

# Real-Time Topometric Localization

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- ▶ Autonomous vehicles must be capable of localizing in GPS denied situations
- ▶ Topometric localization which combines topological with metric localization
- ▶ Build compact database of simple visual and 3D features with GPS equipped vehicle
- ▶ Whole image SURF descriptor, a vector containing gradient information of entire image
- ▶ Range mean and standard deviation descriptor
- ▶ Localization using a Bayesian filter to match visual and range measurements to the database
- ▶ Algorithm is reliable across wide environmental change, including lighting difference, seasonal variations
- ▶ Evaluation using a vehicle with mounted video cameras and LIDAR
- ▶ Achieving an average localization accuracy of 1 m on an 8 km route