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CTCI Science and Technology Research Scholarship

What are the Fashion Trends in New York?

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Fashion Trends Spotting in ...

World's fashion capitals



New York City is one of the world's fashion capitals

Understanding the change of fashion in NYC is a way to keep looking stylish



How to analyze fashion trends without a help from fashion experts?

4 Major elements for fashion style investigation:



Color



Cut



Pattern



Head decoration

2

Key factors for discovering fashion trends:

✓ coherence (frequently occur within a fashion week)

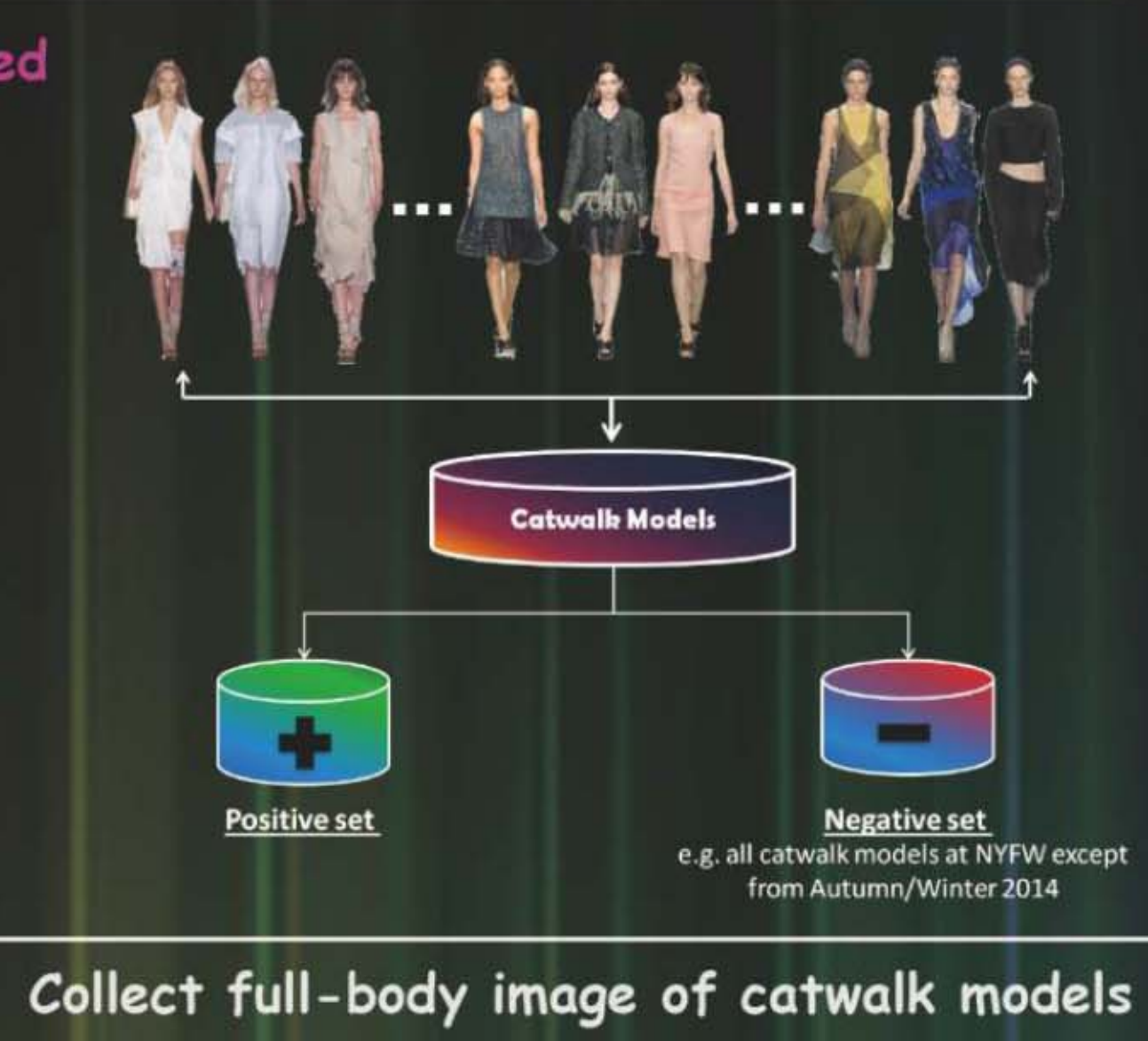
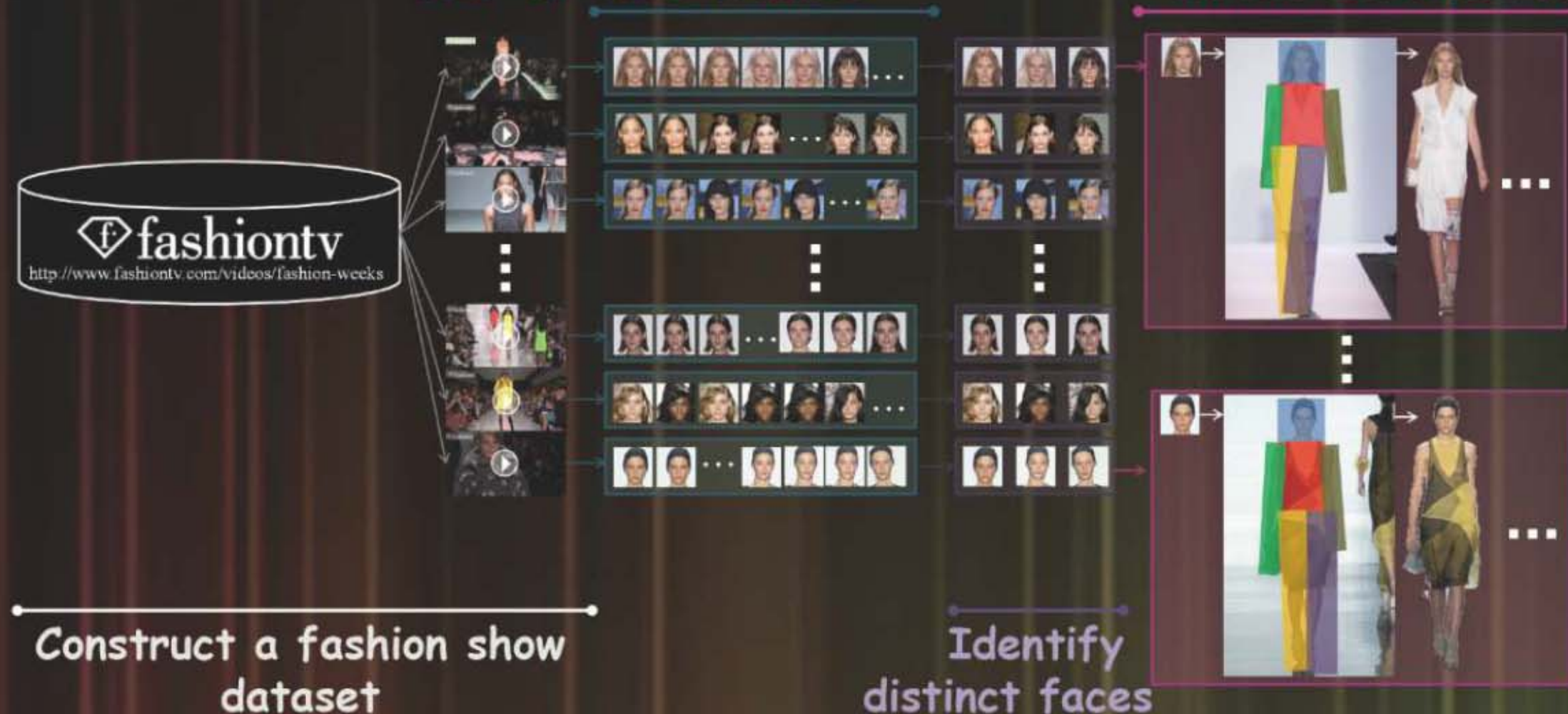
✓ uniqueness (occur much more often in a fashion week than in other fashion weeks)

