

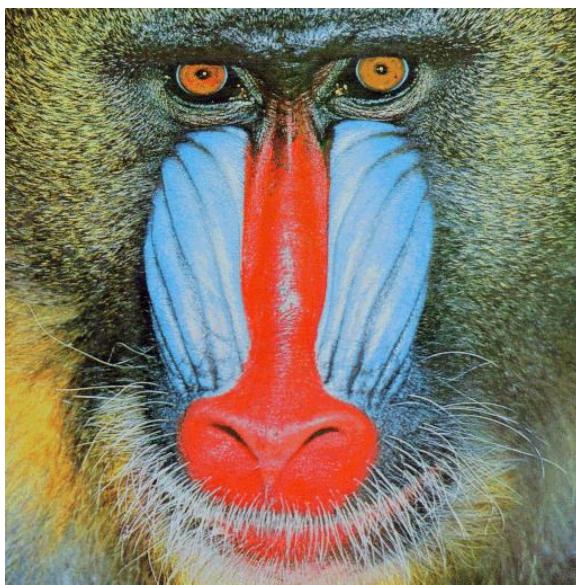
Próbkowanie i zmiana rozmiaru obrazu

Wojciech Latoś

Wnioski:

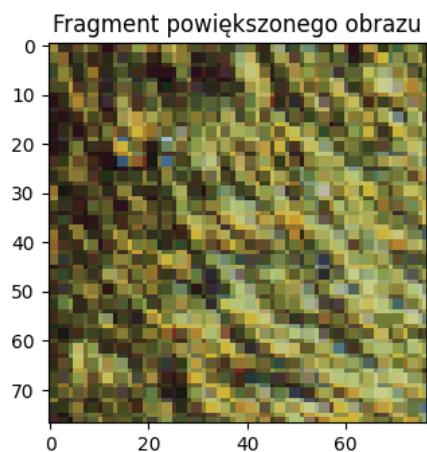
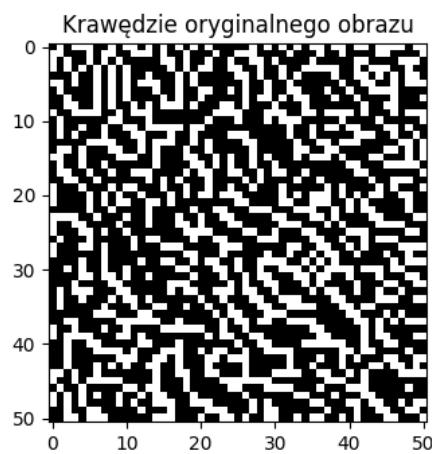
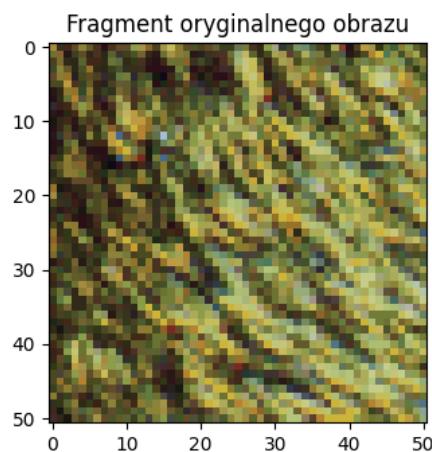
1. Jakość skalowania zależy od wybranej metody, widać różnice pomiędzy metodami. Bilinear tworzy mniej poszarpany obraz, jest bardziej płynny, mniej pikselowany niż metoda nearest.
2. Duże zmniejszanie obrazu prowadzi do znaczącej utraty informacji (obraz się zamazuje, pikseluje).
3. Im skala zmniejszania/zwiększenia jest coraz większa tym krawędzie są bardziej rozmazane, mniej "ostre", bądź całkowicie zatracane.
4. Wybór fragmentu obrazu ma kluczowe znaczenie dla oceny jakości algorytmów (niektóre fragmenty nie mogą skutecznie ocenić skuteczności algorytmów).
5. Przy bardzo dużym zmniejszaniu obrazu następuje duże rozmycie kolorów (idealnym przykładem są testy na obrazie BIG_0004).

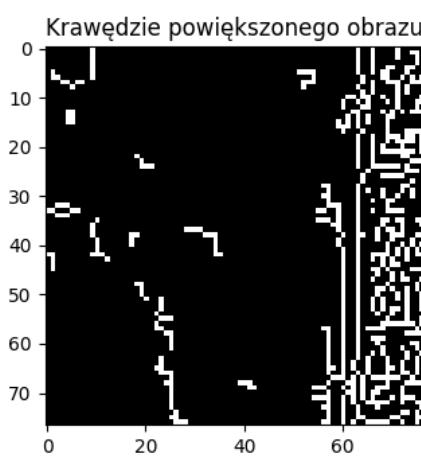
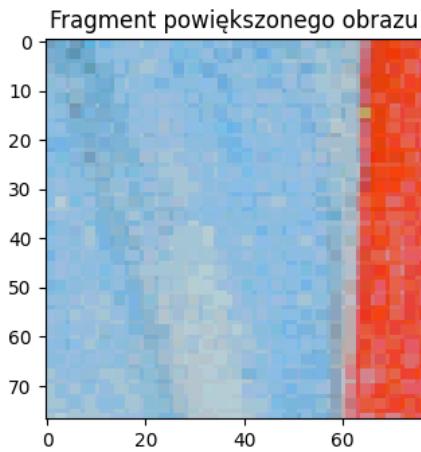
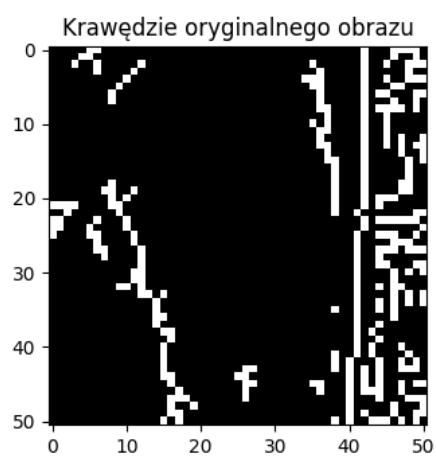
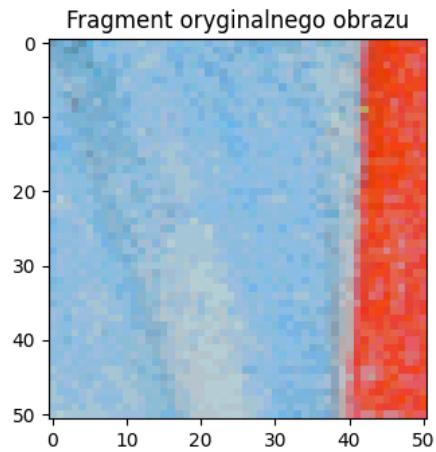
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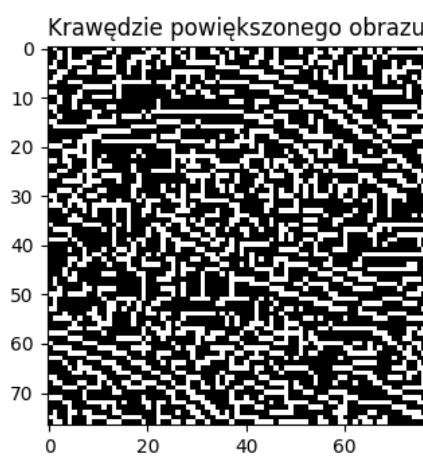
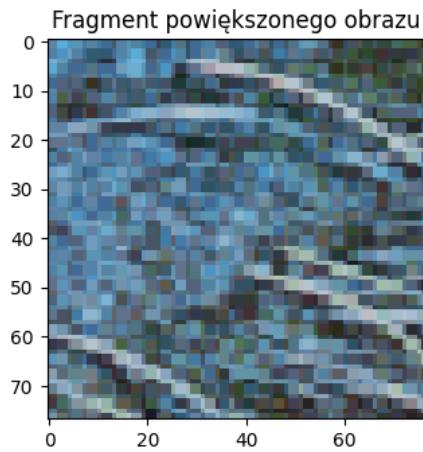
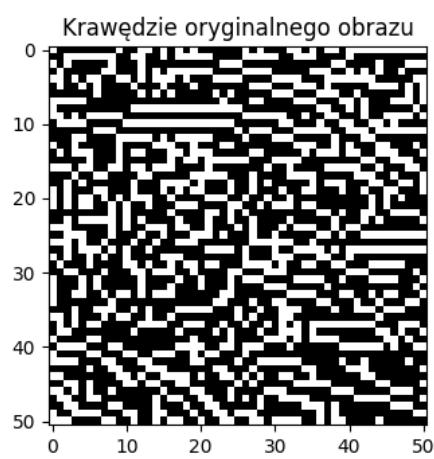
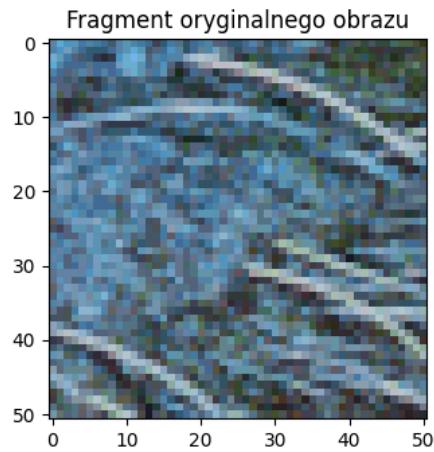


