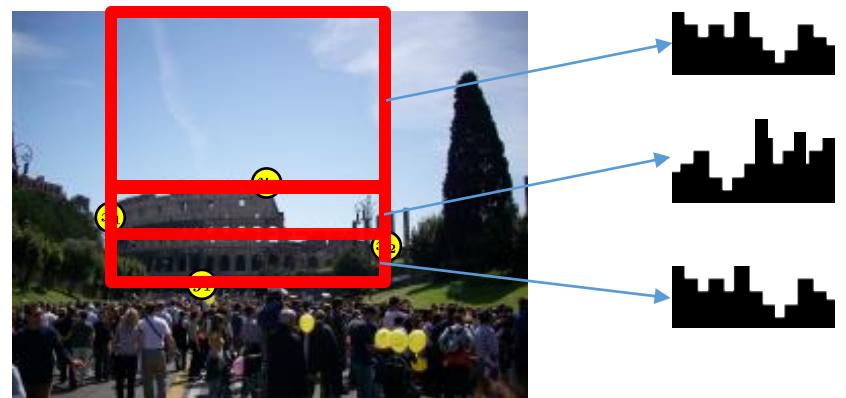
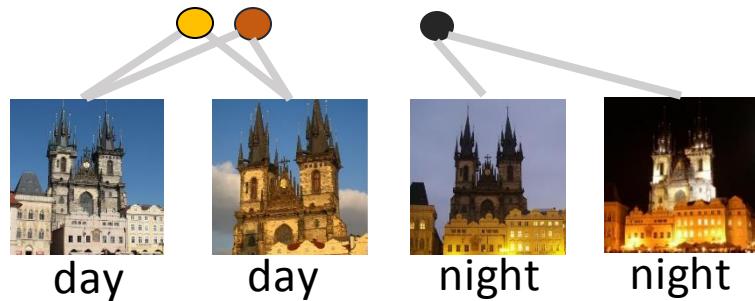
- Images and 3D points in sparse scene graph
- Color histogram of images
- Graph-cut



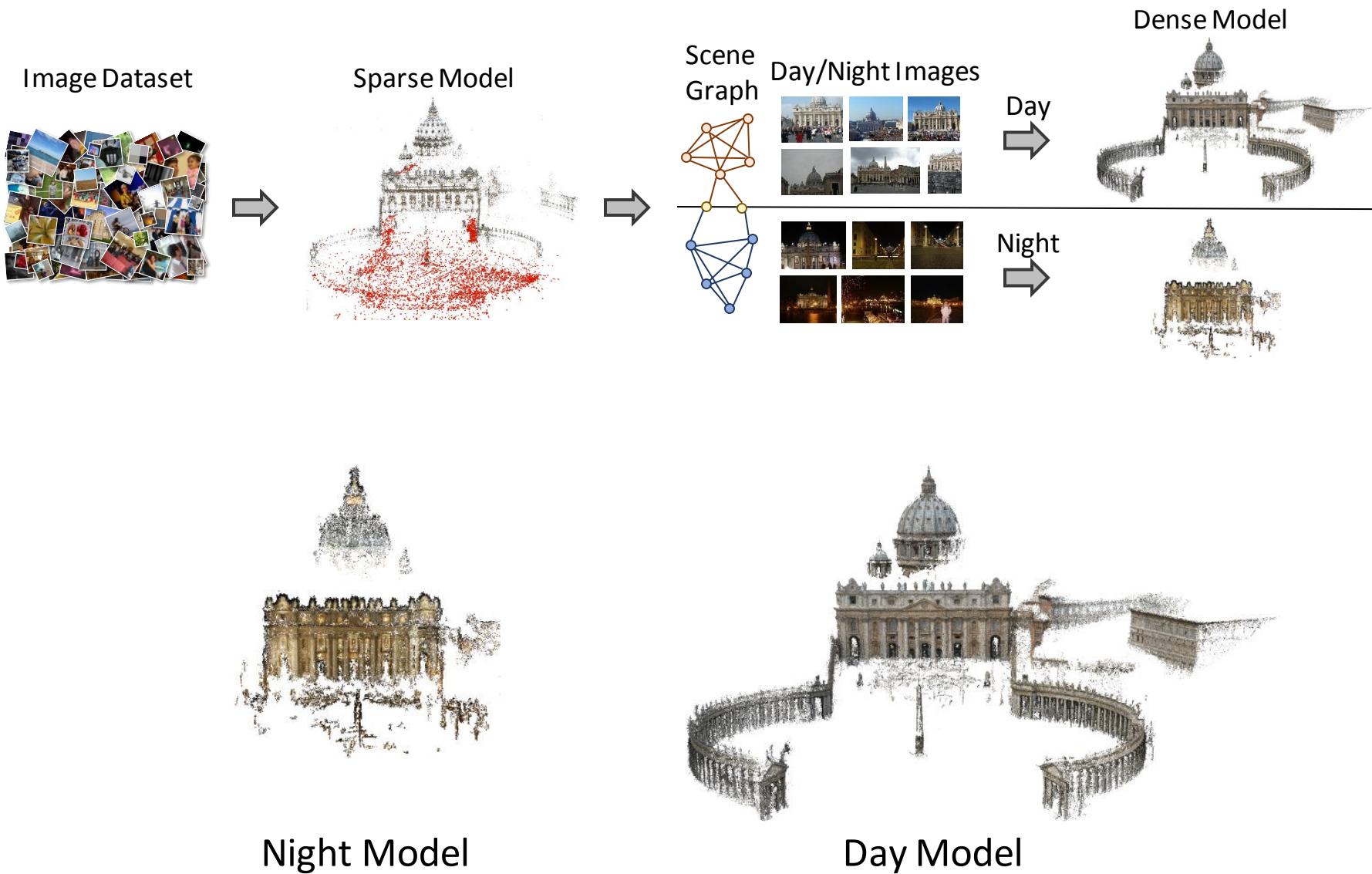
Separate Dense Reconstruction of Day & Night