System Framework

Catwalk model detection

Detect the presence of catwalk models over all video frames

Extract model location based on the detected face



Style element identification

Partition every full-body image of catwalk model into non-overlapping square patches

Capture style elements of fashion trends by exploiting color and texture information

Determine potential patches that represent visual style element of fashion trends

1. Find k-nearest neighbor (k-NN) for each positive patch
2. Build histogram of positive/negative nearest neighbors
3. Keep patches with higher proportion to match similar patches in positive set
4. Run k-means clustering for the surviving patches
5. Apply iterative learning

Dataset

	S/S 2010	A/W 2010	S/S 2011	A/W 2011	S/S 2012	A/W 2012	S/S 2013	A/W 2013	S/S 2014	A/W 2014
BCBG Max Azria	31	29	37	34	30	34	34	30	32	32
Calvin Klein	35	34	34	34	32	33	33	32	35	34
DKNY	46	40	37	34	13	40	48	40	47	42
Nicole Miller	39	37	37	34	39	36	39	44	39	39
Ralph Lauren	50	50	57	53	33	56	52	58	52	38
Rebecca Taylor	44	34	35	39	41	40	33	36	40	41
Richard Chai	26	27	29	28	26	28	27	26	31	27
Ruffian	33	34	36	32	30	31	13	32	31	23
Vera Wang	31	39	44	36	40	39	38	48	40	40
Total	335	324	346	324	284	337	317	346	347	316

Quantitative Evaluation

	Color	Texture	Color + Texture
Spring/Summer 2010	80.33 %	90.67 %	88.00 %
Autumn/Winter 2010	64.67 %	91.00 %	88.67 %
Spring/Summer 2011	87.00 %	92.00 %	92.33 %
Autumn/Winter 2011	67.00 %	74.00 %	72.33 %
Spring/Summer 2012	90.67 %	88.33 %	89.00 %
Autumn/Winter 2012	50.33 %	67.67 %	60.33 %
Spring/Summer 2013	67.67 %	84.67 %	83.67 %
Autumn/Winter 2013	66.33 %	65.67 %	68.00 %
Spring/Summer 2014	94.67 %	90.67 %	92.33 %
Autumn/Winter 2014	81.00 %	76.00 %	71.67 %

