

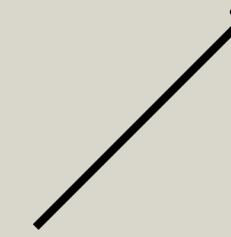
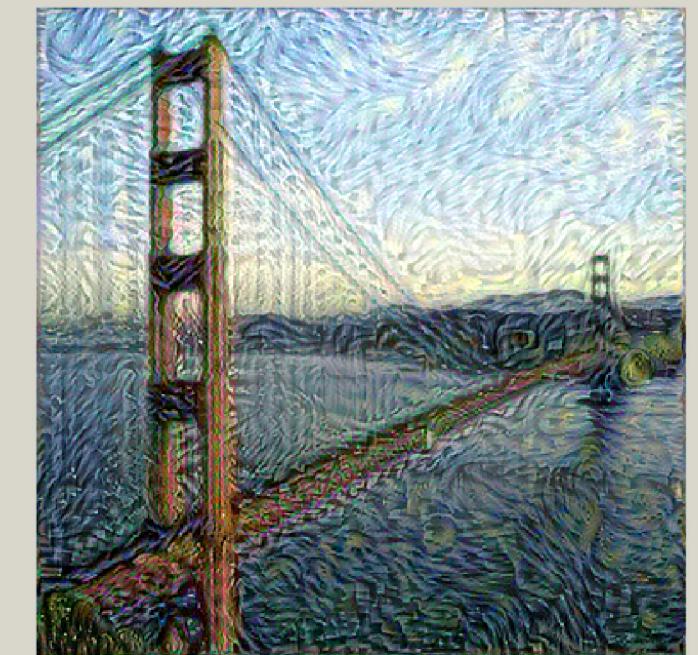
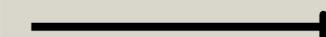
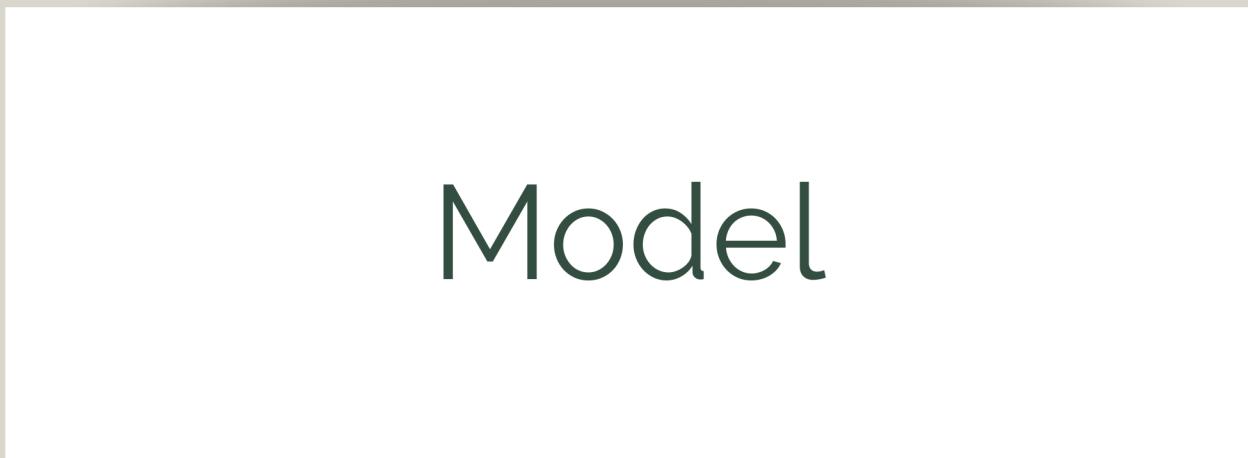
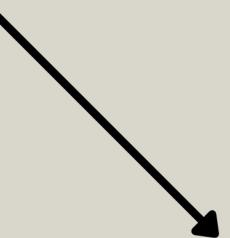
Rad iz predmeta Računarska inteligencija

NEURAL STYLE TRANSFER

PROBLEM

- Slika sadržaja
- Slika stila
- Kombinovana slika

REZULTAT



Optimizacija

- Primena optimizacije na ulaz, ne na model
- $\text{Loss} = \text{alpha} * \text{content_loss} + \text{beta} * \text{style_loss}$

