

Decoding the Text Encoding

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From text visualization to raw data

- ◆ Input: A text visualization diagram
- ◆ Output: Set of (word, weight) pairs

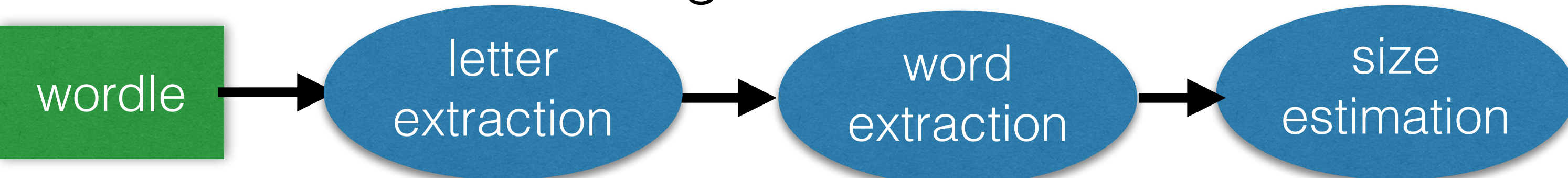


Why decoding text visualization is important?

- Improving the design choices
- Further statistical analysis on raw data

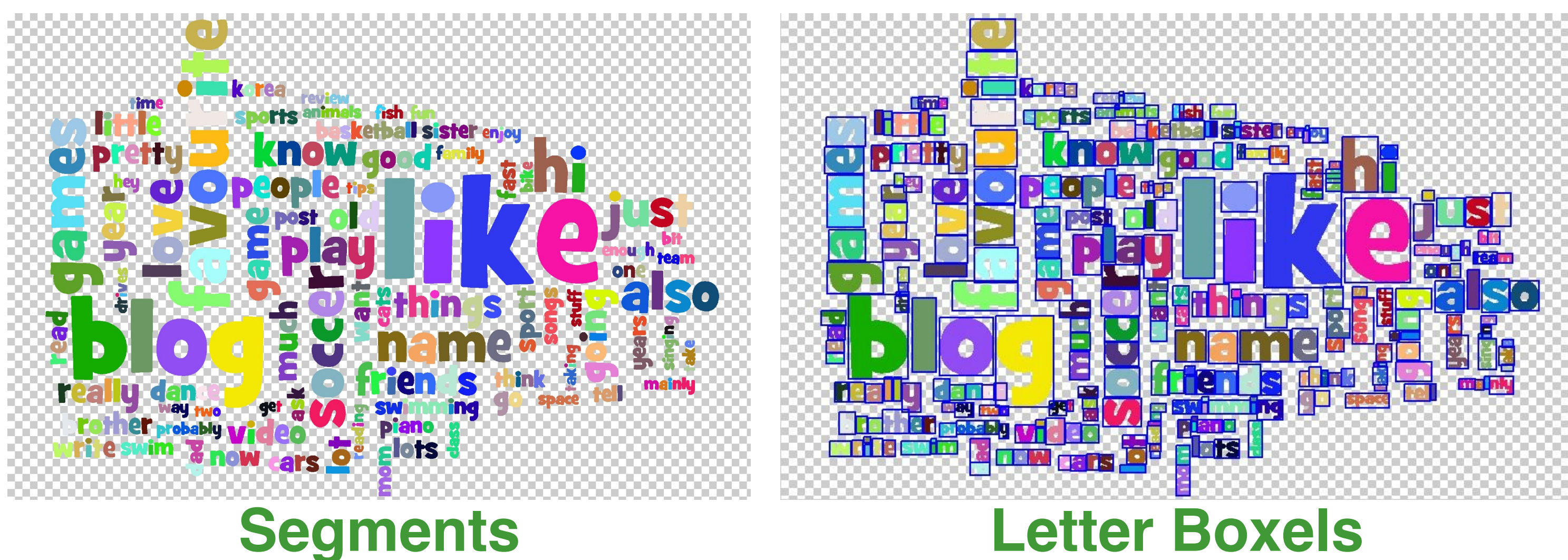
Our solution

- A Three main step computer vision approach to extract words and weights



Letter extraction

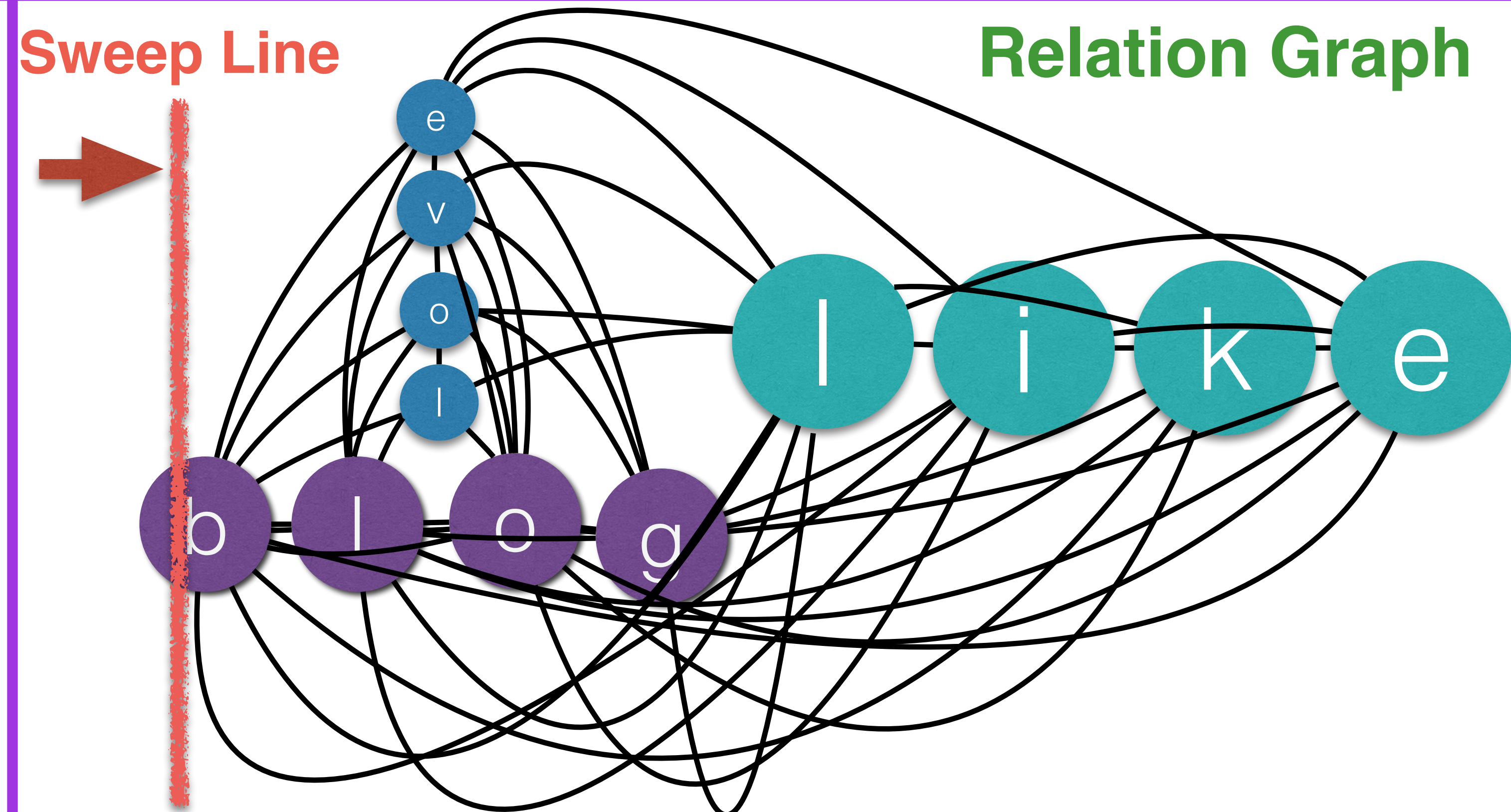
- Extract segments by Pixel-wise connected component extraction
- Assign segments to letters using OCR