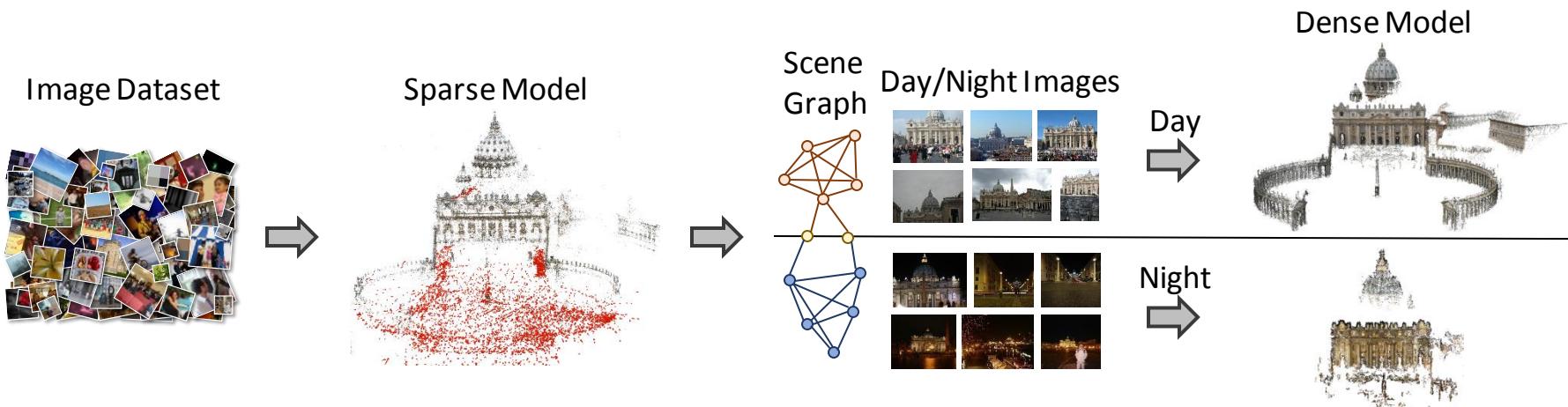
- Images and 3D points in sparse scene graph
- Color histogram of images
- Graph-cut



