

Image Localization With Room Layout Prediction

Task

- Implement pipeline to automatically label the room layout in the real-world images.
- Train and evaluate a deep learning algorithm to perform Layout prediction in RGB and Thermal images.
- Optimize camera pose in near real-time with BIM Model and VP/VL extraction.

Project Characteristics

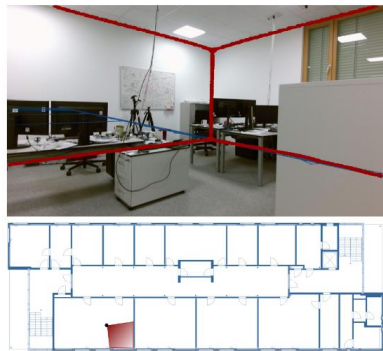
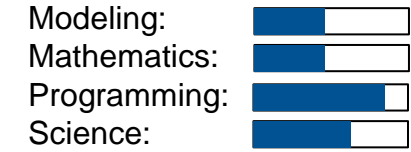
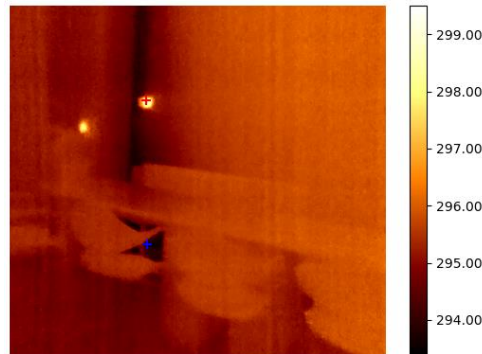
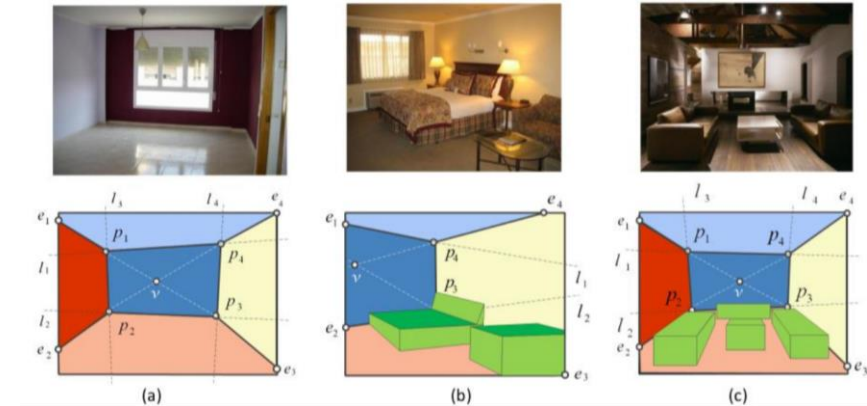


Image Localization with Floor Plans [1]



Example of Thermal Image



Examples of room layouts in RGB images [2]

[1] Boniardi, Federico; Valada, Abhinav; Mohan, Rohit; Caselitz, Tim; Burgard, Wolfram (2019): Robot Localization in Floor Plans Using a Room Layout Edge Extraction Network. <http://arxiv.org/pdf/1903.01804v2>. VIDEO: <https://www.youtube.com/watch?v=8pa4MUqkjc>

[2] Bincy P Mathew. (2020). Review on Room Layout Estimation from a Single Image. International Journal of Engineering Research And, V9(06), 1068–1073. <https://doi.org/10.17577/ijertv9is060820>

[3] Zou, C., Su, J. W., Peng, C. H., Colburn, A., Shan, Q., Wonka, P., Chu, H. K., & Hoiem, D. (2021). Manhattan Room Layout Reconstruction from a Single 360° Image: A Comparative Study of State-of-the-Art Methods. International Journal of Computer Vision, 129(5), 1410–1431. <https://doi.org/10.1007/s11263-020-01426-8>