Word extraction

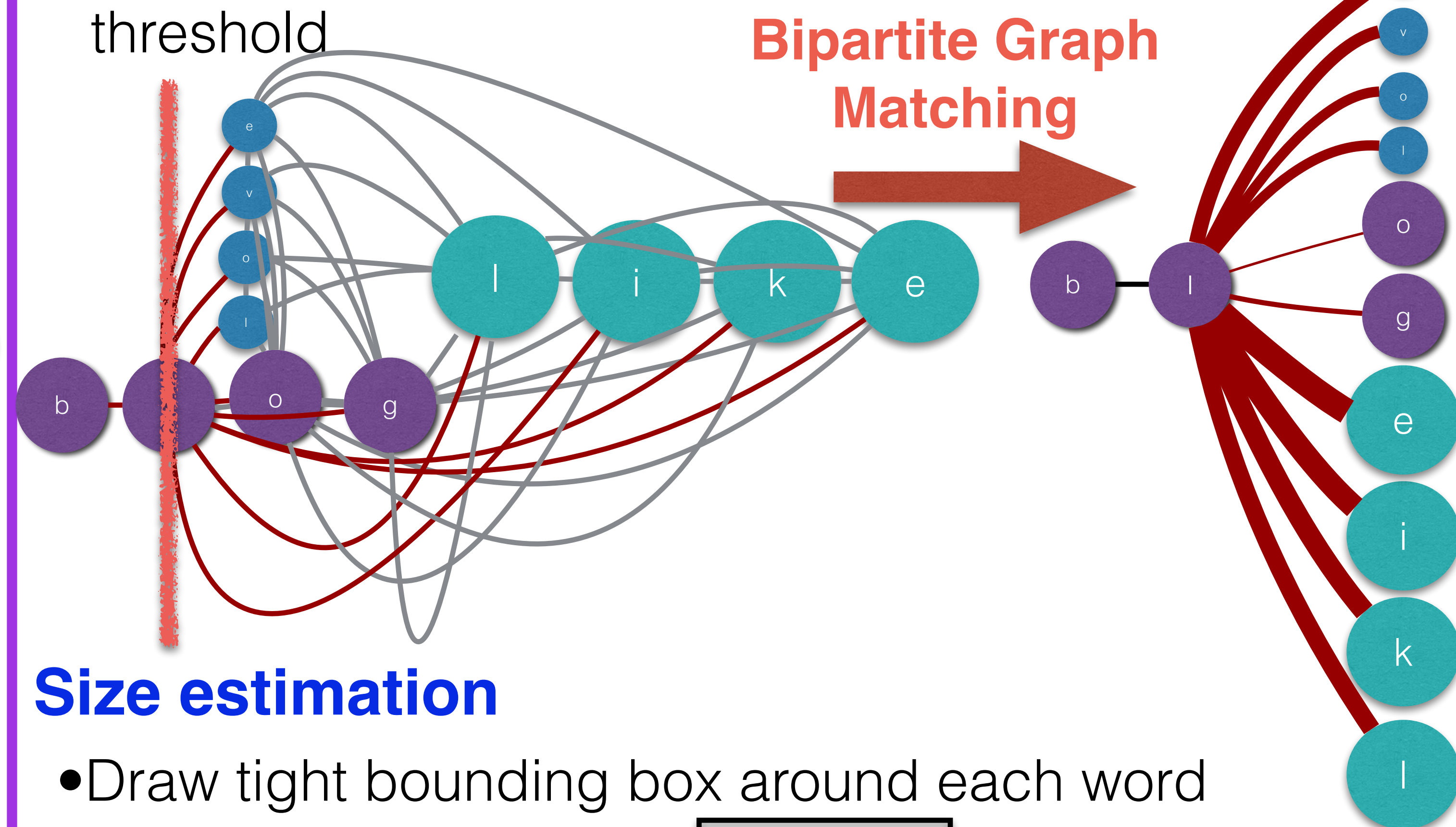
- Construct a relation graph
- Assign each letter to a node
- Connect each two node with an edge of weight w

$$W(n_i, n_j) = d_x(n_i, n_j) + d_{color}(n_i, n_j) + d_{height}(n_i, n_j) + d_{width}(n_i, n_j)$$



Word Extraction

- Sweep Line: visit all nodes in the horizontal order
- Bipartite Graph Matching: select the edge with lowest cost at each visit
- Cut: when the cost of the best edge is higher than threshold



