INTELLIGENT IMAGE

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THE PROJECT:

VISUALLY RECOGNISE ALL OBJECTS ON WIKIPEDIA

AUTOMATICALLY TAG THEM IN PHOTOS

AS A WEBSITE...

IT'S DEMO TIME!

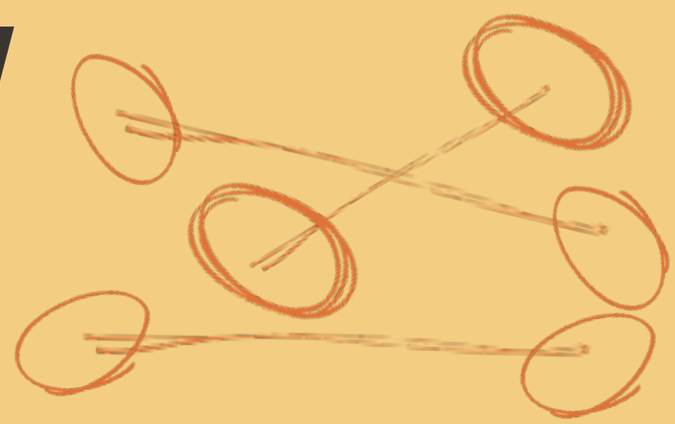
CLICK ME BABY

EXTRACT VISUAL WORDS

GOOGLE VECTOR SEARCH

```
matches = search(Database for Words);
```

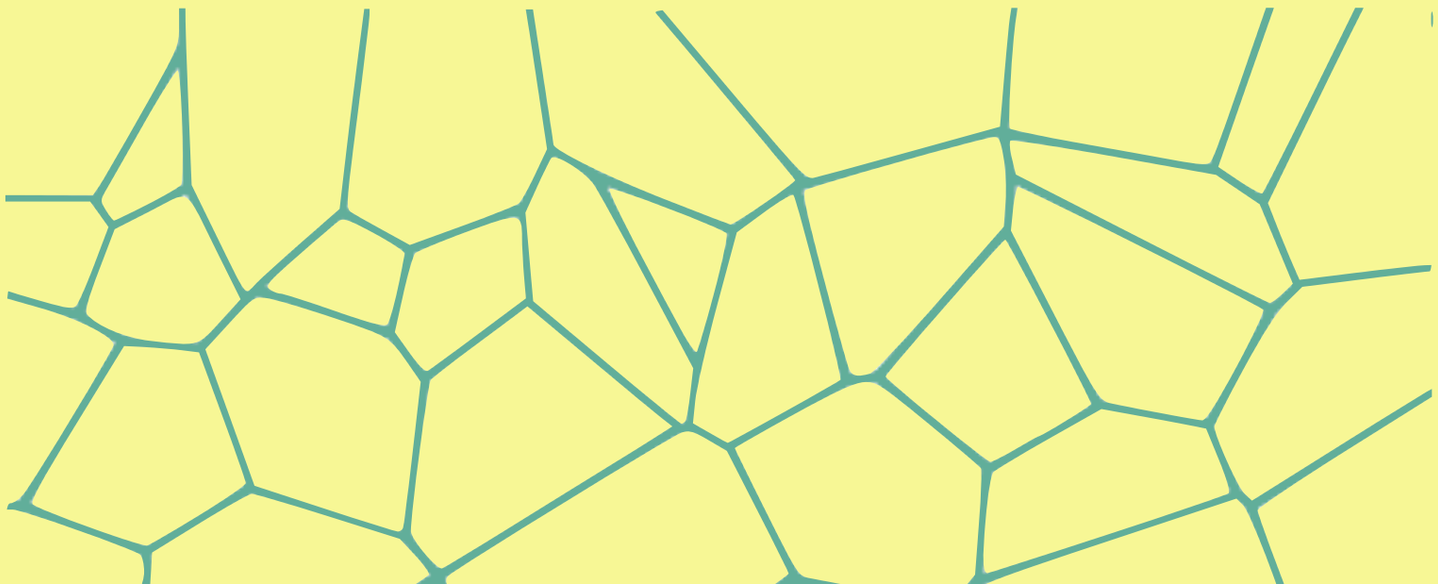
SPATIALLY VERIFY



SCALE INVARIANT FEATURE TRANSFORM

$$\begin{pmatrix} x_1 & \cdots & x_N \\ y_1 & & y_N \\ s_1 & \cdots & s_N \\ \theta_1 & & \theta_N \end{pmatrix}_{4\times N} \qquad (v_1 | \cdots | v_N)_{128\times N}$$

