

Introduction

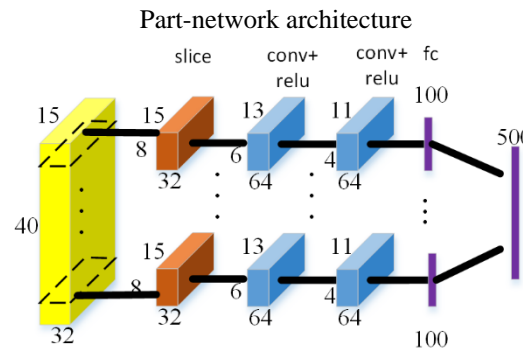
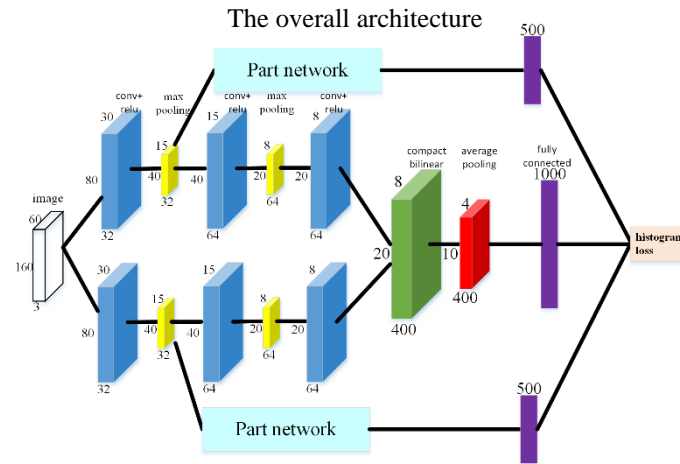
Person re-identification aims to correctly match images of the same person taken from different cameras. It has been widely used in video surveillance and human-computer interaction, etc.

Objectives

This study modified a novel network with a new proposed loss function to improve the accuracy of person re-identification.

Methods

- Overall architecture : images are passed to two separate streams, whose outputs are then combined with compact bilinear operation[1].
- Part-network: It slices the feature map of each stream to 5 equal non-overlapping parts to learn more spatial information.
- Histogram loss: two distributions of similarities corresponding to matching pairs and non-matching pairs are estimated. The overlap of the two distributions is computed as histogram loss.



Results on CUHK03 Labeled dataset

Method	r = 1	r = 5	r = 10	r = 20
Fused Model [2]	72.43	--	95.51	98.40
MR B-DML [3]	65.04	91.60	95.84	98.21
Ustinova [4]	65.77	92.85	97.62	99.43
CBC (ours)	70.28	95.24	98.25	99.71
MCBC (ours)	71.62	94.86	98.12	99.39

Results

- It outperforms the related methods Multiregion Bilinear DML and deep metric learning with histogram loss.
- MCBC slightly outperforms CBC.

Conclusion

Compact bilinear pooling and histogram loss can be combined to achieve favorable results in person re-identification, and part-network can boost the capability.

Acknowledgments

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References

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- [2] Subramaniam A, Chatterjee M, and Mittal A, "Dep Neural Networks with Inexact Matching for Person Re-Identification," *Advances in Neural Information Processing Systems*, pp. 2667-2675, 2016.
- [3] Ustinova E, Ganin Y, Lempitsky V. Multiregion Bilinear Convolutional Neural Networks for Person Re-Identification[J]. *Computer Science*, 2015, 48(10):2993-3003.
- [4] Ustinova E, and Lempitsky V, "Learning deep embeddings with histogram loss," *Advances in Neural Information Processing Systems*, pp. 4170-4178, 2016.