Level of map abstraction	Place description type	Comments
Pure image retrieval	Appearance-based	No position information
Topological	Appearance-based	Includes transition information
Topological-metric	Appearance-based	Includes metric information between but not within places
Topological-metric	Sparse metric information (landmark maps)	SLAM system – includes metric information between and within places
Topological-metric	Dense metric information (occupancy grid maps)	SLAM system – includes metric information between and within places

▶ A comprehensive review of the current state of place recognition research, including its relationship with SLAM, localization, mapping, and recognition

▶ Introducing the concepts behind place recognition
- ▶ The role of place recognition in the animal kingdom
- ▶ How a "place" is defined in a robotics context
- ▶ The major components of a place recognition system

▶ Discussing how place recognition solutions can implicitly or explicitly account for appearance change within the environment

▶ A discussion on the future of visual place recognition with respect to advances in deep learning, semantic scene understanding, and video description