

Project proposal

Image recognition of touristic places

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Fundamentals of Artificial Intelligence, 281301
September 4, 2019

1. Problem

Sometimes we don't know about the monument's or landscape's name. As a tourist, it could be useful to know the name of the place where we are, knowing about its history or some stuff that help us to grow the knowledge of culture.

2. Proposal

There is a solution of this educational problem: use the technology to know what monument or place we are seeing. This is the moment where the artificial intelligence is the principal topic of this solution.

For all of this, an image recognition is needed. All users can take a picture of the monument, landscape or

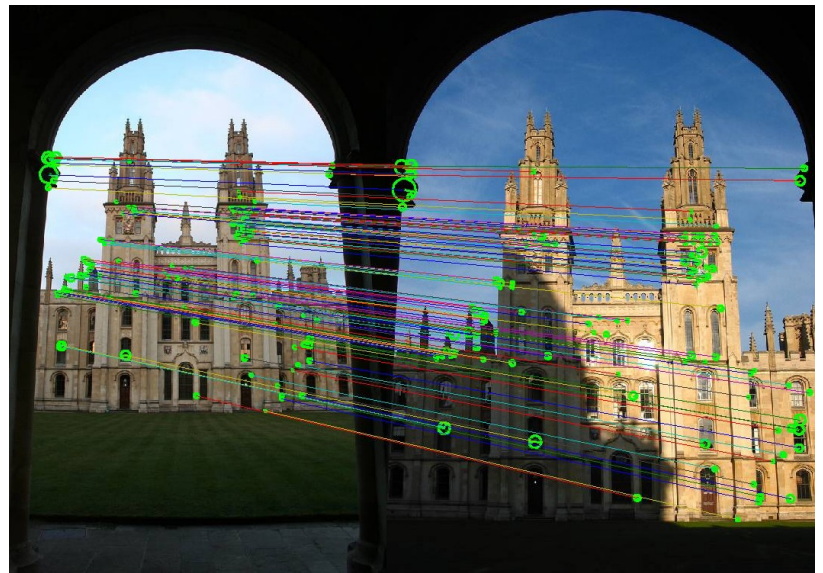


Image 1: Example of image recognition of buildings

turistic building and the program will compare it the physical characteristics to determine which one is. Those images will be recognized despite changes in scale, camera viewpoint, illumination conditions, etc.

There is a lot of important concepts to know about:

- ➔ **SIFT method** – The images can be similar, sometimes they have different scales and rotations; an Scale Invariant Feature Transform (SIFT) is needed to use in this case. SIFT is an involved algorithm which the thresholds are learned from the pair of images. Enables one to extract local information from digital images. It normalise local patches around robust scale convariant image key points.
- ➔ **OpenCV** – it supports a lot of algorithms related to Computer Vision and Machine Learning. Supports a variety of programming languages like Python, Java, C++, Matlab, etc. Developers who ue OpenCV build applications to process visual data.
- ➔ **FAST algorithm** – Features from Accelerated Segment Test is a corner detection method, which could b used to extract feature points and later used to track and map objects in many computer vision tasks. One of the advantage of the FAST corner detector it's computational efficiency.

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