

AUTOMATIC RETRIEVAL OF VIDEOS OF STEREOTYPY BEHAVIOR

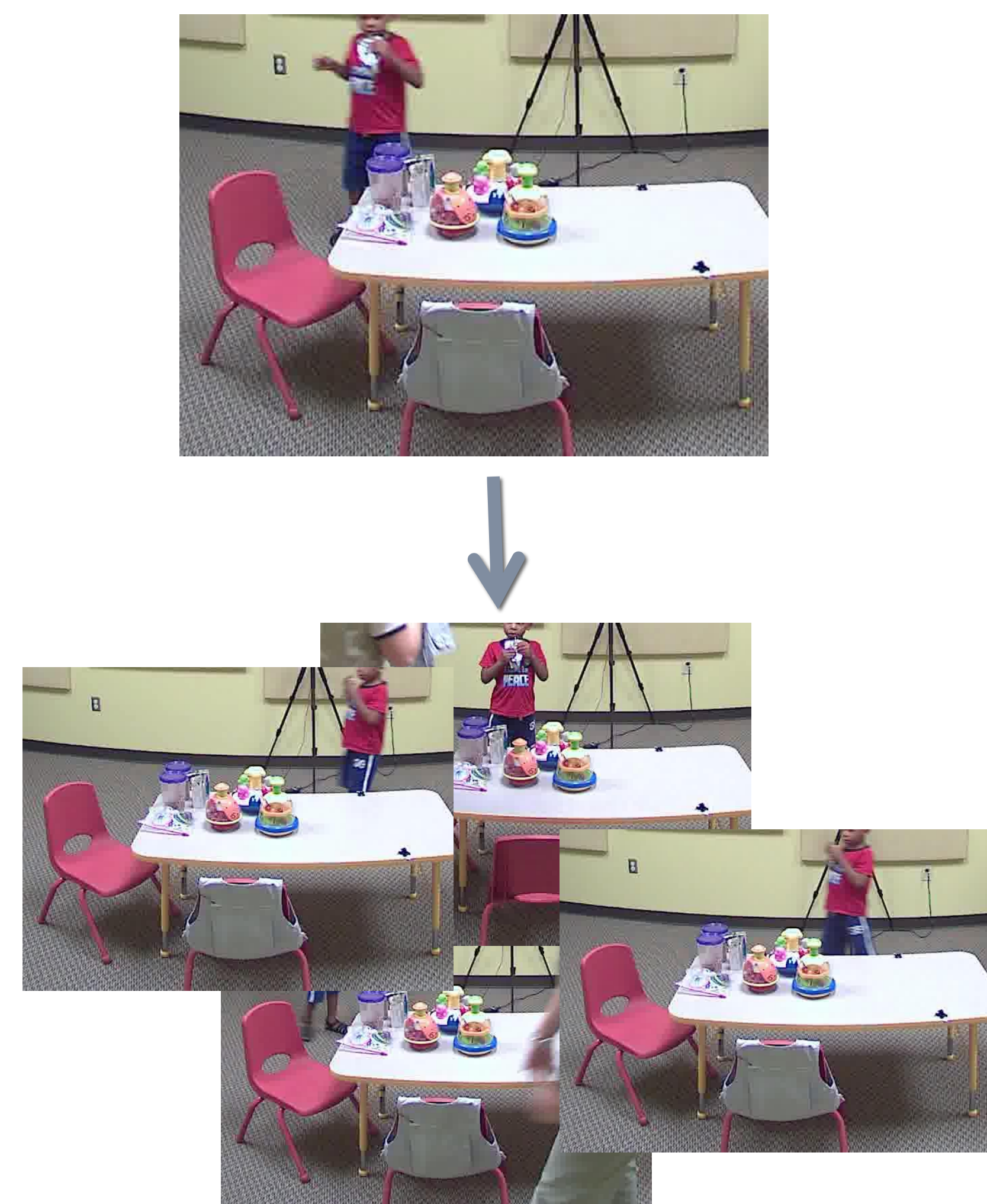
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Motivation

