

Video



Syntharch: [Poster]^{*}

Interactive Image Search with
Attribute-Conditioned Synthesis

Zac Yu^{1,2}

Adriana Kovashka¹

DIRA workshop @
2020-06-14



¹University of Pittsburgh

Google

² now at Google

** Full 36-minute recorded talk also available!*



CBIR Challenge & Solutions

Video

- **Semantic gap** between the user and the machine
 - **interactive search** v.s. **one-query search**



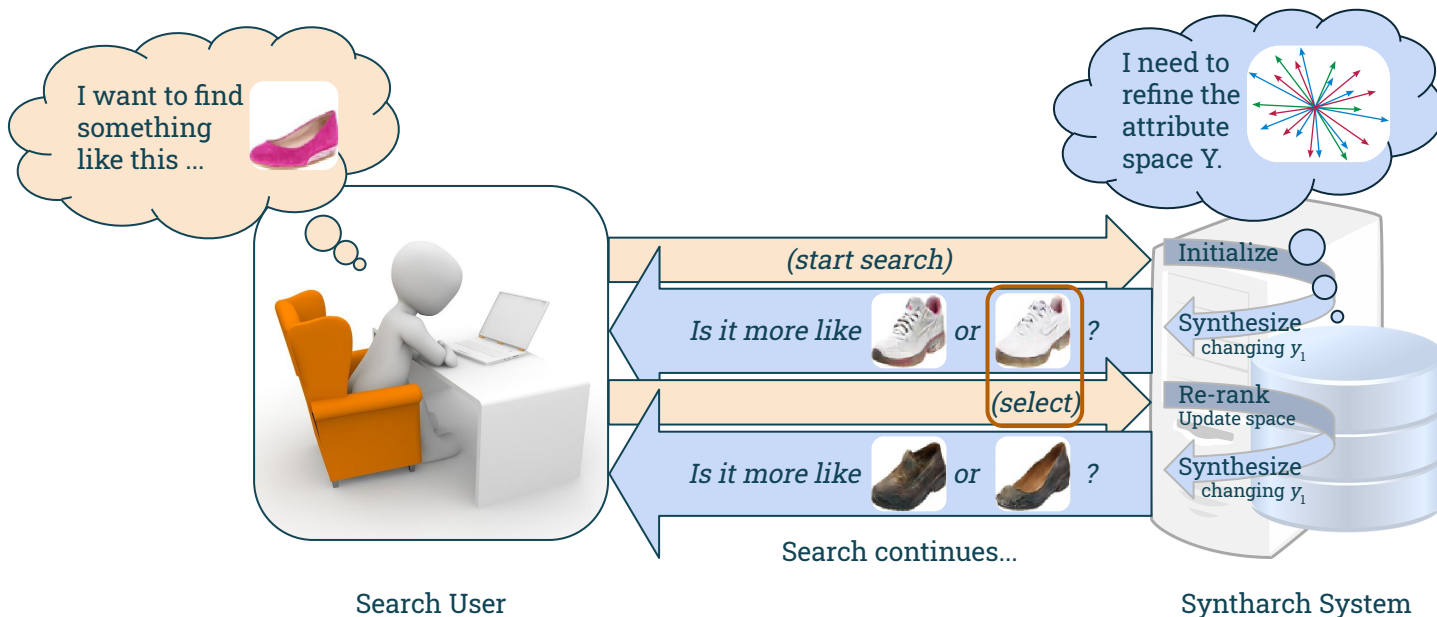
- use of **relative attributes**





Proposed System

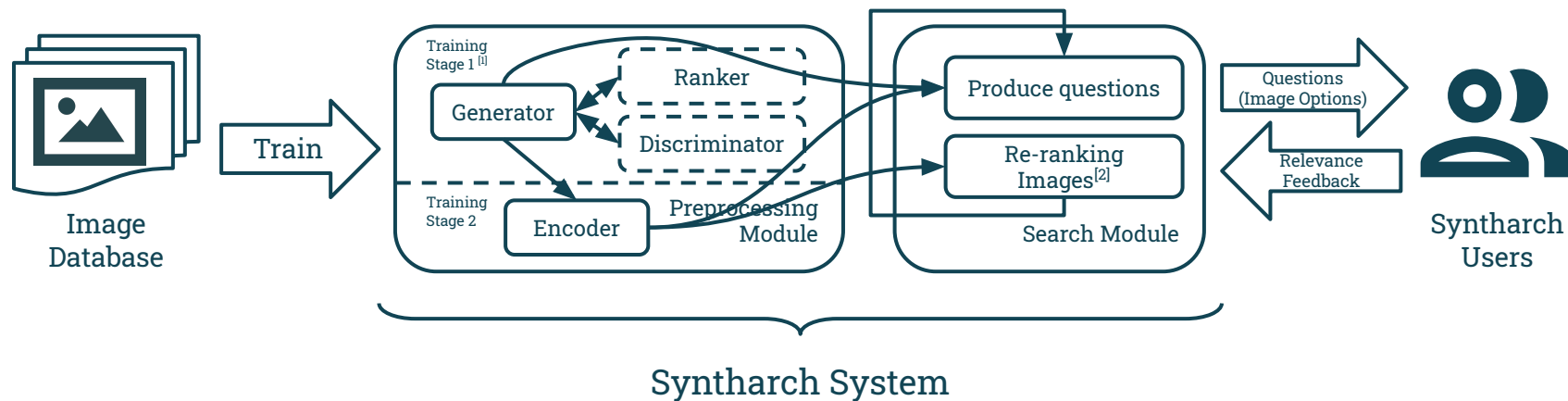
Video





Syntharch Design

Video

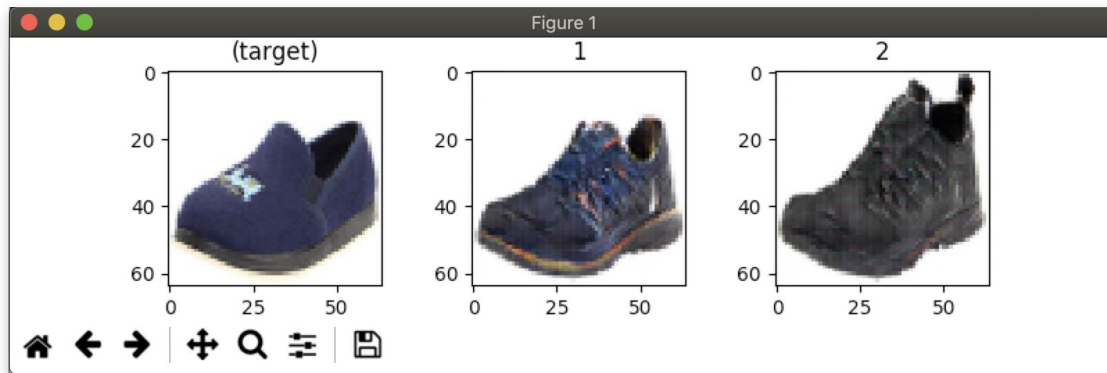


[1] Y. Saquil, K. I. Kim, and P. Hall, "Ranking cgans: Subjective control over semantic image attributes," in Proc. of British Machine Vision Conference (BMVC), 7 2018. [Online]. Available: <http://bmvc2018.org/contents/papers/0534.pdf>

[2] A. Kovashka and K. Grauman, "Attribute pivots for guiding relevance feedback in image search," in 2013 IEEE International Conference on Computer Vision, Dec 2013, pp. 297–304. [Online]. Available: <https://dx.doi.org/10.1109/ICCV.2013.44>



