

Morphological Mapping of Landslides using Images and Videos from Drones and SfM

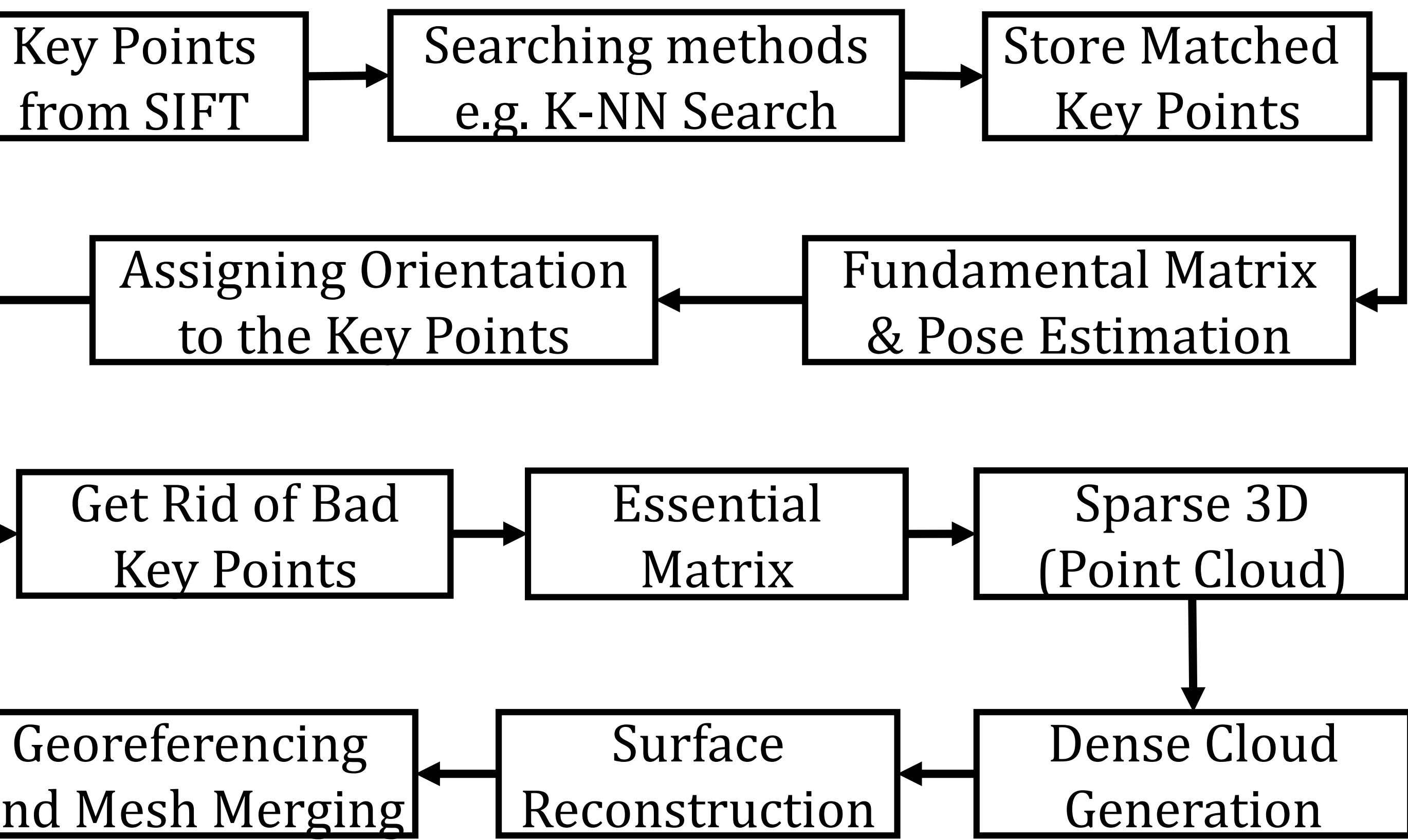