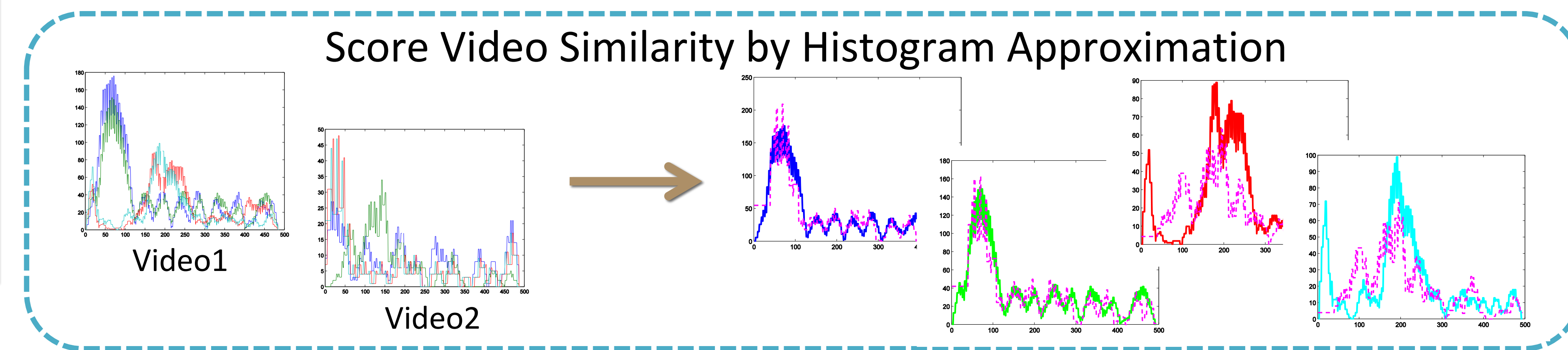
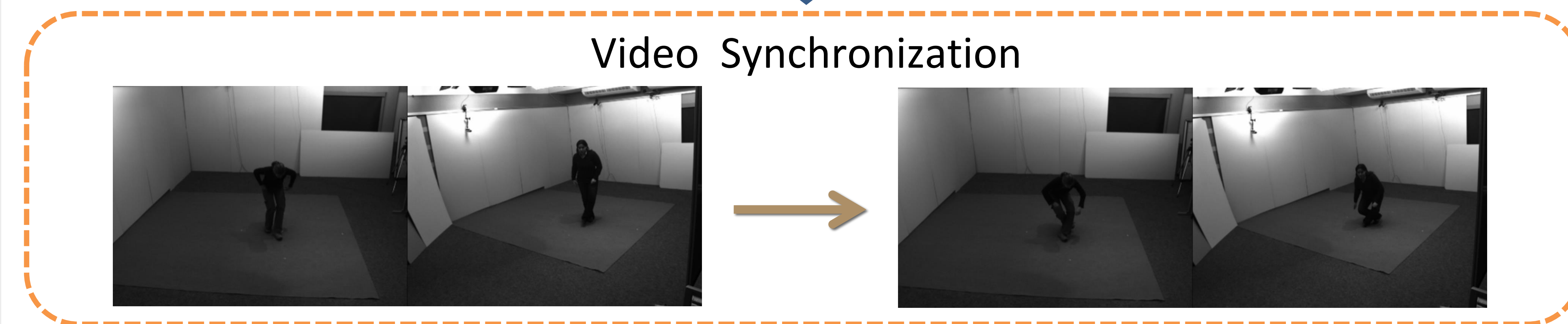
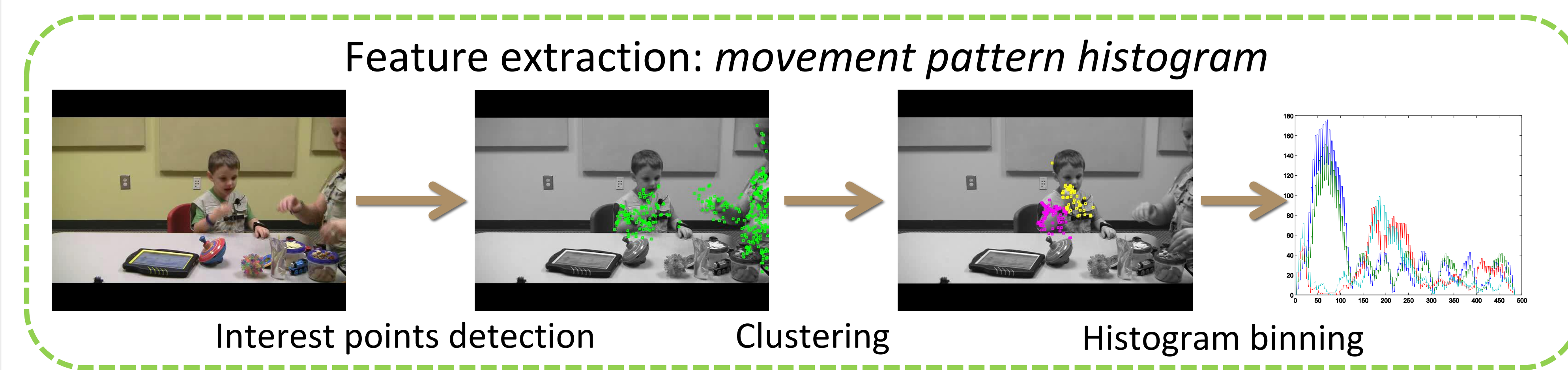
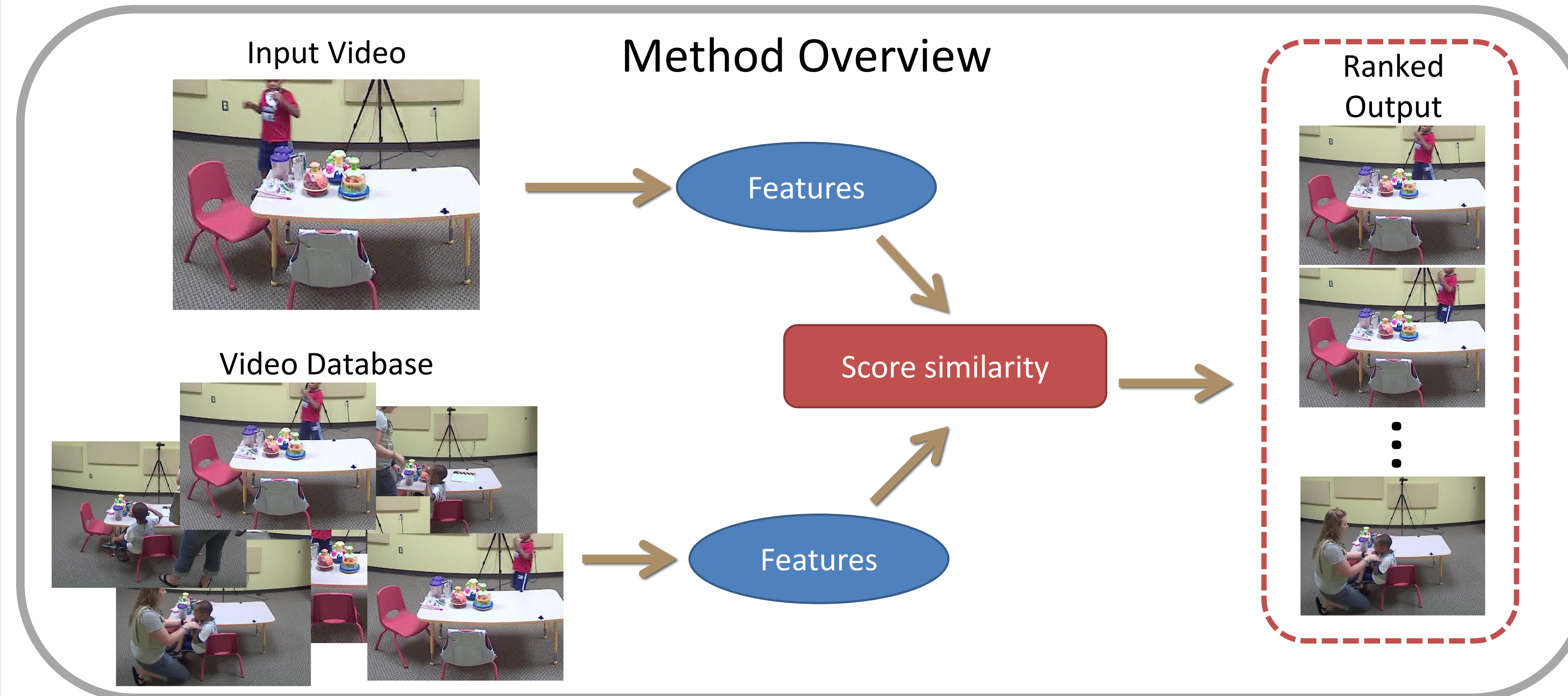
- Collecting a large corpora of video data has become common practice among researchers and clinicians studying autism.
- Many individuals with autism exhibit stereotypes and other repetitive behaviors
- Manually identifying relevant behaviors in a large video collection is a labor-intensive process.