Powiększenie o x1.5

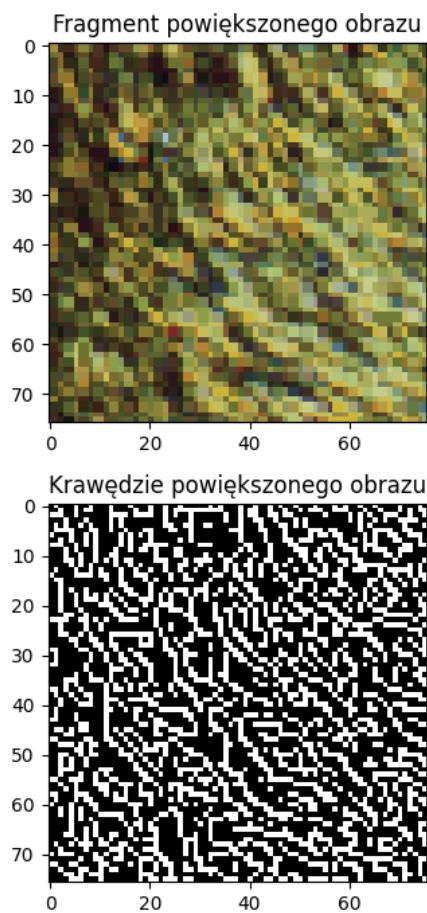
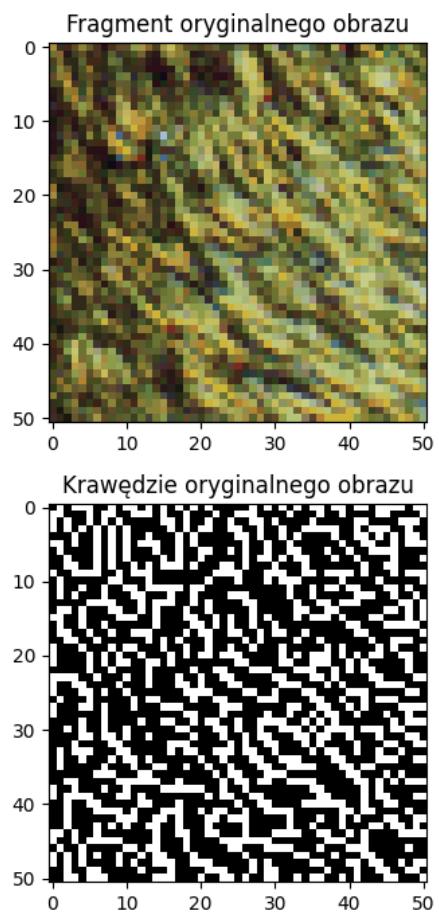
Metoda nearest

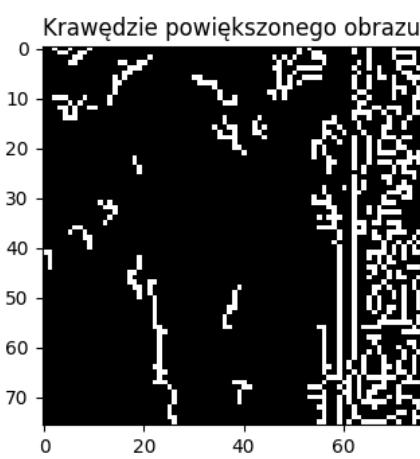
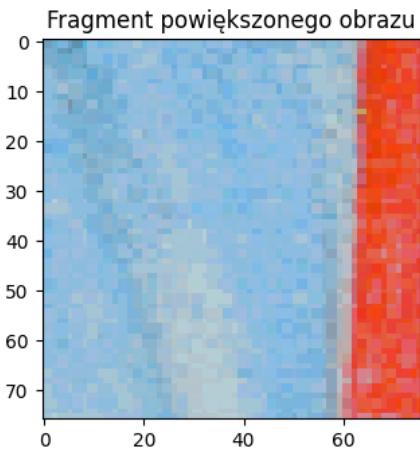
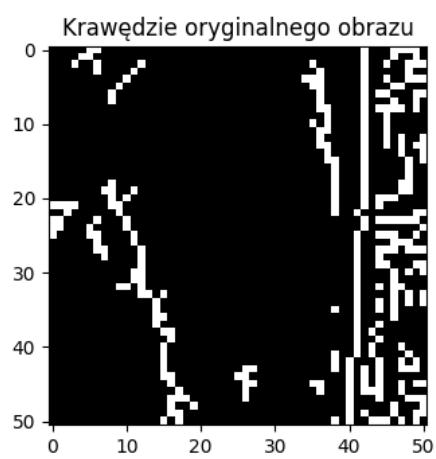
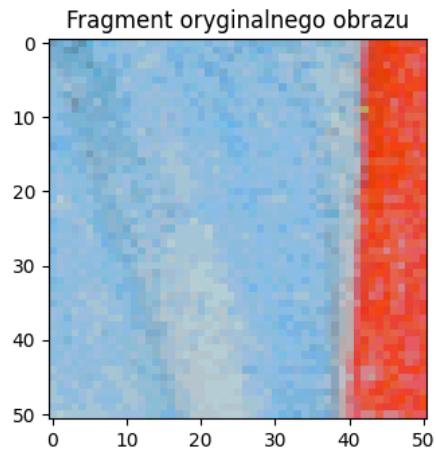


