

Supplementary Material

Stratified Autocalibration of Cameras with Euclidean Image Plane

Devesh Adlakha^{1,3}

adlakha@unistra.fr

Adlane Habed¹

habed@unistra.fr

Fabio Morbidi²

fabio.morbidi@u-picardie.fr

Cédric Demonceaux³

cedric.demonceaux@u-bourgogne.fr

Michel de Mathelin¹

demathelin@unistra.fr

¹ ICube, CNRS, University of Strasbourg, France

² MIS, University of Picardie Jules Verne, France

³ ImViA, VIBOT ERL CNRS, University of Burgundy Franche-Comté, France

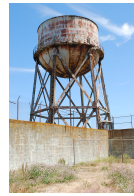
S.1 Additional real image experiments



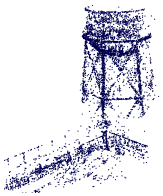
(a) Golden Statue



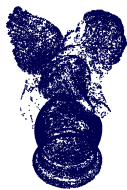
(b) Eglise du Dome



(c) Alcatraz Water Tower



(d) Cherub



(e) Arbre aux Serpents



Figure S.1: Qualitative assessment. Sample images and metric 3D reconstructions obtained using EIP. *Arbre aux Serpents* image courtesy Renato Saleri, *L'Arbre aux Serpents de Niki de Saint Phalle* (C) Musées d'Angers/ (C) 2017 Niki Charitable Art Foundation.

Qualitative assessment: We visually assessed the metric 3D reconstructions obtained with our algorithm using several real image sequences. These sequences include (number of images given in parentheses): *Golden Statue* (18), *Eglise du Dome* (85), and *Alcatraz Water Tower* (173) from [9], *Cherub* (65) from [10], as well as one from a digital cultural heritage application, *Arbre aux Serpents* (154). The last sequence was captured by a camera drone for digital preservation of the imaged sculpture. The projective reconstructions were obtained using P2SfM [10] and they contained a maximum of 66 cameras for the tested sequences. The feature matches were obtained using COLMAP [9].

Figure S.1 shows the metric 3D reconstructions obtained using EIP. The recovered metric structure faithfully represents the imaged scene. Thus, the EIP assumption was applicable for all these sequences, which have been captured using different cameras. These results were obtained in just over one second of computation time on average.

References

- [1] 3Dflow SRL. 3DF Zephyr Reconstruction Showcase. <https://www.3dflow.net/3df-zephyr-reconstruction-showcase/>.
- [2] L. Magerand and A. Del Bue. Revisiting Projective Structure from Motion: A Robust and Efficient Incremental Solution. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 42(2):430–443, 2018.
- [3] C. Olsson and O. Enqvist. Stable Structure from Motion for Unordered Image Collections. In *Proc. Scandinavian Conf. Image Analysis*, pages 524–535, 2011.
- [4] J. Schönberger and J.-M. Frahm. Structure-from-Motion Revisited. In *Proc. IEEE International Conference on Computer Vision and Pattern Recognition*, pages 4104–4113, 2016.