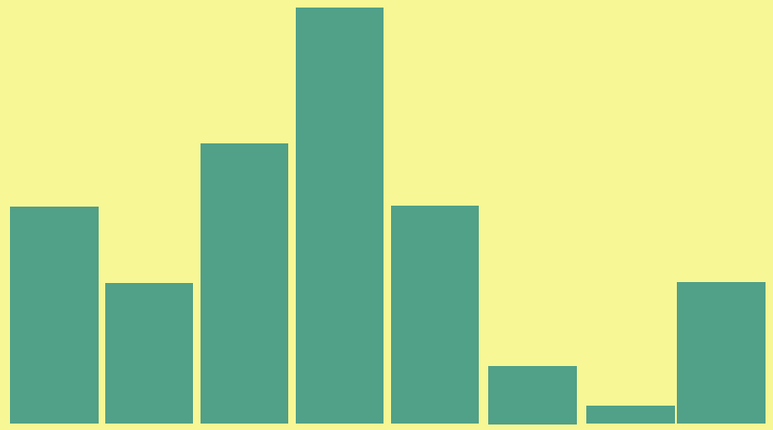
QUANTISE ⇨ WORDS



WORDS ⇨ HISTOGRAM

$(w_3, w_{281}, w_{9177}, \ldots, w_{640})$

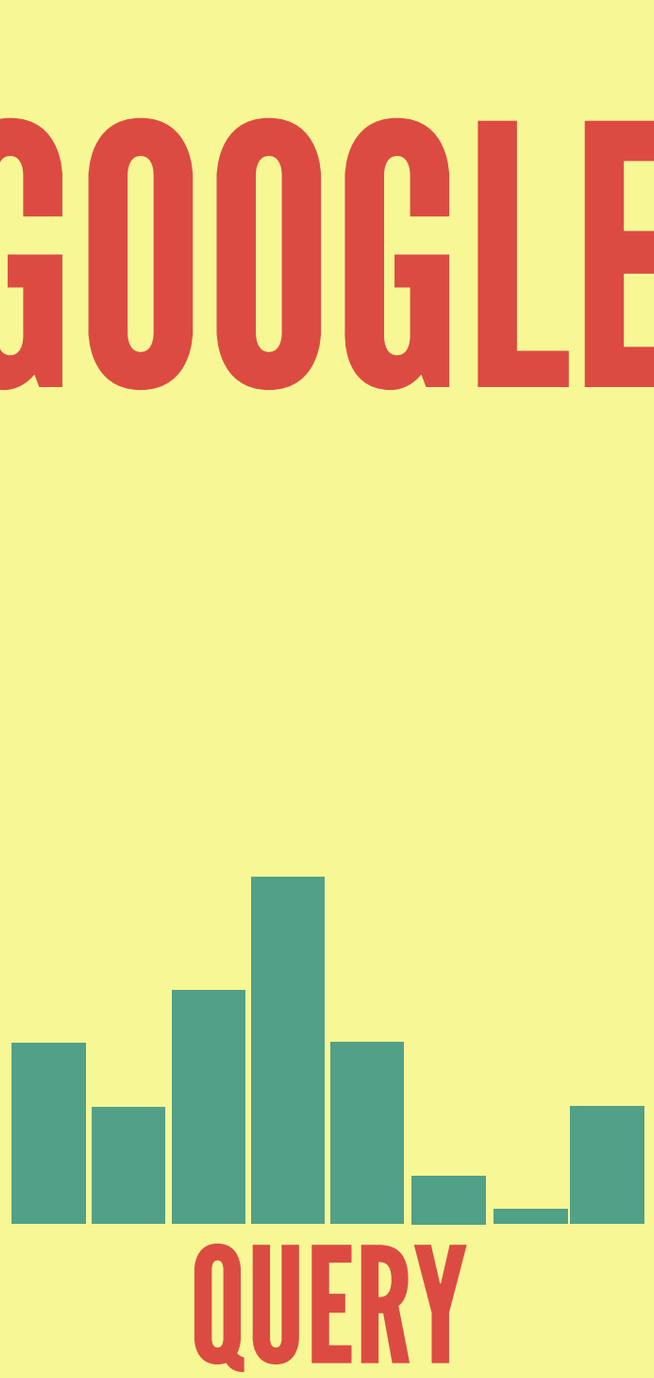
$1 \times N$



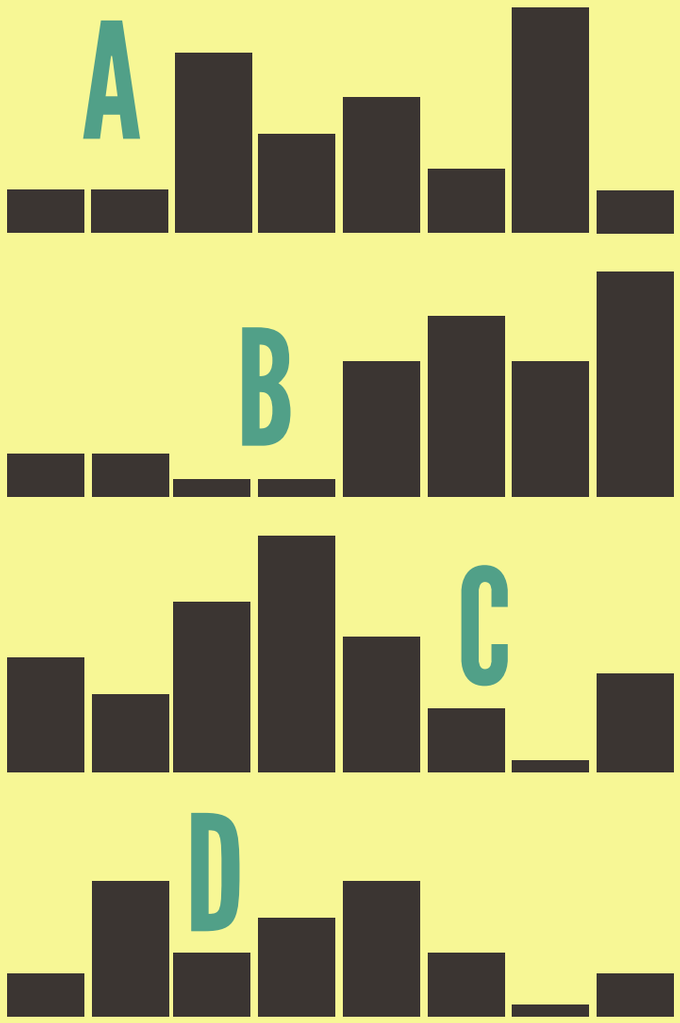