Geometric Fusion & Recoloring



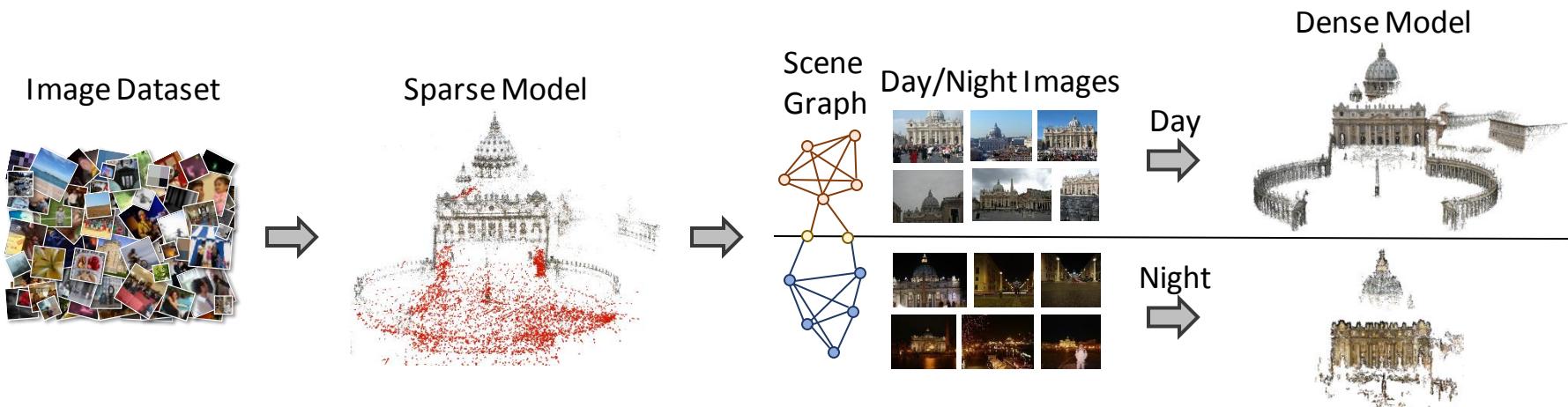
Geometric Fusion & Recoloring



- Merge point clouds



Geometric Fusion & Recoloring



- Merge point clouds



Fused Geometry Night Illumination



Contributions

- Automatic reconstruction of day & night images

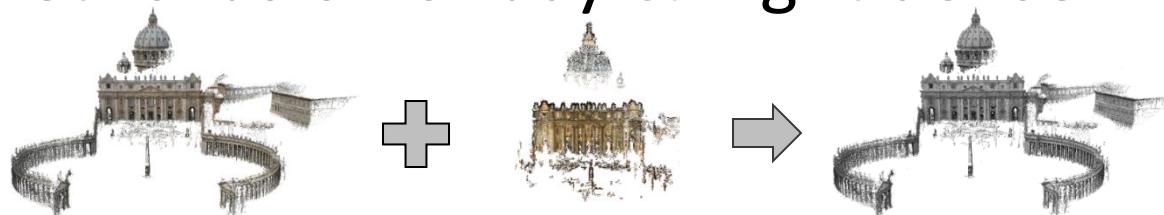


Contributions

- Automatic reconstruction of day & night images



- Geometric fusion of day & night dense models

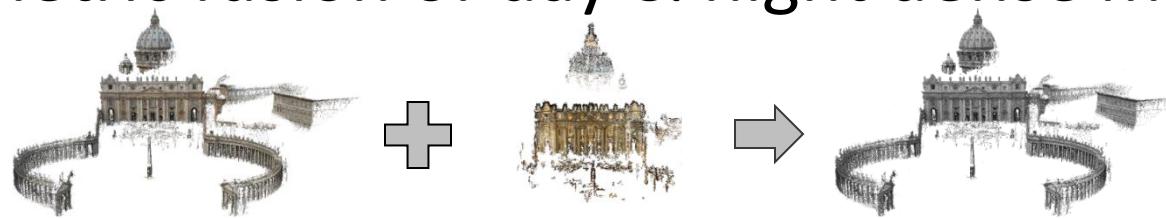


Contributions

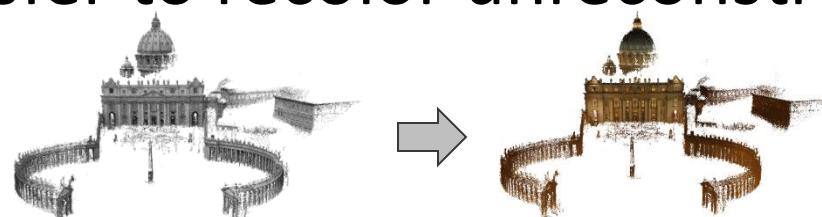
- Automatic reconstruction of day & night images



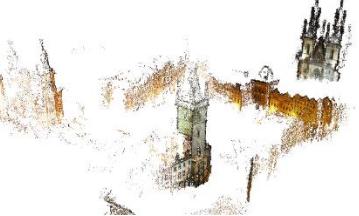
- Geometric fusion of day & night dense models



- Color transfer to recolor unreconstructed areas



Results

Day Image	Day Model	Night Model	Fused Night Model	Night Image
				
				
				
				
				

See you at Spotlight Poster #21