JEDAN KORAK U OPTIMIZACIJI



Model

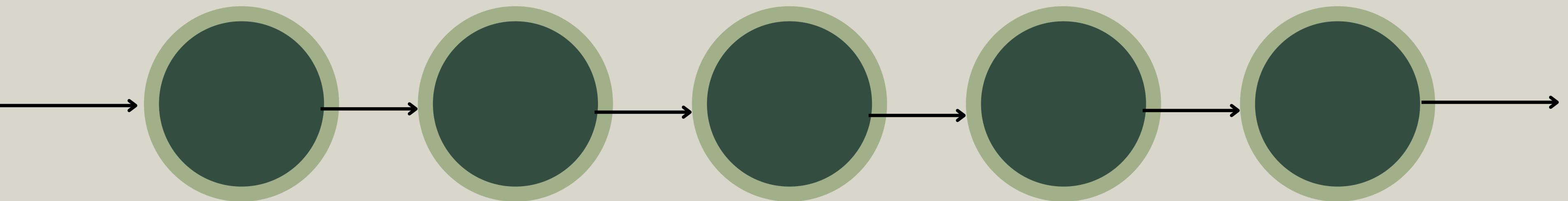
Sloj 1

Sloj 2

Sloj 3

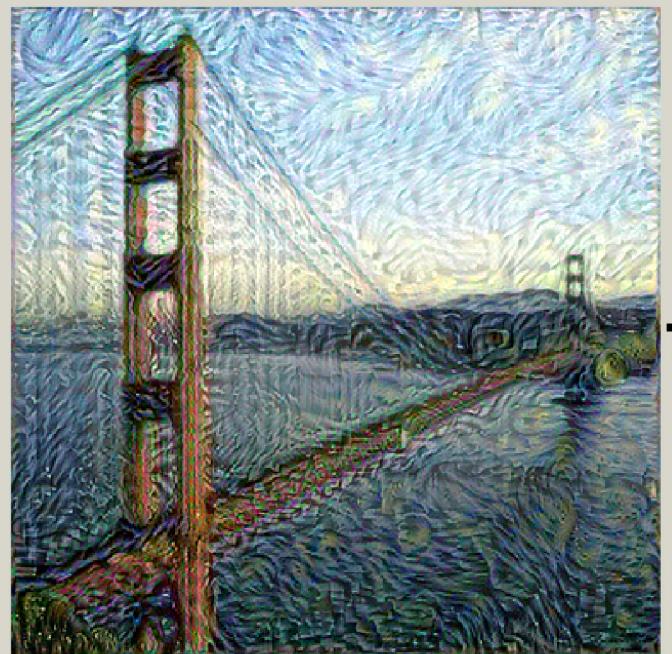
Sloj 4

Sloj 5





Model



Model

Odlike stila

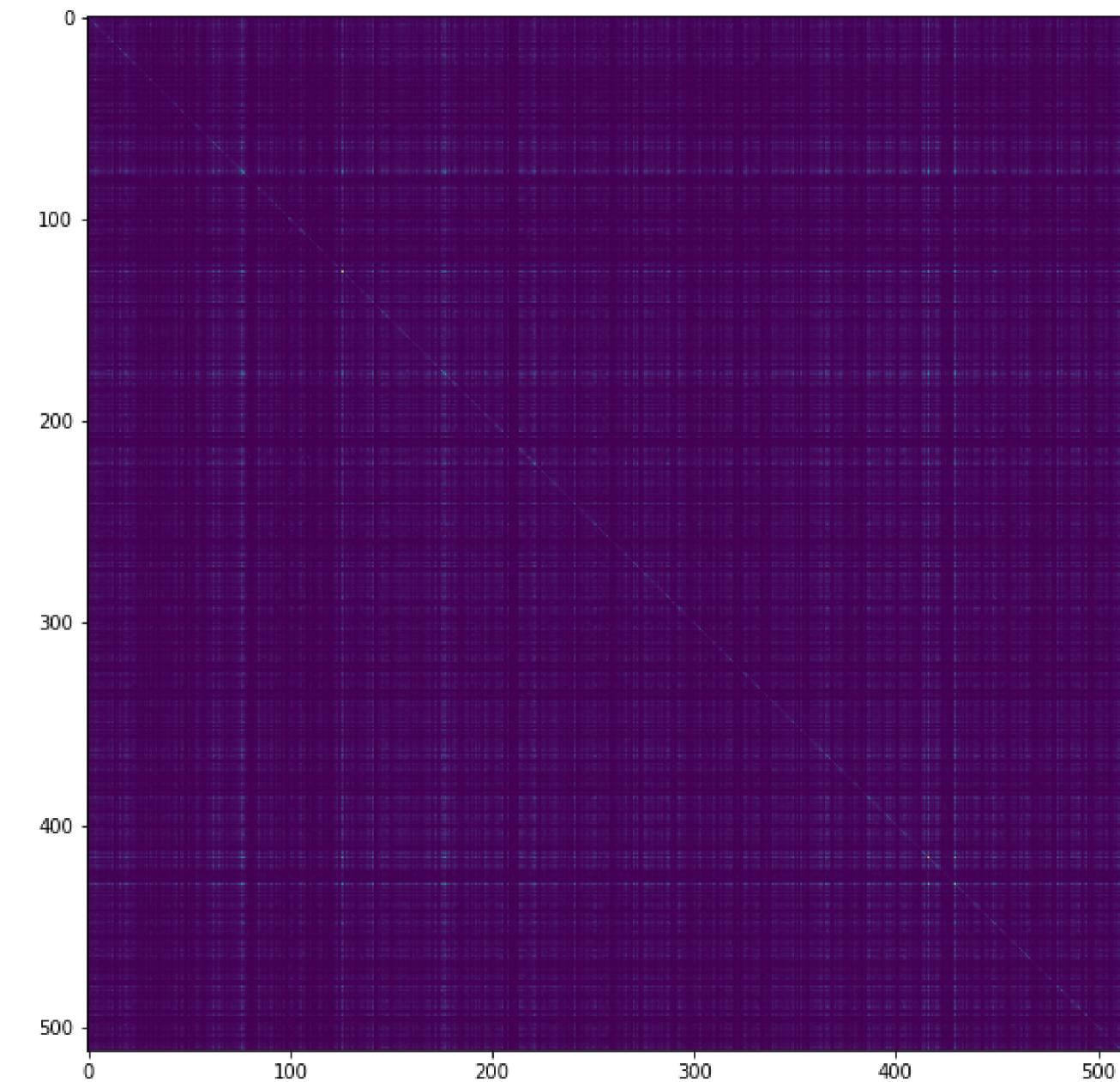
Greška
stila

Odlike stila

GRAM MATRIX

- Matrix of all inner products
- Koliko je blizu neka odlika
blizu nekoj drugoj odlici

