Piotr Indyk

Project Overview

- Geometric pattern matching is a fundamental problem, occurring in
  - Computer Vision
  - Computational Drug Design
  - Computational Biology
- Need efficient algorithms for computing similarity between a pattern and
  - a target object (one-to-one matching)
  - a database of objects (one-to-many matching)

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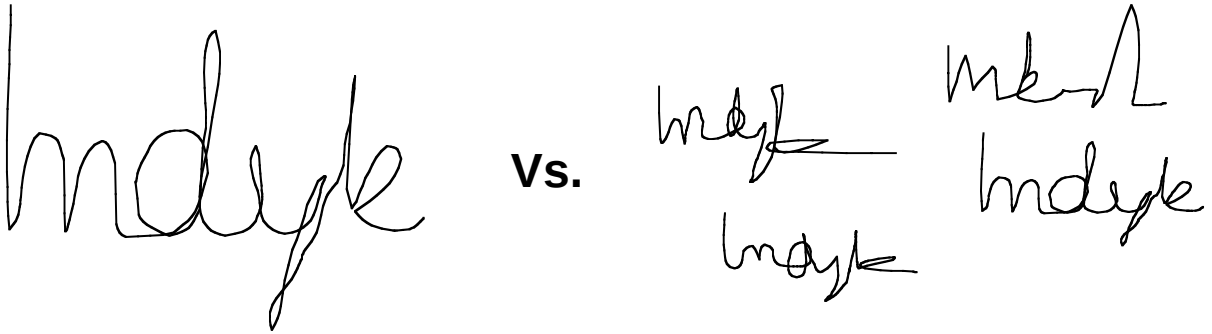
Progress Through December 2001

- Designed novel algorithm for solving one-to-many matching problems for *curves* (accepted to SoCG'2002)



- Discovered a new method for one-to-many matching of color and texture histograms (via Earth-Mover Metric), by *embedding* the metric into the Euclidean space

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Research Plan for the Next Six Months

- Implement the Earth-Mover Metric embedding
- Test the quality of the embedding on large image databases (e.g., CorelDraw)
- Implement efficient algorithms for similarity search in Euclidean space
- Integrate the components, create a high-performance system for similarity search in image databases