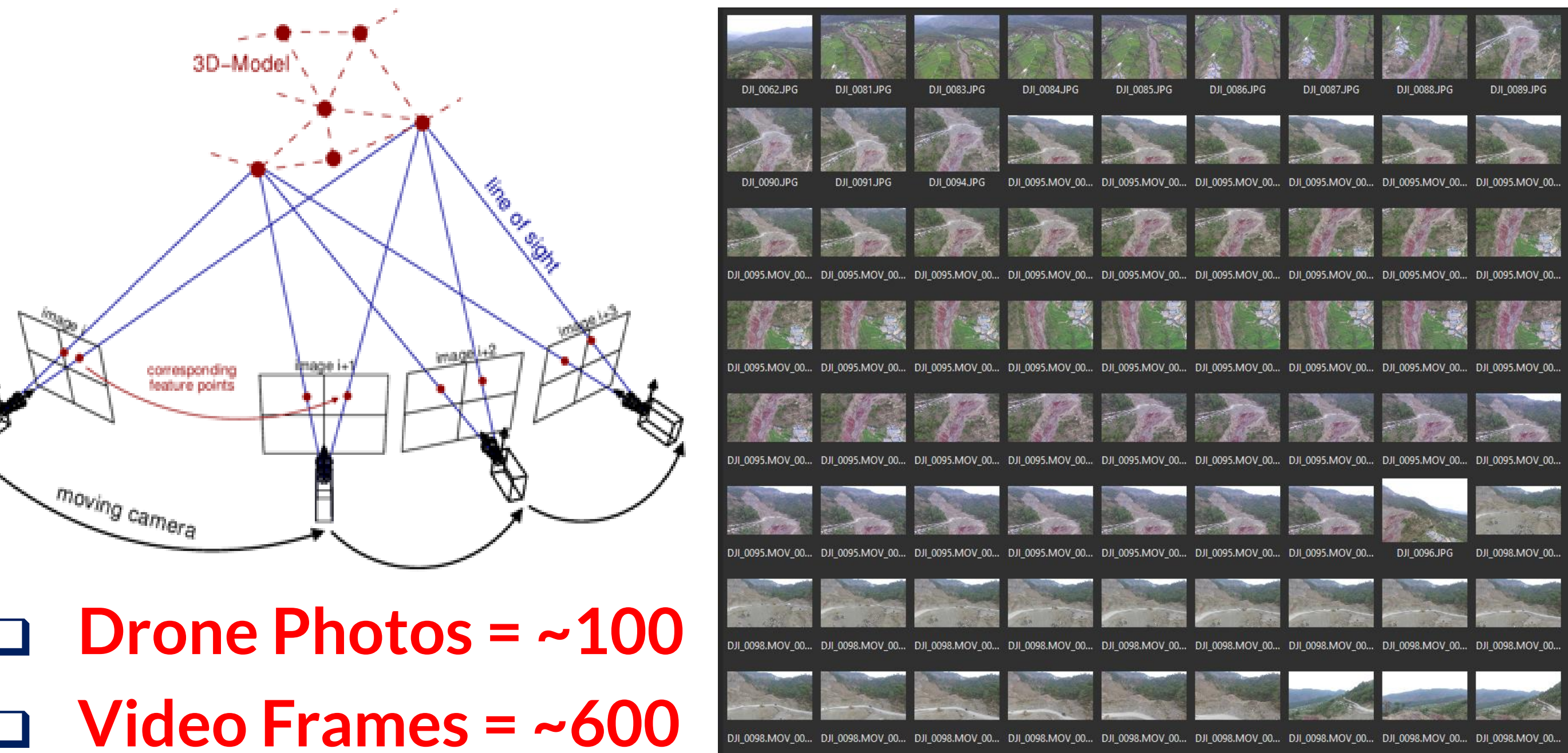
Sharad K. Gupta, Nitu Singh, Dericks P. Shukla, Ramesh P. Singh

