Metric learning for facial descriptors Results

Department: **Intelligent Systems Lab, Huawei**
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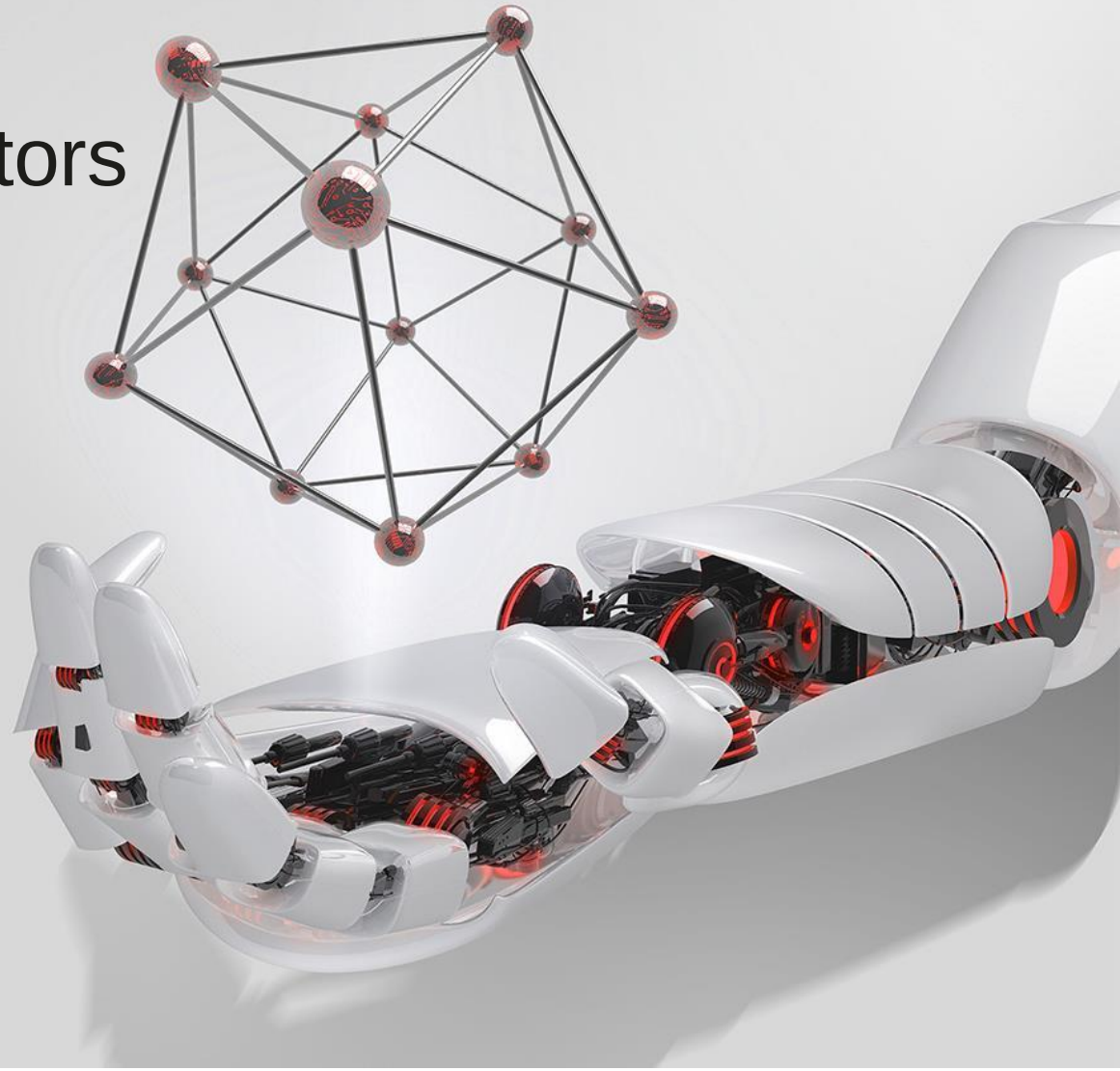

Security Level:

RAAI Summer School 2019

Developing artificial don't overlook natural

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Data used in this Hackathon

- Train data
  - Images – clean list[1] from CASIA-WebFace[2]
  - Detection and landmark points – MTCNN[3]
- Test data
  - Images – a number of pairs from Cross-Pose Labeled Faces in the Wild (CPLFW)[4]
  - Detection and landmark points – RetinaFace[5]
- Warping function: similarity transform
- Face ID features extraction: ArcFace[6]

[1] https://groups.google.com/forum/#!topic/cmu-openface/Xue_D4_mxDQ
[2] Dong Yi, Zhen Lei, Shengcai Liao and Stan Z. Li, "Learning Face Representation from Scratch". arXiv preprint arXiv:1411.7923.
[3] Zhang, K., Zhang, Z., Li, Z., & Qiao, Y. (2016). Joint face detection and alignment using multitask cascaded convolutional networks. *IEEE Signal Processing Letters*, *23*(10), 1499-1503.
[4] http://www.whdeng.cn/CPLFW/index.html
[5] Deng, J., Guo, J., Zhou, Y., Yu, J., Kotsia, I., & Zafeiriou, S. (2019). RetinaFace: Single-stage Dense Face Localisation in the Wild. *arXiv preprint arXiv:1905.00641*.
[6] Deng, J., Guo, J., Xue, N., & Zafeiriou, S. (2019). Arcface: Additive angular margin loss for deep face recognition. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*(pp. 4690-4699).

Baselines

- Single baseline
  - L2-distance
- Improved baseline
  - Cosine similarity: $d\left(x^1, x^2\right) = \frac{\sum_{i=0}^{N-1} x_i^1 x_i^2}{\left||x^1|\right| * ||x^2||}$

Method	Public	Private
L2	0.74202	0.74295
cos	0.84260 (+0.10)	0.85435 (+0.11)
Best solution	0.88093 (**+0.04**)	0.88528 (**+0.03**)

Best solutions

(better than improved baseline)

#	Team Name	Entries	Public	Private
1	Matvei Novikov	27	0.880932	0.885279
2	Denis Tarasov	47	0.869407	0.874428
3	rudsasha	20	0.854622	0.866234
4	Artemis Fowl	38	0.855114	0.866055
5	Tony	16	0.857897	0.866055
6	Noody	17	0.850422	0.860649
7	Ghadeer Elmkaiel	35	0.850422	0.860649
8	Alek Valentine	11	0.849509	0.860332
9	Yazan Murhij	13	0.84946	0.859689
10	GoodGuy	50	0.848948	0.858531
11	G4	22	0.848022	0.858348
12	Ilya Belkin	39	0.853254	0.858137
13	ED1700	20	0.846363	0.85712
14	a1nox	13	0.844428	0.856739
15	dinarkino	49	0.844942	0.855975
16	Alexander Rudnev	38	0.842801	0.854649

Thank you.

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