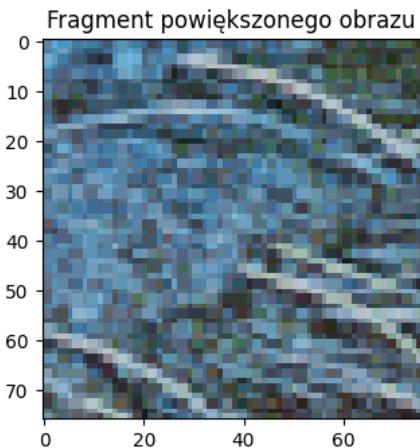
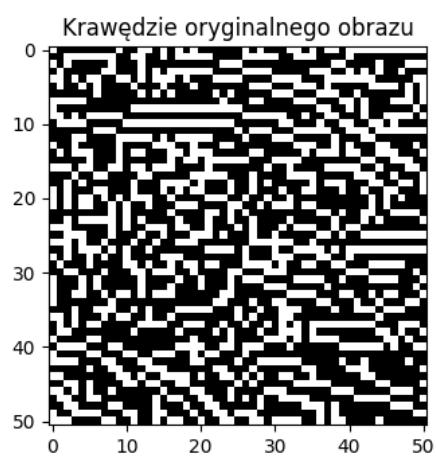
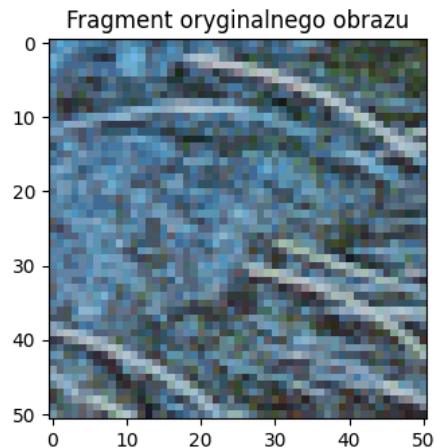




Metoda bilinear

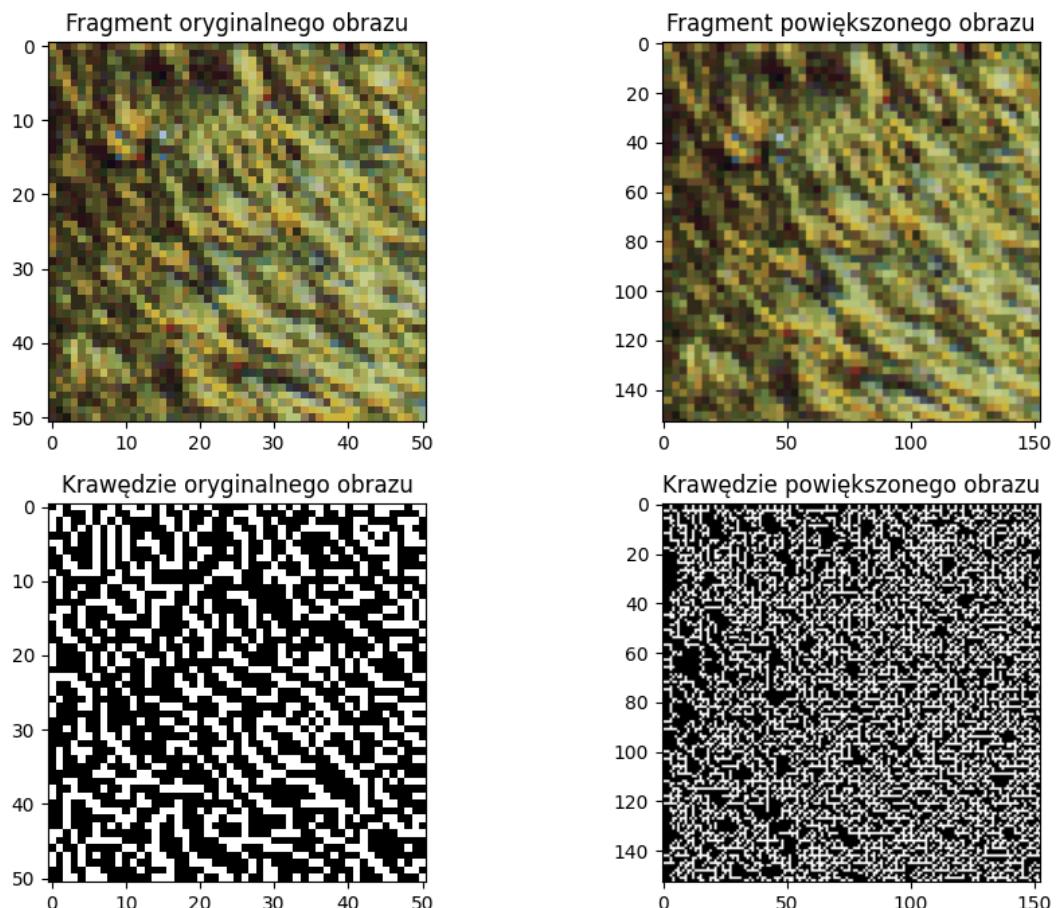


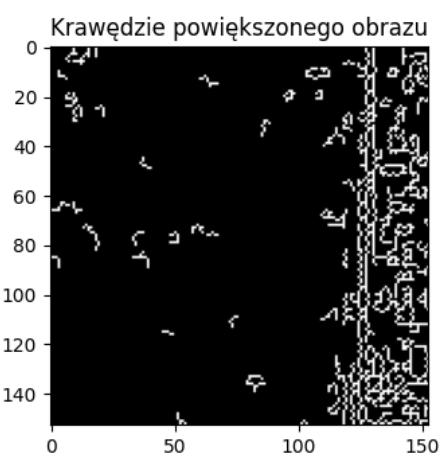
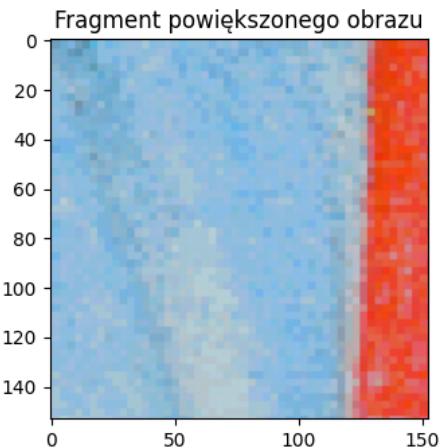
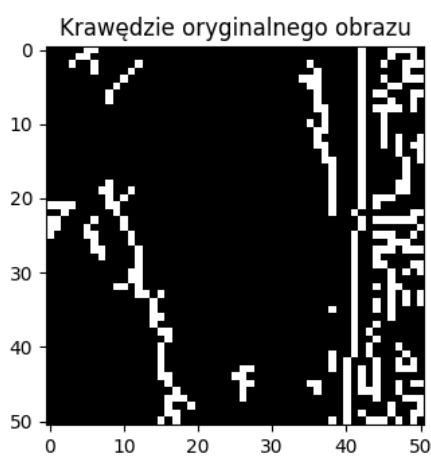
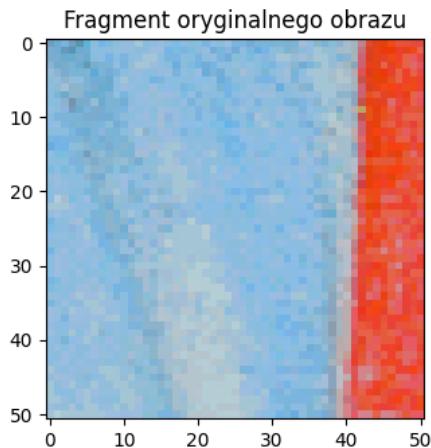