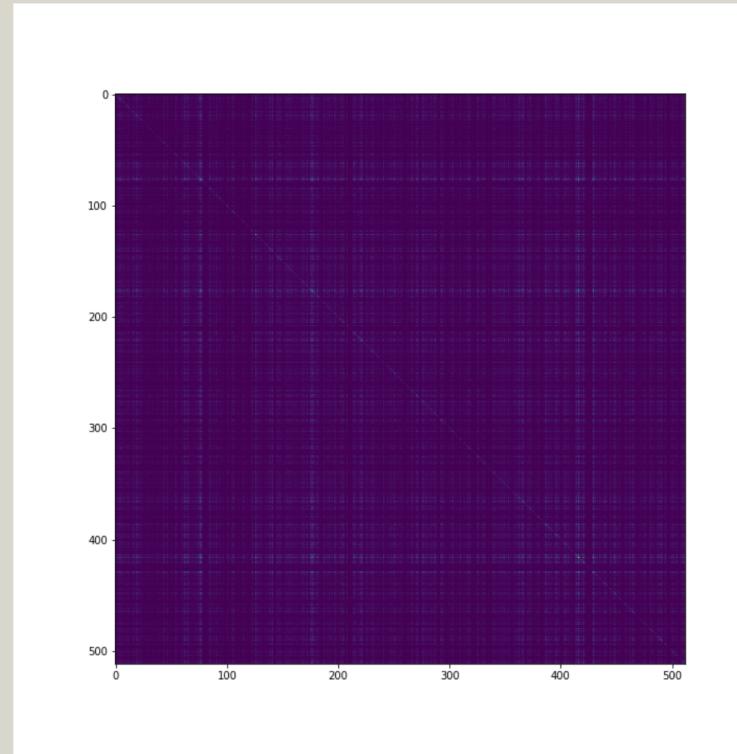
$$G_{ij}^l = \sum_k F_{ik}^l F_{jk}^l$$



GREŠKA STILA

Stil slike stila

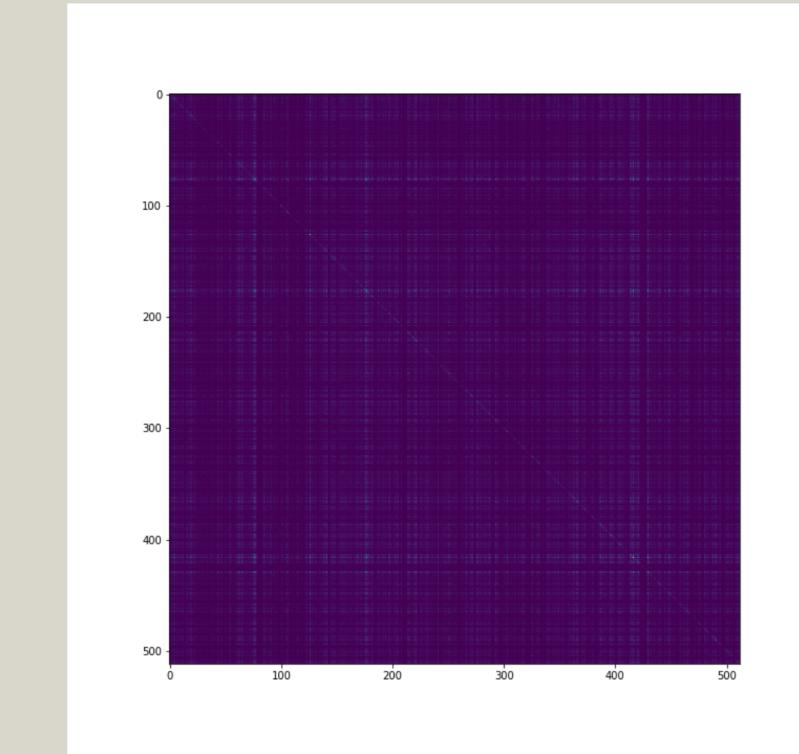
(



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Stil slike na ulazu

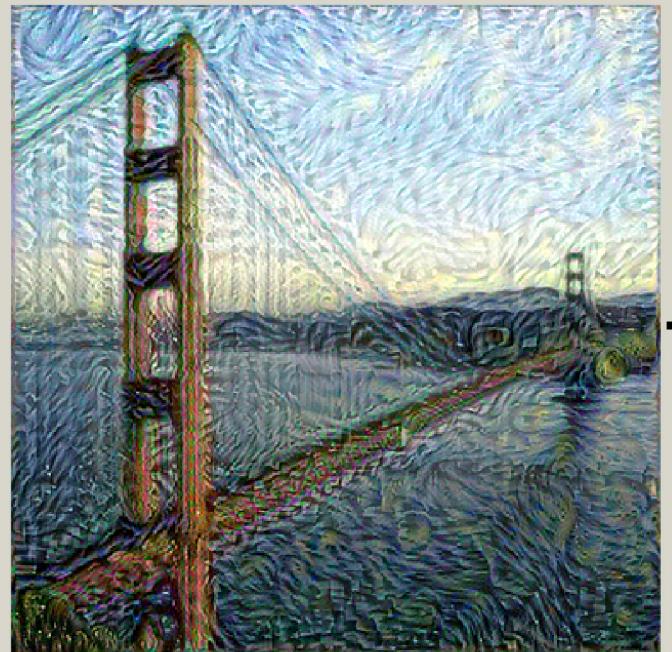
)²



$$\mathcal{L}_{\text{style}} \left(\begin{array}{c} \text{Starry Night} \\ , \\ \text{Golden Gate Bridge} \end{array} \right) \approx 0$$



Model



Model

Odlike sadržaja

Odlike sadržaja

Greška
sadržaja

GREŠKA SADRŽAJA

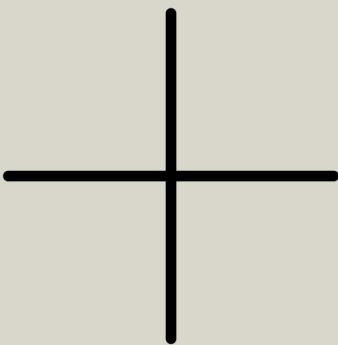
$$\mathcal{L}_{\text{content}} \left(\begin{array}{c} \text{Golden Gate Bridge} \\ , \\ \text{Pixelated Golden Gate Bridge} \end{array} \right) \approx 0$$

$$\mathcal{L}_{content}(\vec{p}, \vec{x}, l) = \frac{1}{2} \sum_{i,j} (F_{ij}^l - P_{ij}^l)^2$$

UKUPNA GRESKA

$$\mathcal{L}_{total}(\vec{p}, \vec{a}, \vec{x}) = \alpha \mathcal{L}_{content}(\vec{p}, \vec{x}) + \beta \mathcal{L}_{style}(\vec{a}, \vec{x})$$

REZULTAT



HVALA NA PAŽNJI!