Known-item search represents a scenario, where a user searches for one particular image in a given collection but does not know where it is located. The thesis focuses on the design and evaluation of a keyword retrieval model for known-item search in image collections. We use a deep neural network trained on a custom dataset to annotate the images. We design complex yet easy-to-use query interface for fast image retrieval. We use/design several types of artificial users to estimate the model’s performance in an interactive setting. We also discuss our successful participation at two international competitions.