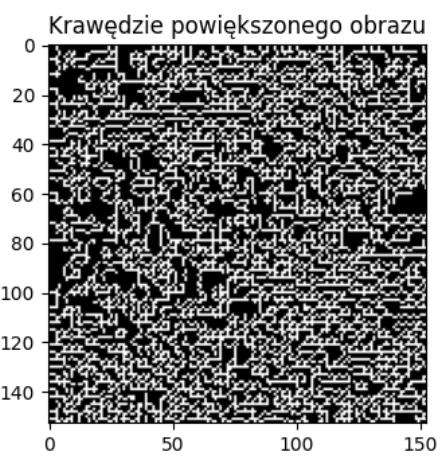
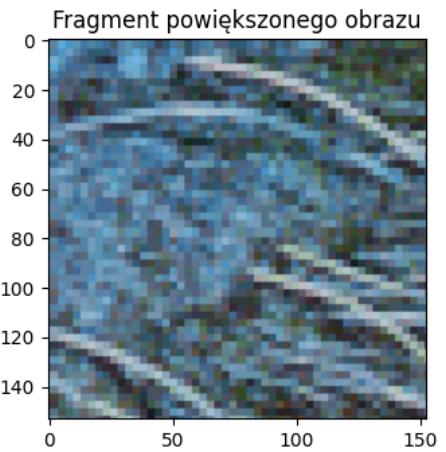
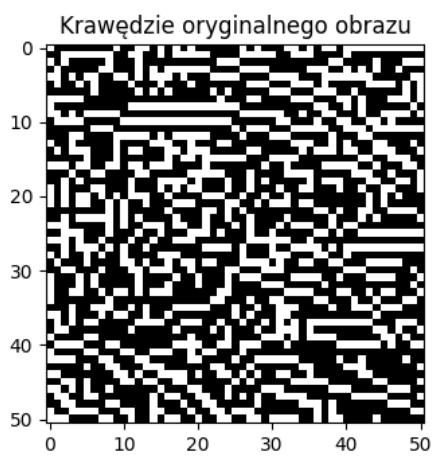
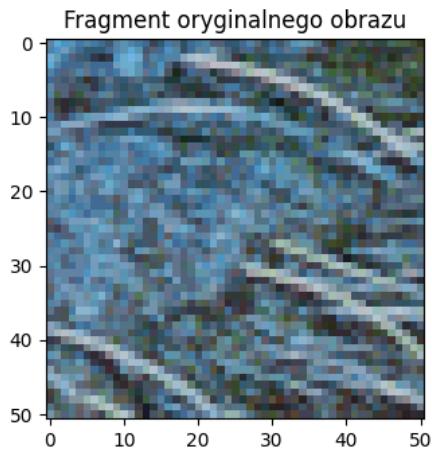


Powiększenie o x3

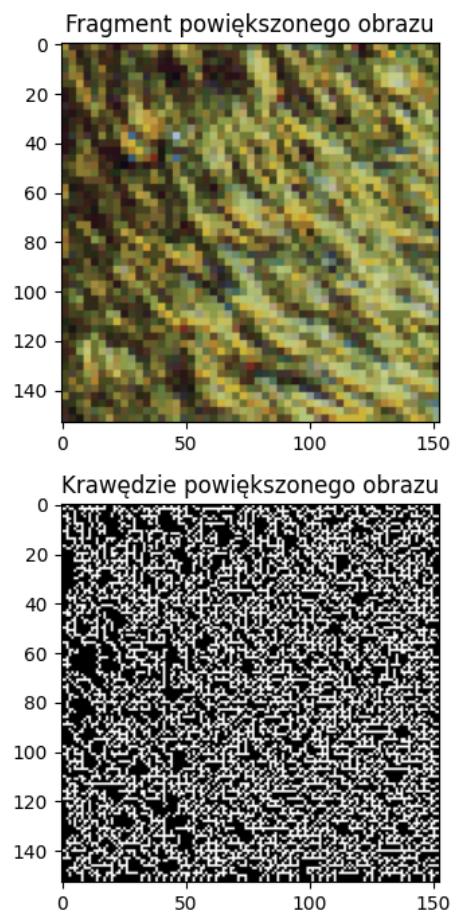
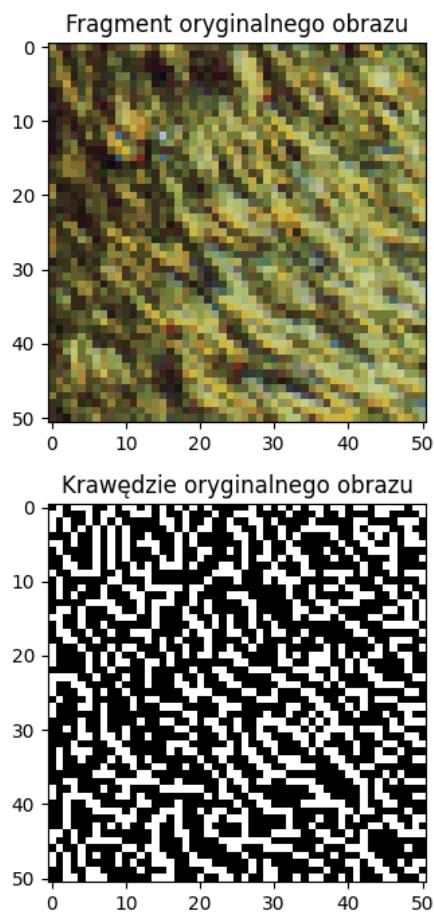
Metoda nearest

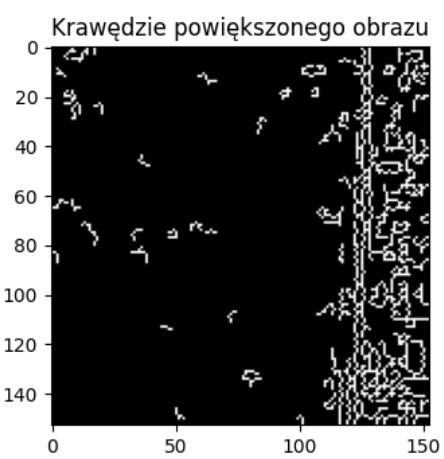
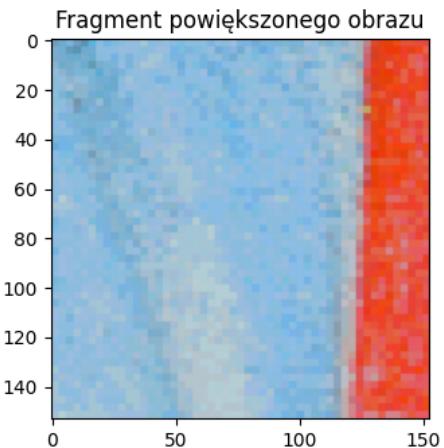
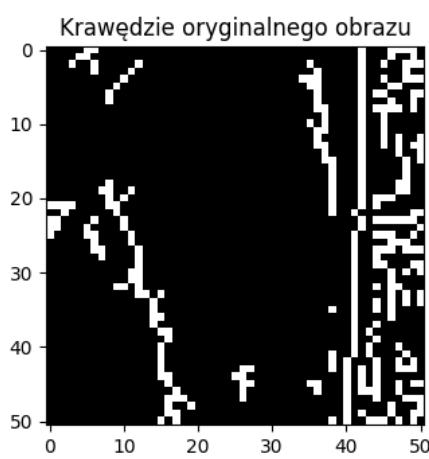
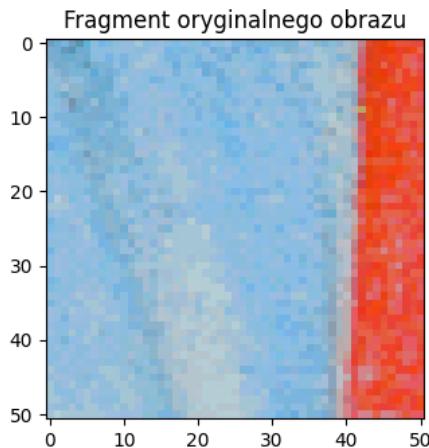