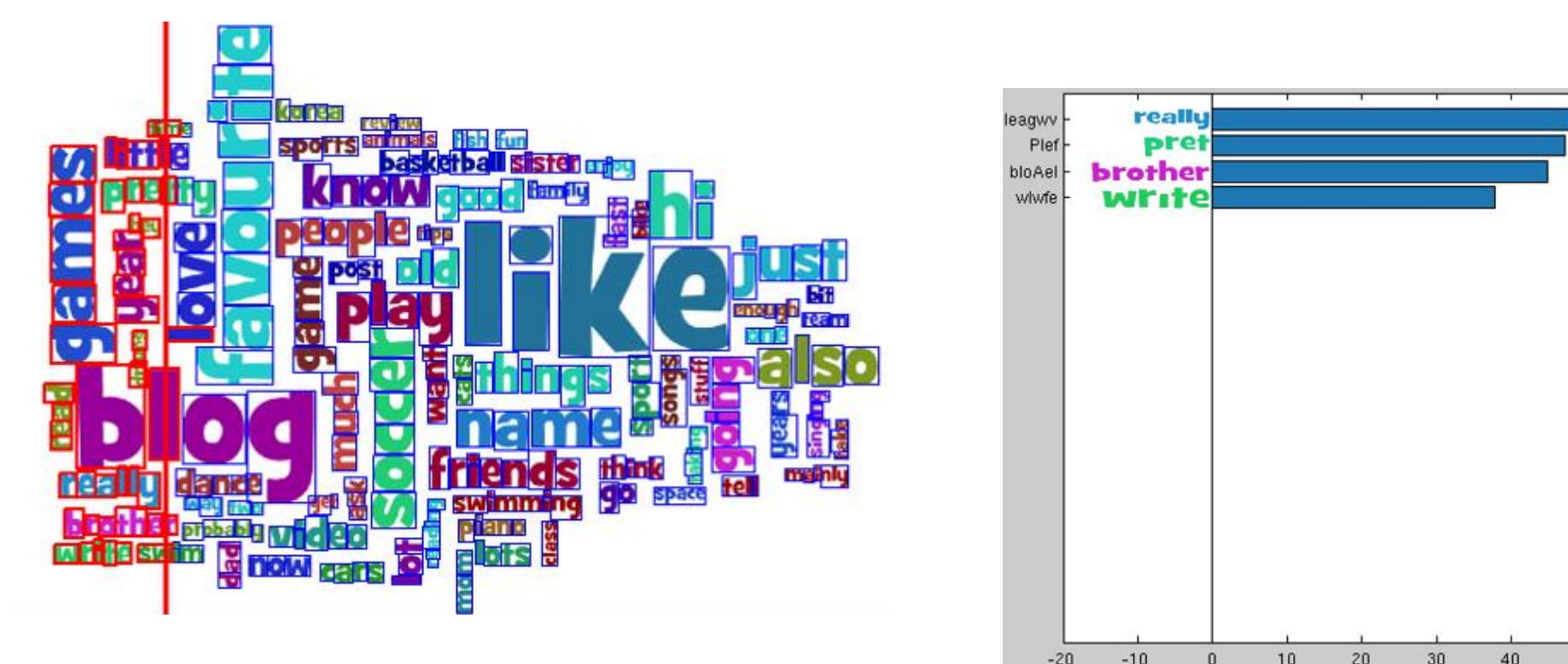
Size estimation

- Draw tight bounding box around each word
- Box area is the size!

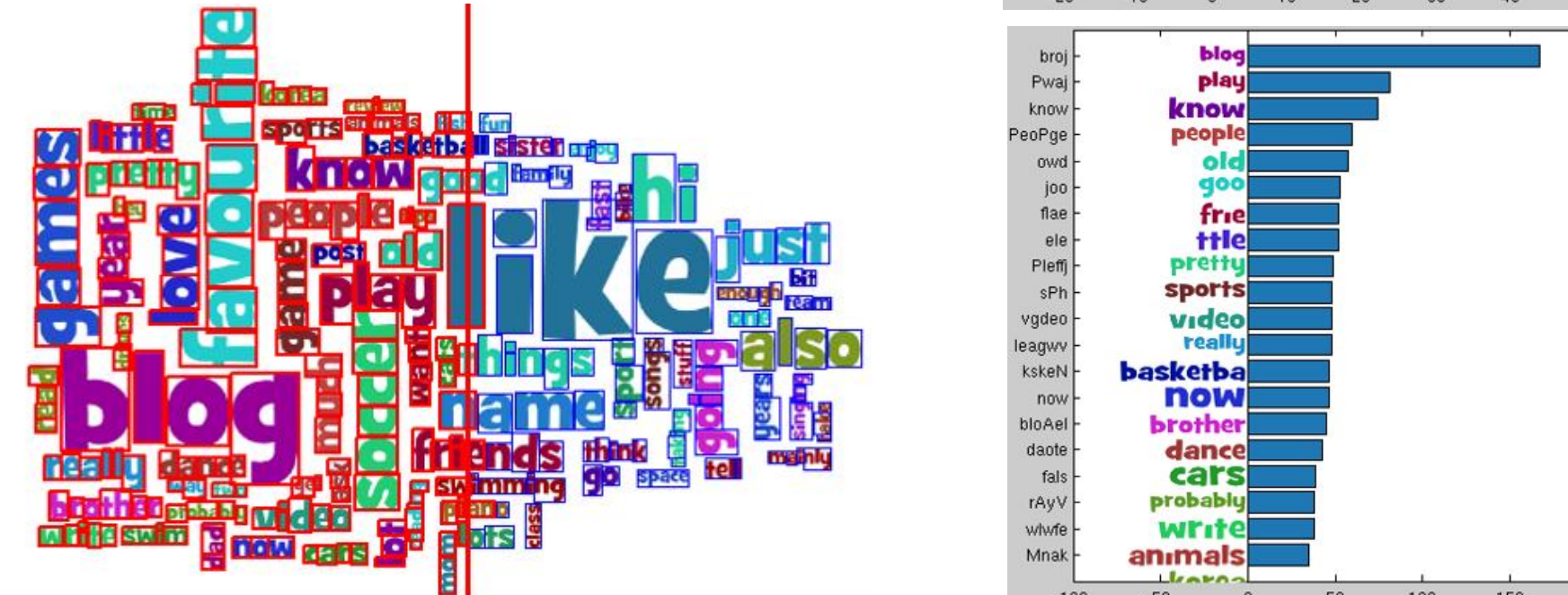


Results

Snapshot 1



Snapshot 2



Snapshot 3

