Summary

- Review of known methods
- Several methods were implemented and compared
- Method of AWB for video is proposed (it needs experimental verification)
- Scheme of experiment was developed

Thank you for your attention

Grey World

Assumption: Scene is achromatic in average.

$$\langle S_R(n)\rangle_n = \langle S_G(n)\rangle_n = \langle S_B(n)\rangle_n$$

$$\sum_{n=1}^{N} I_k(n) = \sum_{n=1}^{N} \int_{\lambda} E(\lambda) S(\lambda, n) R_k(\lambda) d\lambda =$$

$$= \int_{\lambda} E(\lambda) R_k(\lambda) \sum_{n=1}^{N} S(\lambda, n) d\lambda =$$

$$= \int_{\lambda} E(\lambda) R_k(\lambda) C\, d\lambda, \quad \partial C / \partial \lambda = 0$$

$$E_k = \frac{1}{N} \sum_{n=1}^{N} I_k(n)$$

White point

Assumption: The brightest pixel in scene is achromatic.

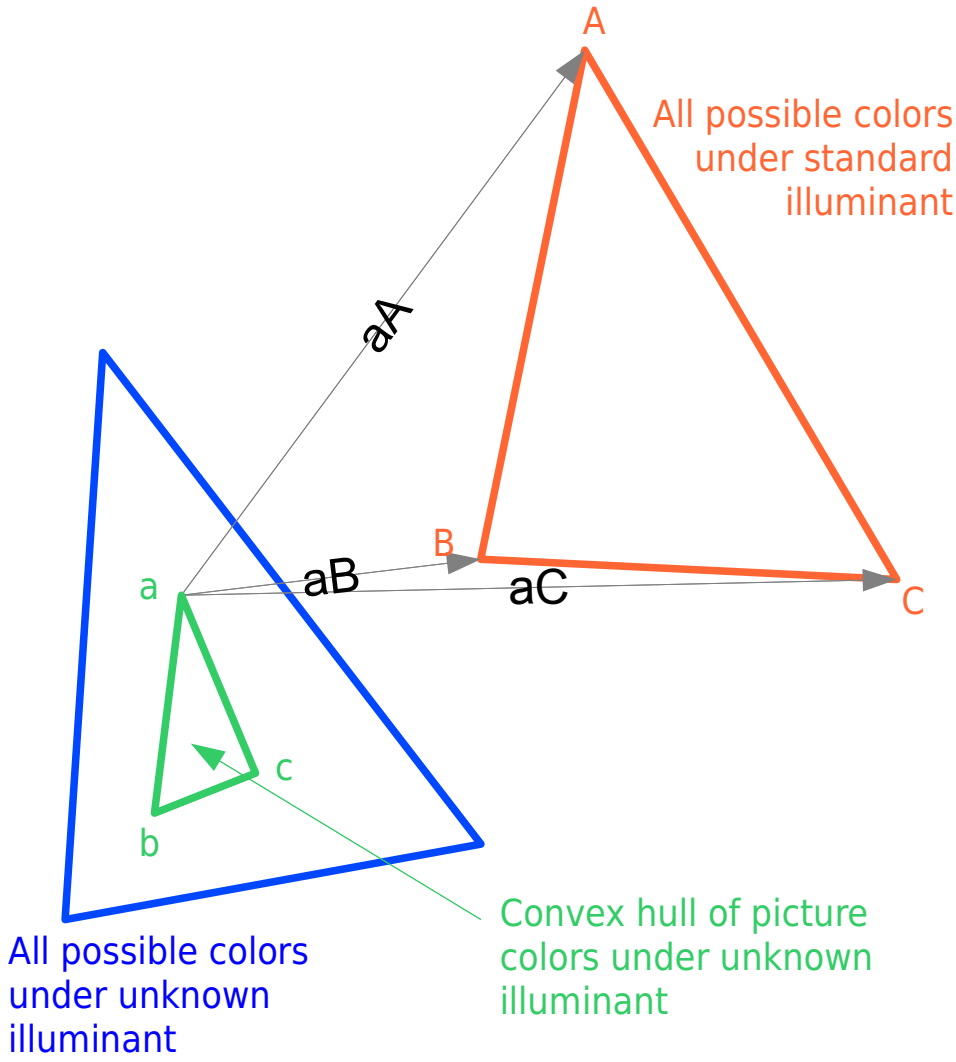
$$\max_{n=1..N} S_R(n) = \max_{n=1..N} S_G(n) = \max_{n=1..N} S_B(n)$$

$$E_k = \max_{n=1..N} I_k(n)$$

- 1% of brightest pixels are averaged to increase robustness
- Bright picture areas should be in sensor's dynamic range
  → Auto Exposure should be applied before AWB

Gamut mapping

- Lighting can be estimated by color gamut of picture
- Search of transform of picture gamut to standard gamut
- Crossing convex polygons should be calculated.
- Method does not always find a solution.



Gamut mapping

The wider is gamut, the smaller is the set of possible transforms