Goal

Make it easier to find relevant behaviors in video collections, by means of a tool that can automatically retrieve gross motor physical stereotypes given a single video example identified by the user.



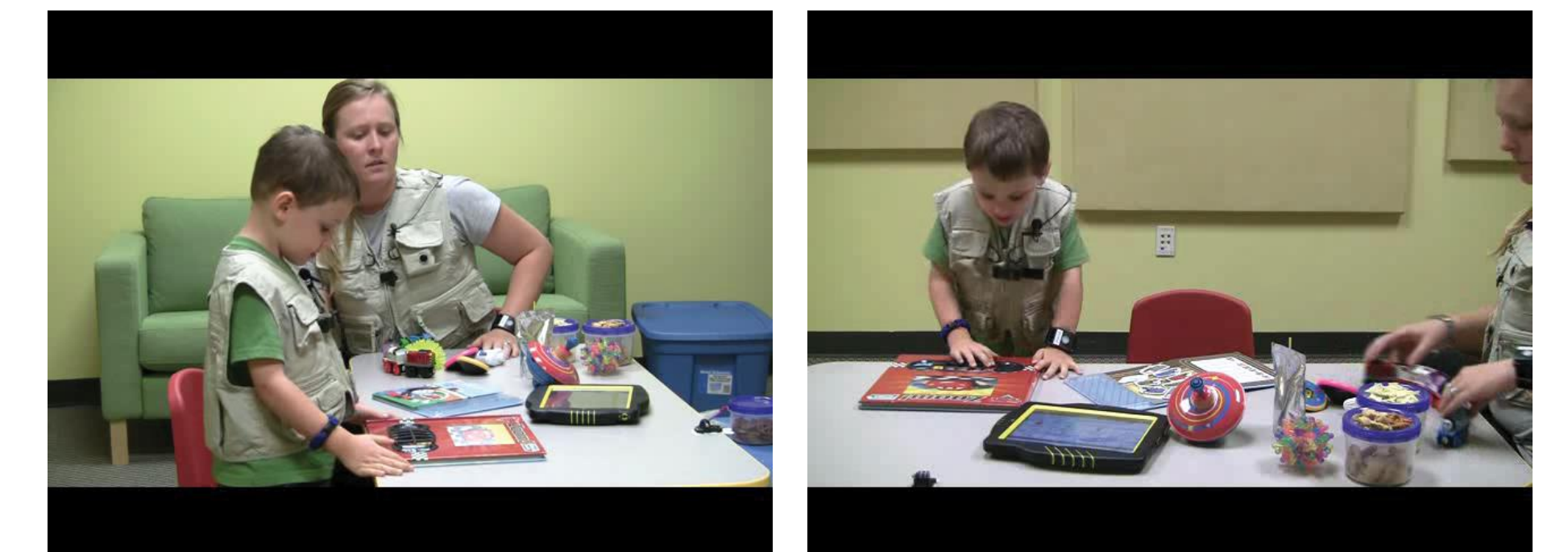
Overall Approach



Results

Dataset 1

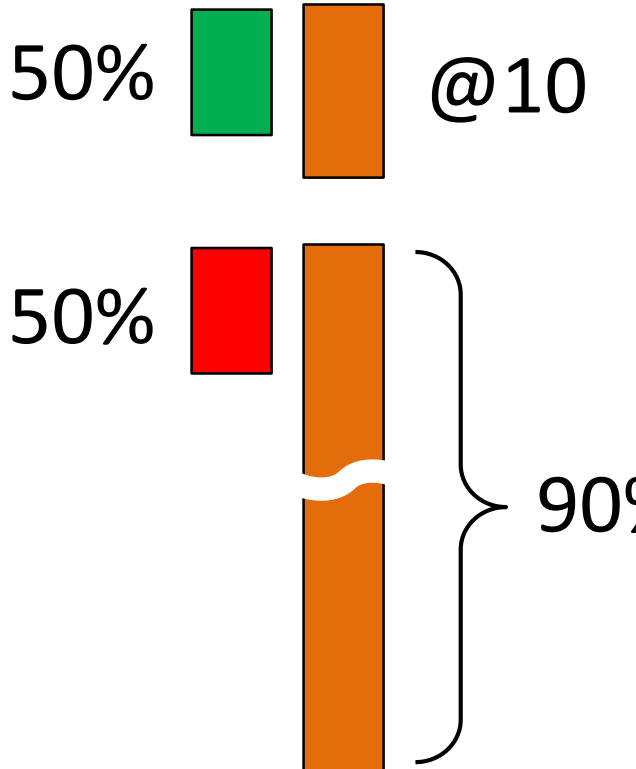
- 20 minute long videos from 2 viewing angles.
- A single child exhibited three repetitive behaviors (escape, jump, handflap).



Dataset 1 Results

	@20	@10	@5
Escape	77%	50%	30%
Jump	45%	28%	15%
Flap	31%	18%	8%

Escape Example
50% @ 10



The algorithm ranks all input windows. The top 10% (@10) contain 50% of the escape behaviors (detected escape windows), the bottom 90% contains the other 50% of missed escape windows

Dataset 2

- 20 min video of a single child captured from a ceiling camera, at the Center for Discovery in Harris, NY
- 4 instances of self injurious behavior (jumping up from chair landing forcefully down on tailbone)
- Using one example as the query, additional instances were found at rank 7 and 8 (out of 2000).



Future Work

- We plan to improve the performance of our algorithm in several ways: better visual features which are more responsive to human movement, better optimization during matching, and joint search and synchronization
- We will conduct a more thorough experimental evaluation.