INTRODUCTION

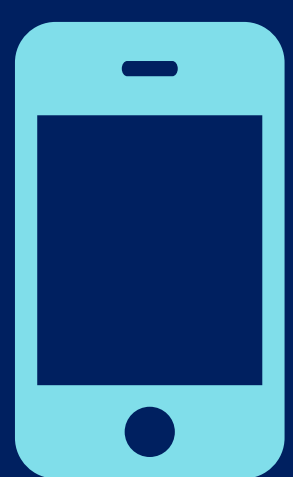
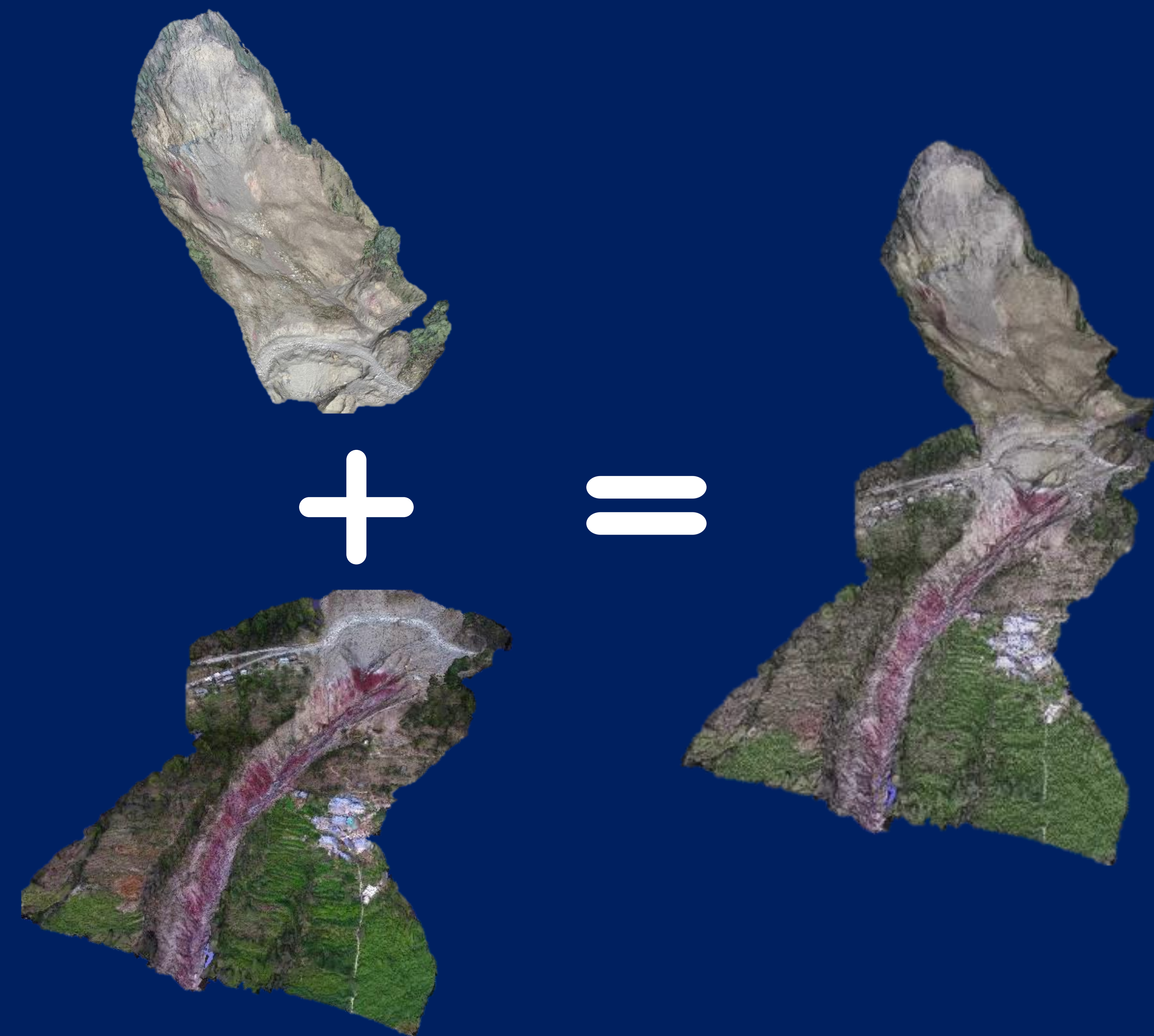
- Large landslides and complex geomorphology
- Difficult to estimate volume/area/perimeter from traditional instruments.
- SfM for 3D reconstruction using drone videos and images.
- Videos for coarse reconstruction and high-resolution images for fine reconstruction.

METHODS & TOOLS

- Photos + Videos
- Structure from Motion
- Meshroom, AGI Metashapes
- MeshLab/CloudCompare
- Global Mapper



UAV images in combination with SfM provide a flexible and effective tool to map and monitor large landslides.