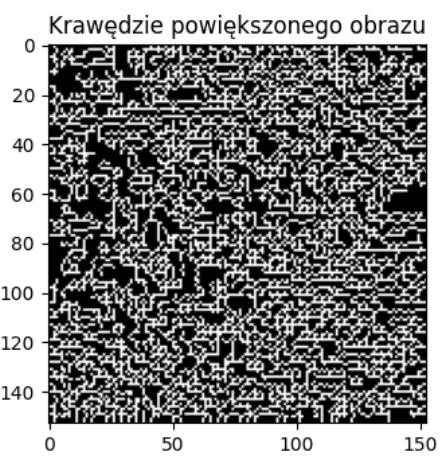
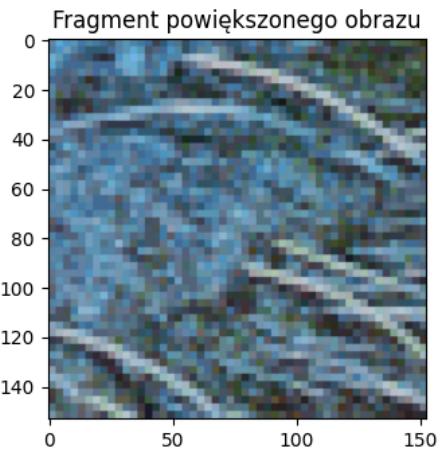
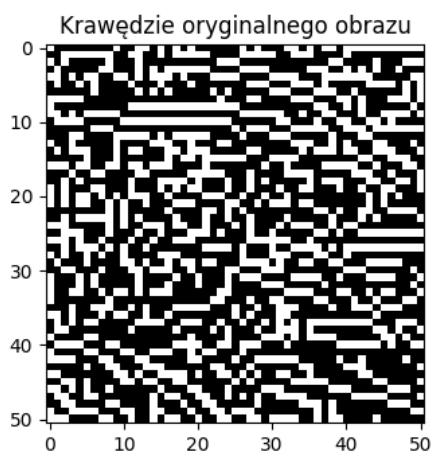
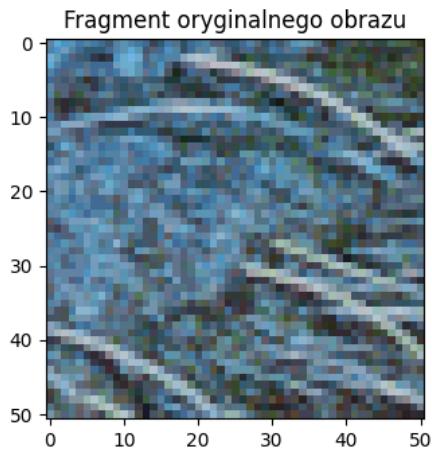