$N_{words} \times 1$

TF-IDF WEIGHT: $h_i = \frac{n_{id}}{n_d} \log \frac{N}{n_i}$

GOOGLE STYLE RETRIEVAL



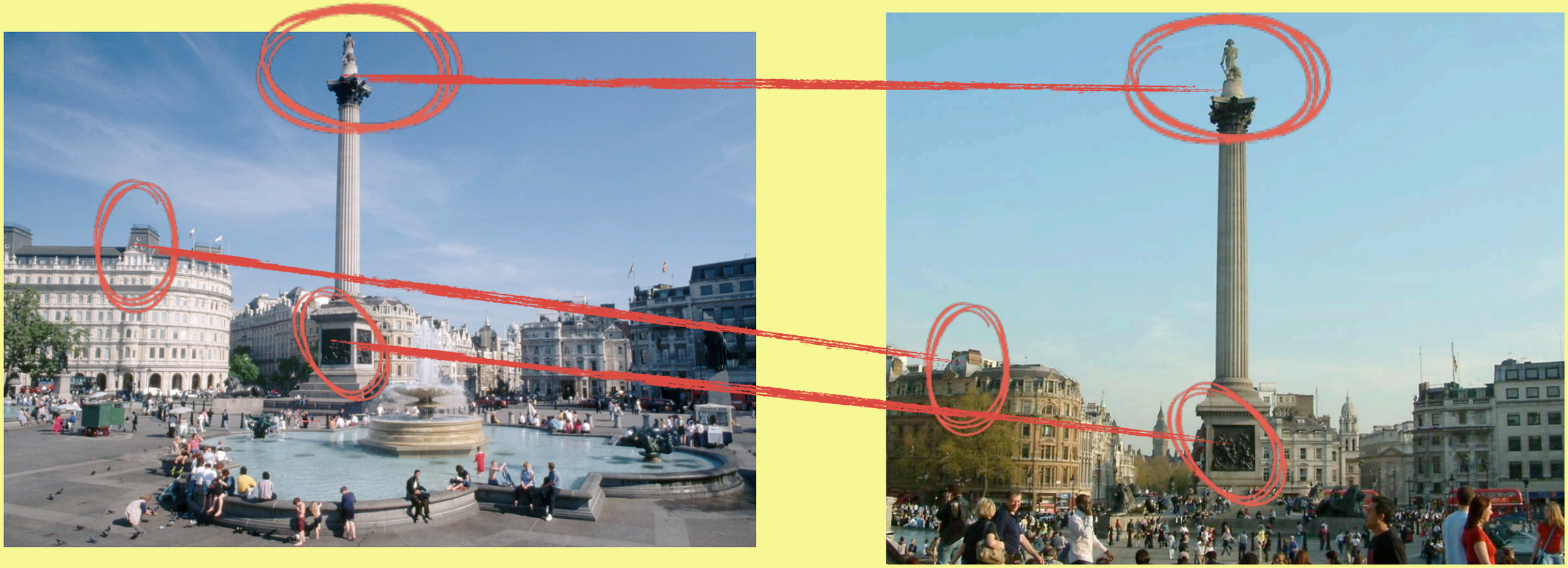
QUERY



DATABASE

Most similar!

SPACIAL VERIFICATION



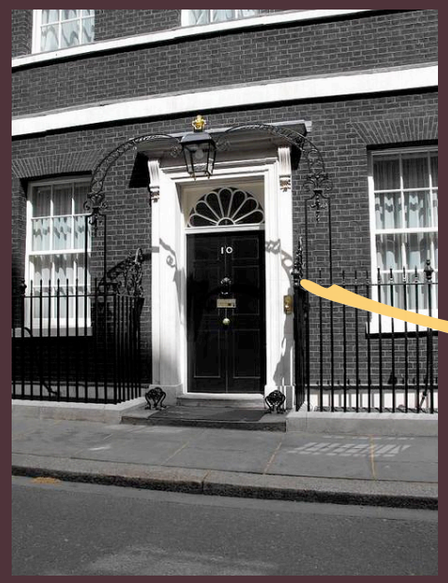
$$X_{db} = \begin{bmatrix} A & \vec{t} \\ 0 & 1 \end{bmatrix} X_{query}$$

RESEARCH

RESEARCH

MULTIPLE MATCHING

RESEARCH



DATABASE EXPANSION