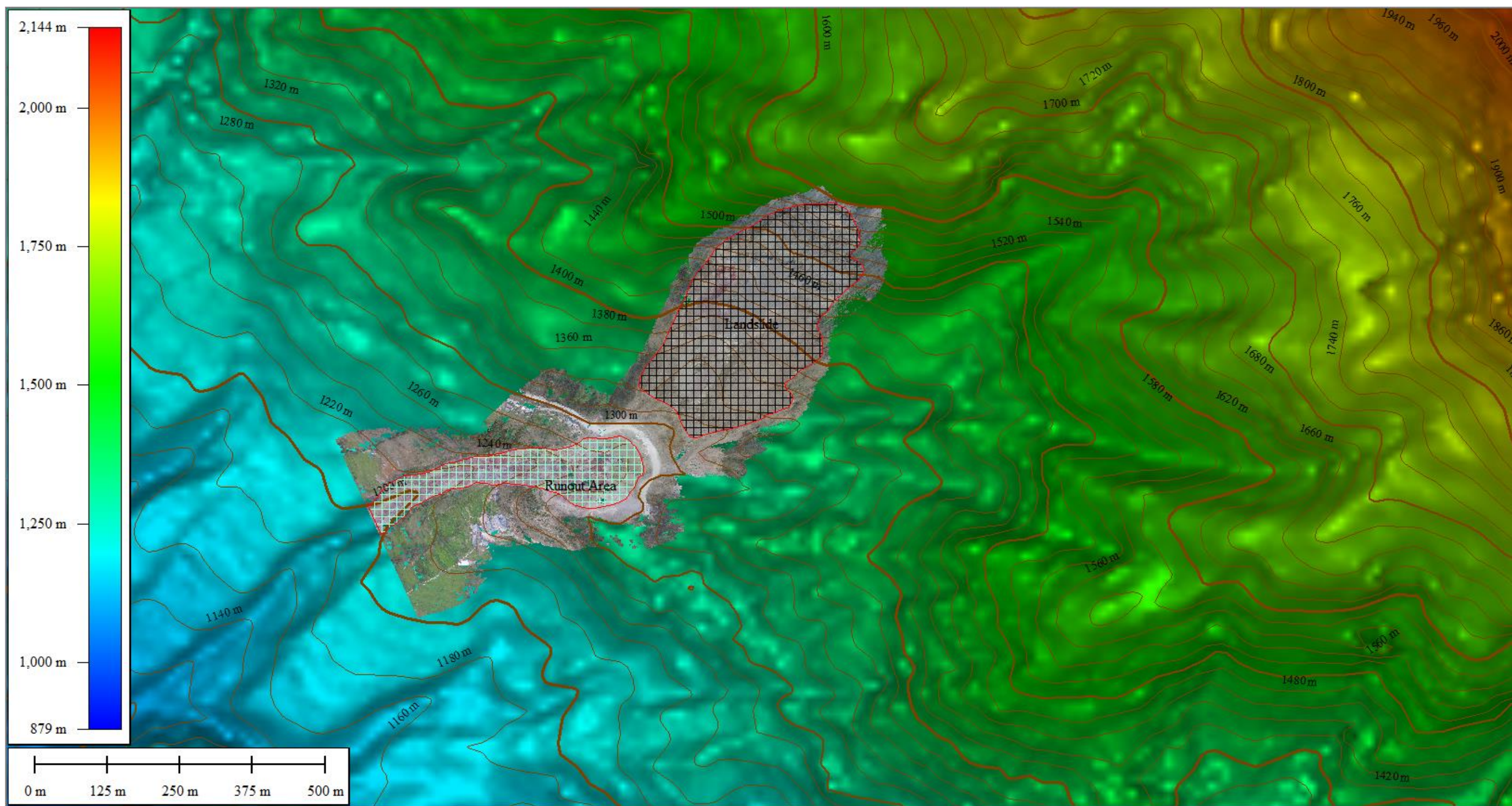
Take a picture to download this poster

FIELD VISIT



RESULTS

	Volume (cu. m)	Enclosed Area (sq. m)	Perimeter (m)
Part above road	-4,00,986.39	77,300	1173.00
Part below road	-2,88,002.49	28,100	994.37



CONCLUSIONS

- A very large landslide such as Kotrupi, cannot be measured in the field using traditional instruments and hence UAV's and SfM can be very effective in mapping and monitoring such landslides.

FUTURE SCOPE

- 3D Slope stability analysis requires the geometric surface of an area. The surface generated using current analysis could be applied for local stability analysis within the landslide area.

ACKNOWLEDGEMENTS

I would like to heartily thank AGU for providing Austin Travel Grant for attending the fall meeting. I am also very grateful to HIMCOSTE for providing Partial Travel Support for presenting the paper.