Metoda bilinear

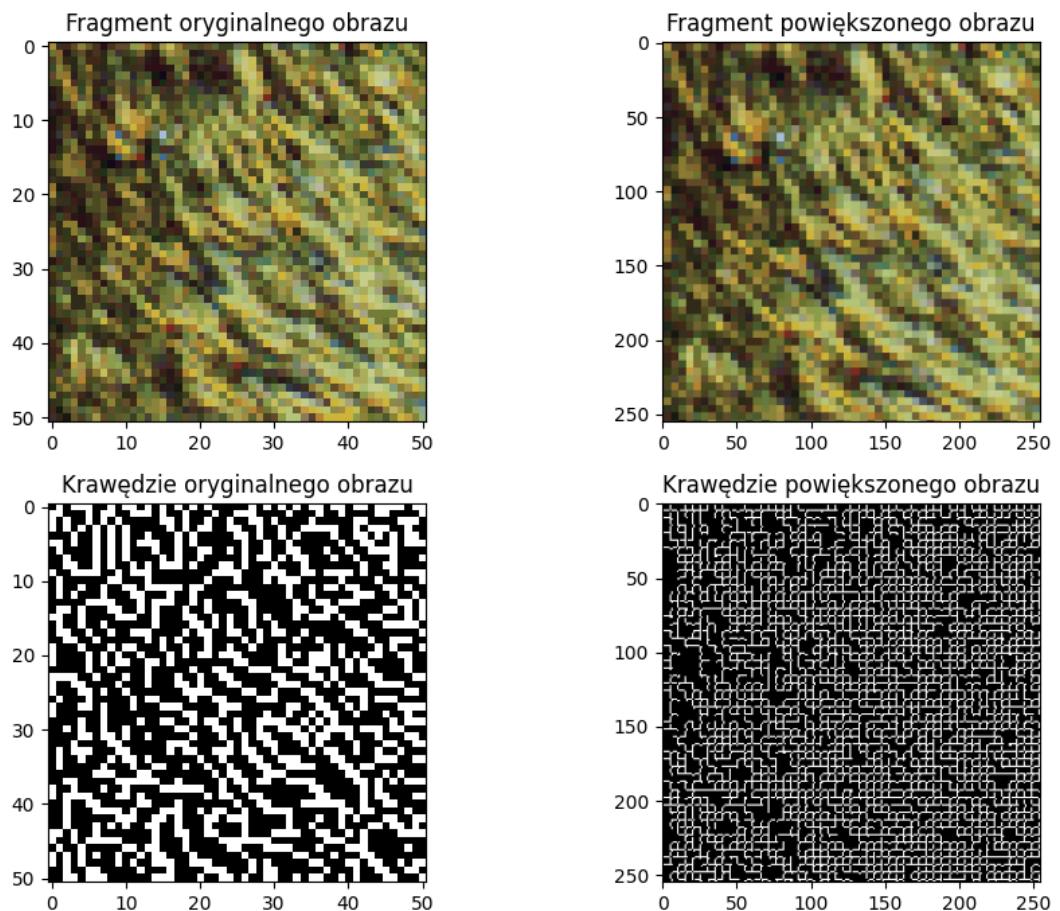


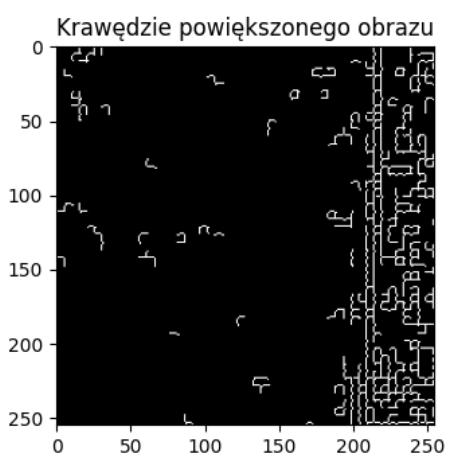
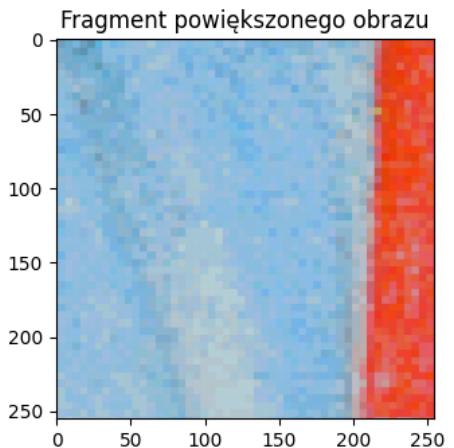
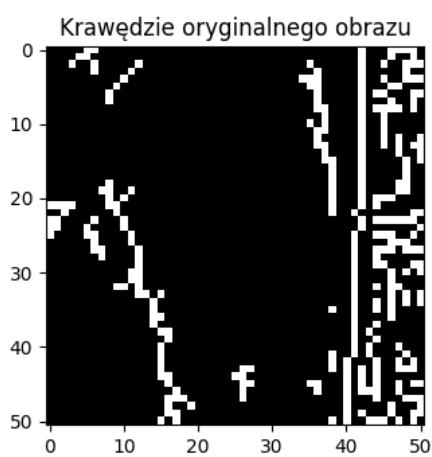
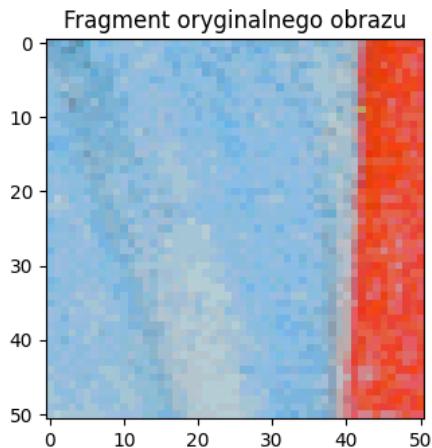


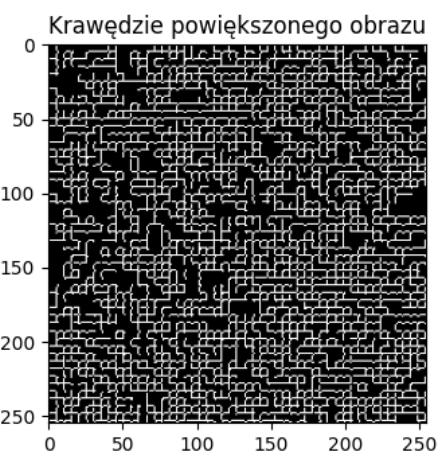
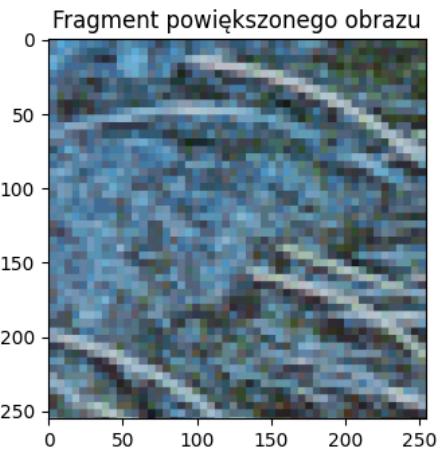
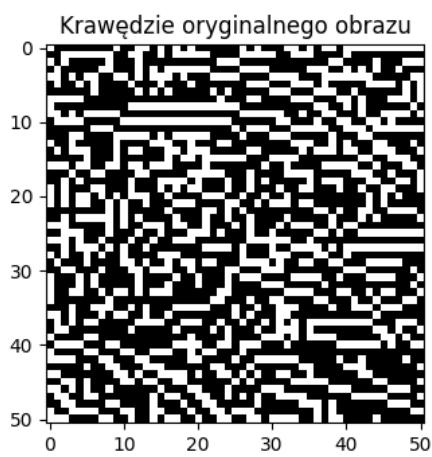
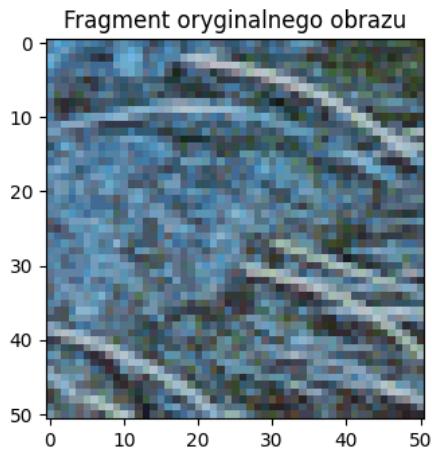


Powiększenie o x5

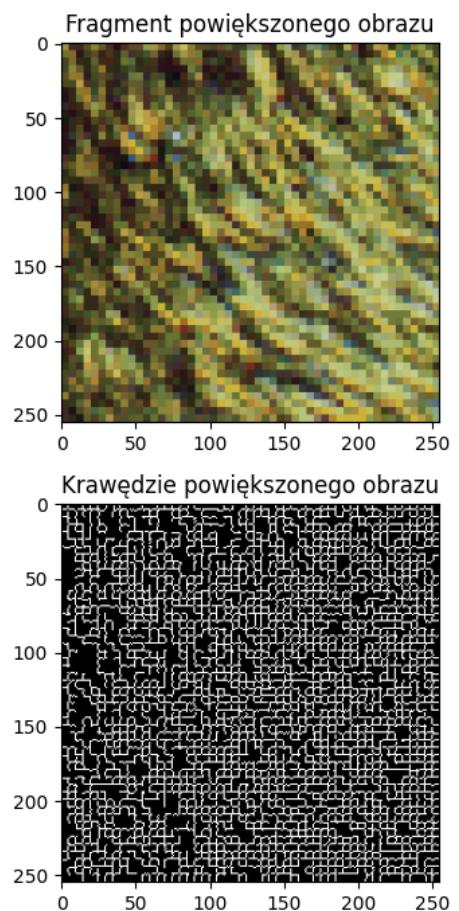
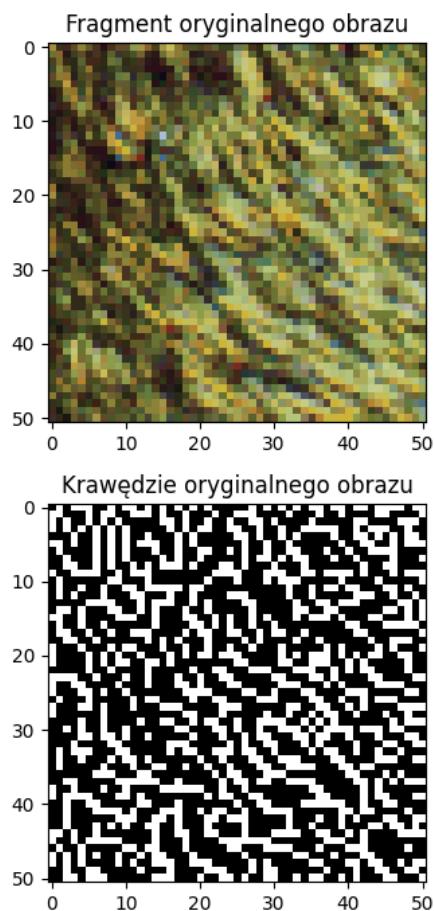
Metoda nearest