Fashion Styles Elements

NYFW
Spring/Summer 2010

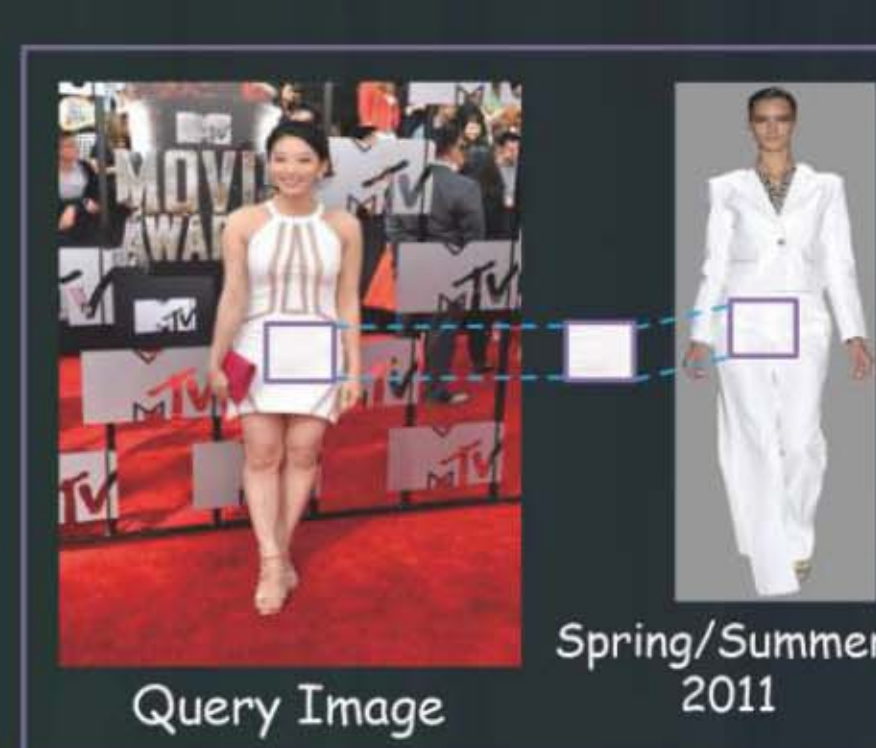


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NYFW
Autumn/Winter 2014

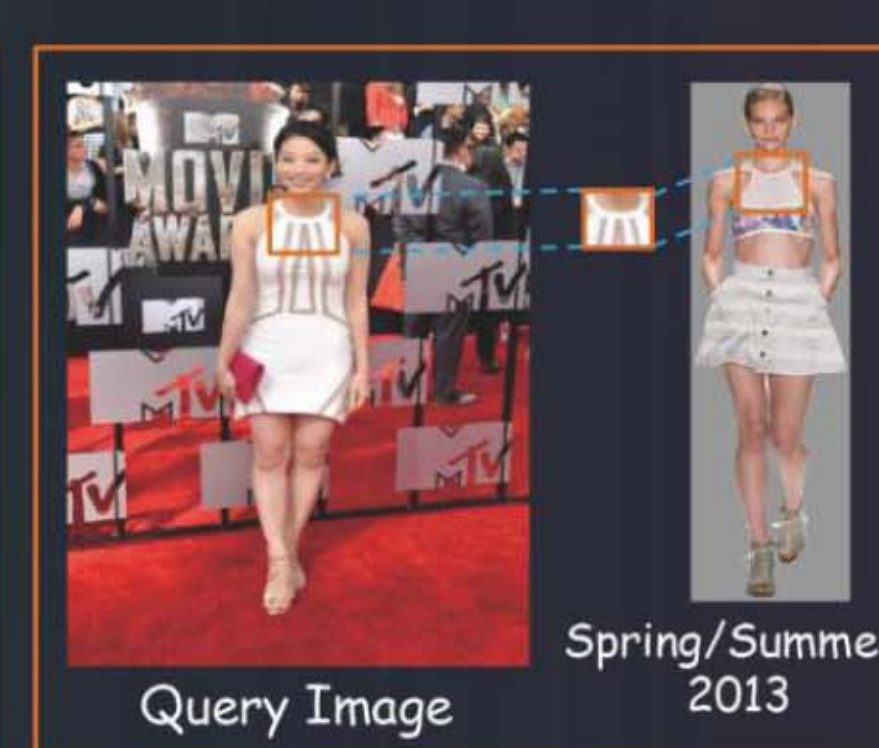


Fashion Detection



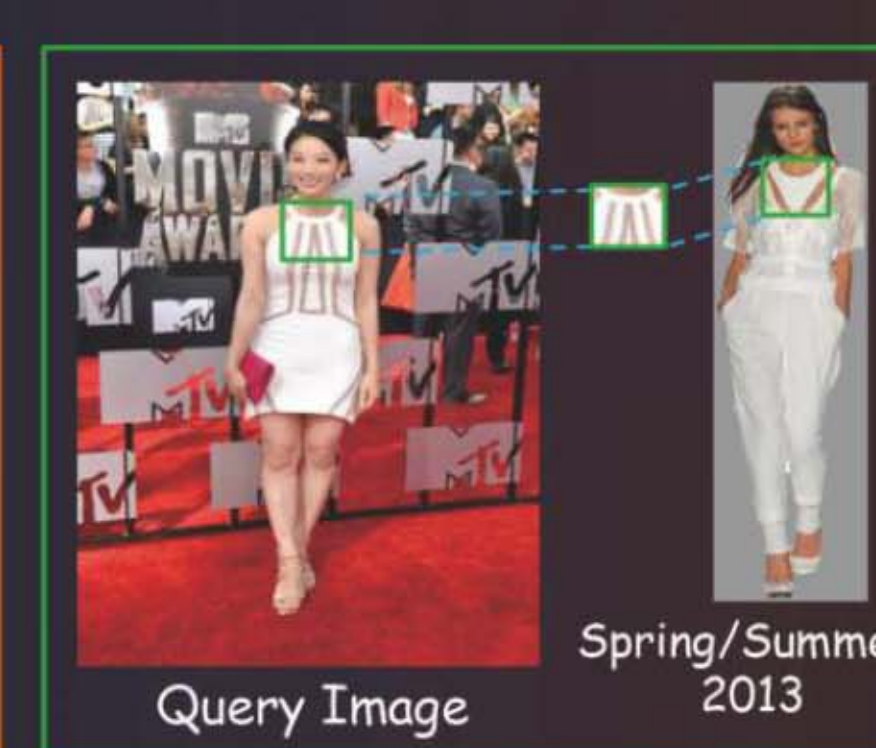
Color Analysis

✓ Spring/Summer 2011



Texture Analysis

✓ Spring/Summer 2013



Color + Texture Analysis

✓ Spring/Summer 2013

Research experience

My research interests include pattern recognition and multimedia computing, especially in human-centric content analysis. During my PhD study, I also have industrial research experience in a reputed Taiwan company.



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