Sample Question



Q: Which option (1 or 2) is closer to the target image?



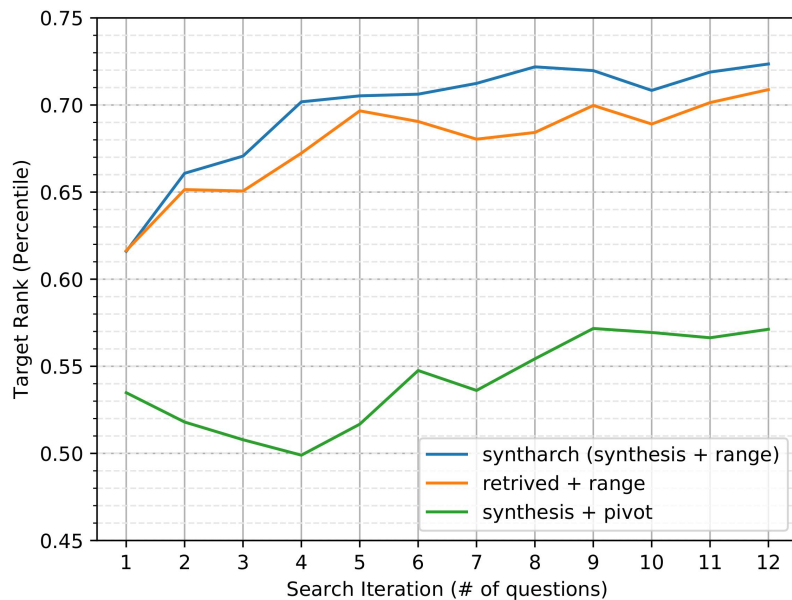
Hypotheses

Video

- [H1] Benefits of **Image Editing**
 - Given the two **attribute vectors** y_1 and y_2
 - Syntharch: **generate** $G(z, y_1)$ and $G(z, y_2)$
 - Alternative: **retrieve** two real images with **similar** y
- [H2] Benefits of **Range-Based Search**
 - Given k attributes
 - Syntarch: search on a **k -dimensional attribute space**
 - Alternative: search on k separate **binary search trees**



Overall Results



- Change of **average percentile rank** for 3 methods over 12 search iterations (questions)
 - From **80 search sessions** for each method
 - **2,876 feedback responses**
- **Average rank by the end**
 - **Syntharch**: 71.10% (blue)
 - **“retrieved”**: 70.49% (orange)
 - **“pivot”**: 55.84% (green)

Video

THANKS!

Learn more at our full talk!

Zac Yu

me@zacyu.com