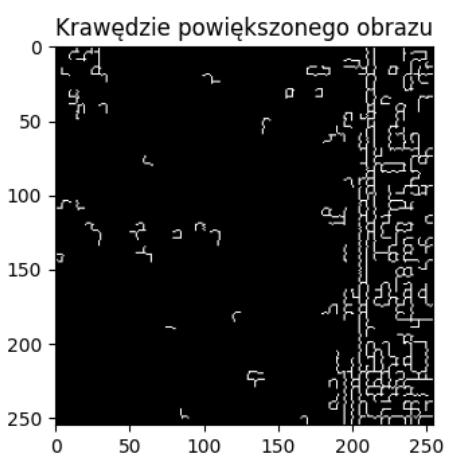
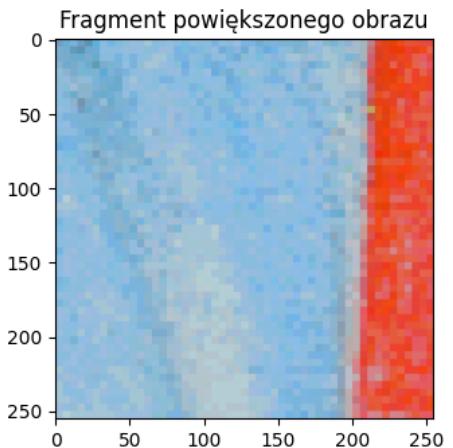
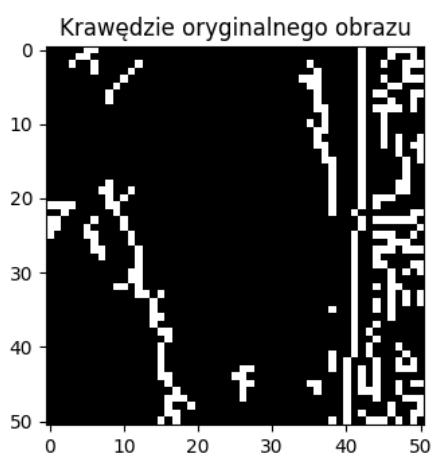
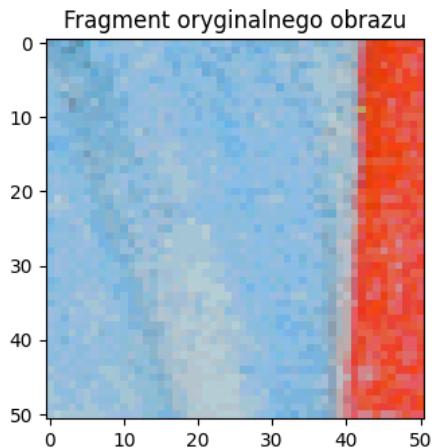


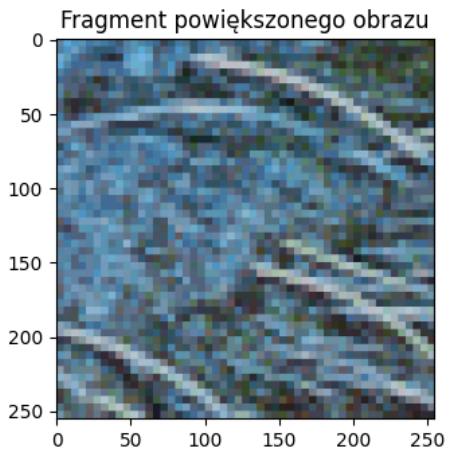
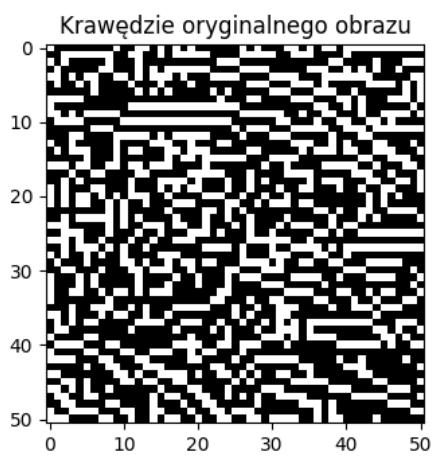
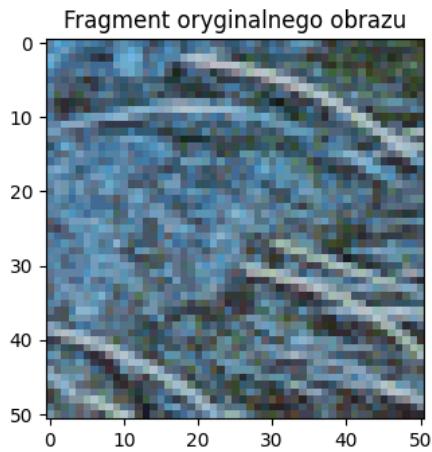




