Probabilistic Data Association Methods for Tracking Complex Visual Objects

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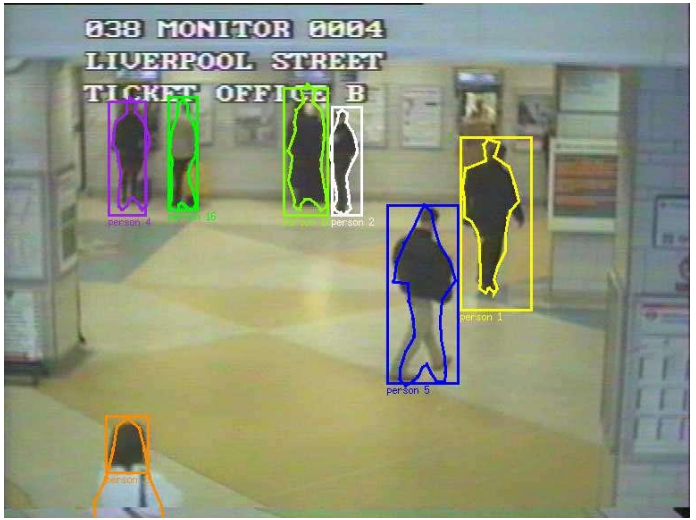
Introduction to Connectomics

Opportunity

- Probabilistic Data Association Filters (PDAF) developed to track objects in visual environments
- Could be useful for numerous applications, such as tracking people on cameras



Challenge

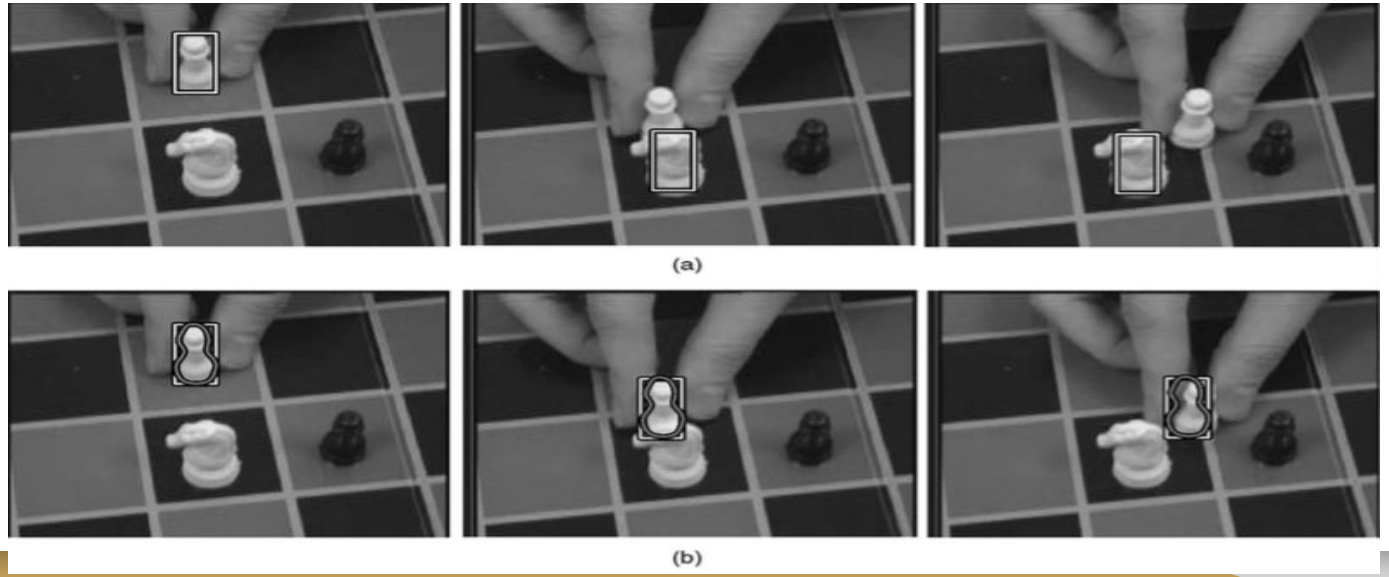
- Multiple objects bring numerous problems
  - Switching/Losing track of 2 moving objects
  - Similar looking objects in background

Action

- Joint PDAF can track multiple objects
  - Problem: objects must have same defining features
- Joint Likelihood Filter allows for multiple modalities
- Constrained JLF (CJLF) is an extension of JLF.
  - Most important component of this paper

Resolution

- CJLF can now track people, microscopic cells, and chess pieces
- Exploiting multiple modalities to track a single object is new
  - Ex. Face & Shirt, Hinge Strategy, Shape & Color



Feedback/Future Work

- Extension: Find persistent distractions & turn them into their own objects to track
- Good visuals and figures to understand work
- Does not discuss significance of results to the world