Metoda bilinear





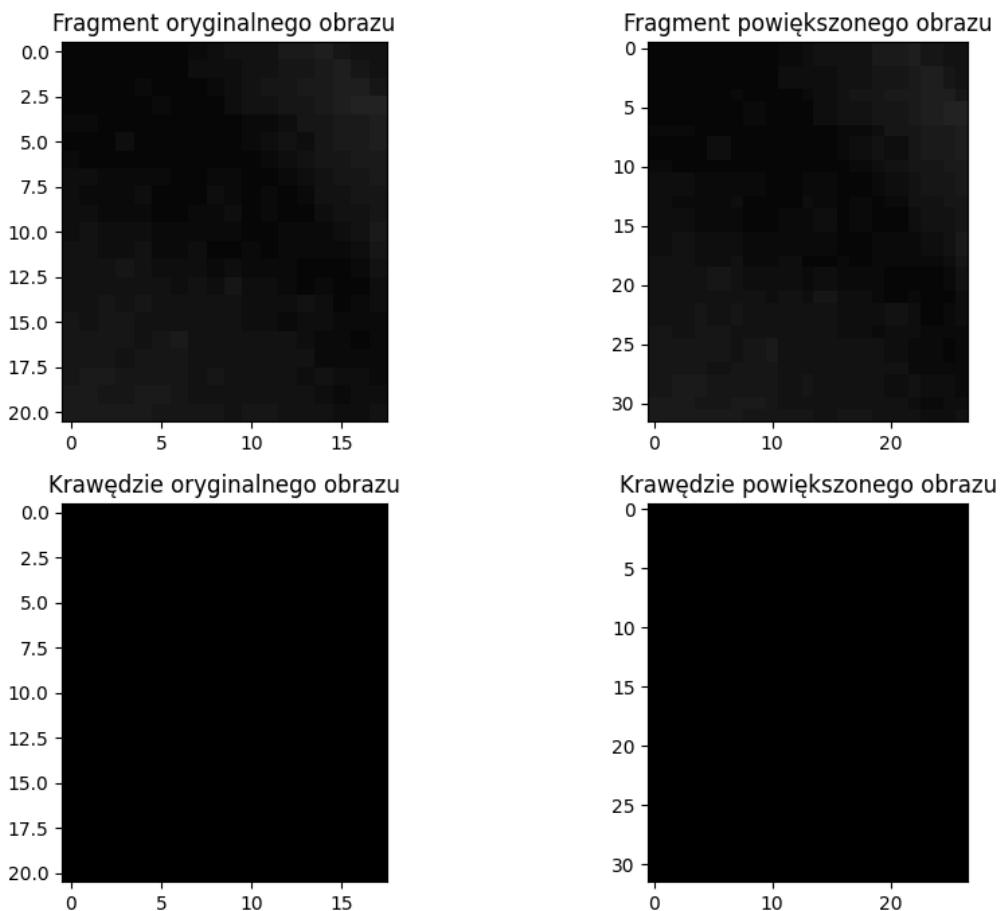


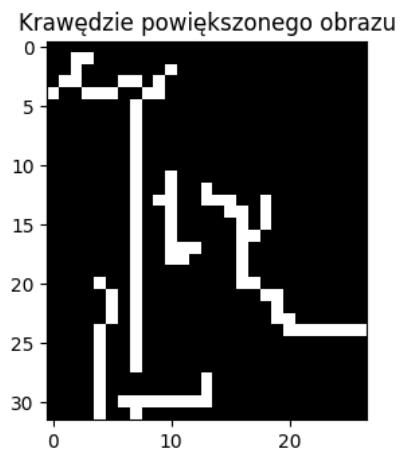
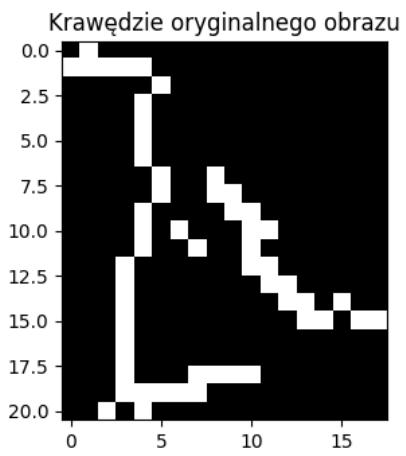
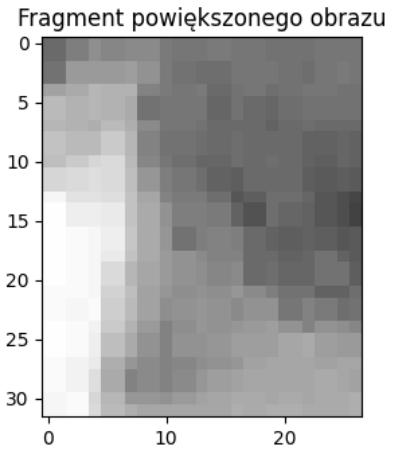
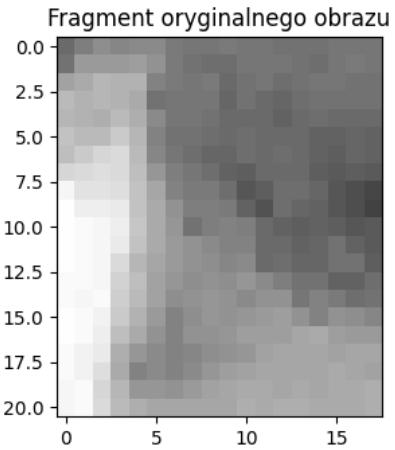
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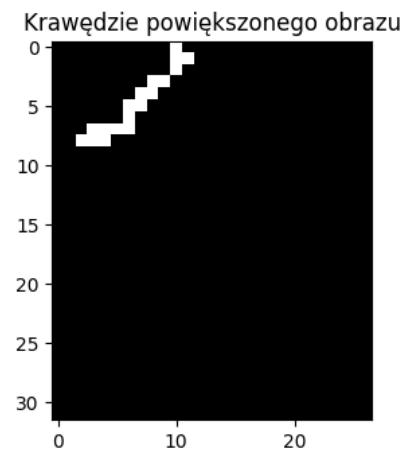
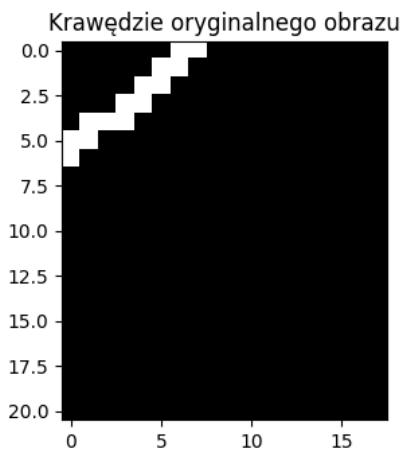
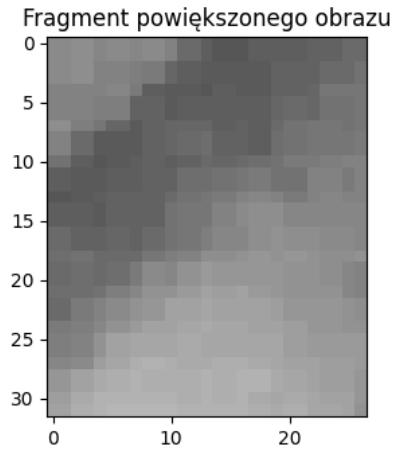
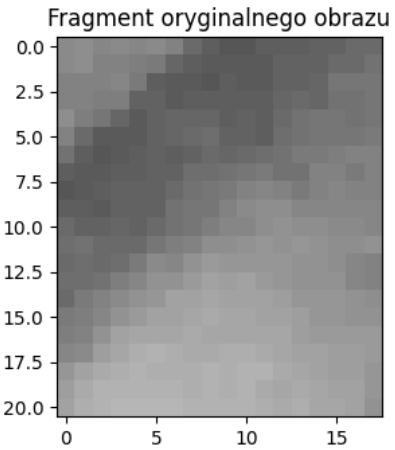


Powiększenie o x1.5

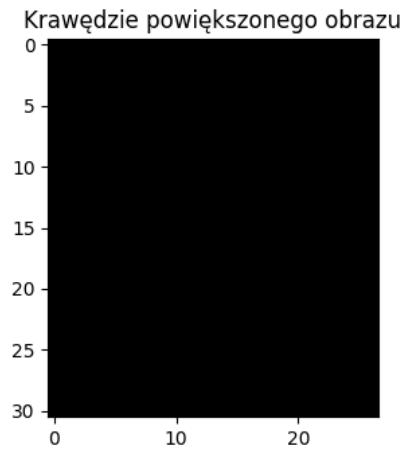
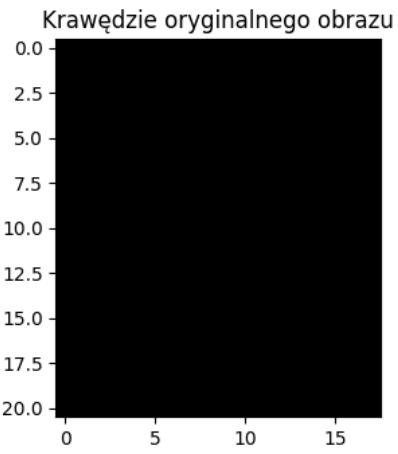
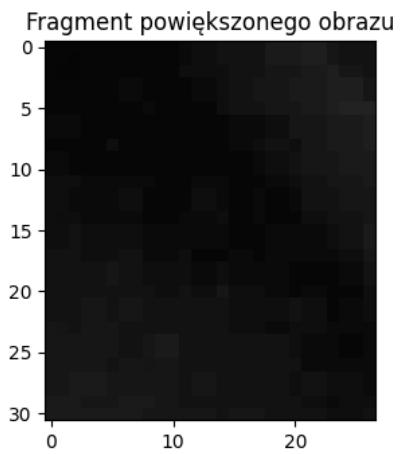
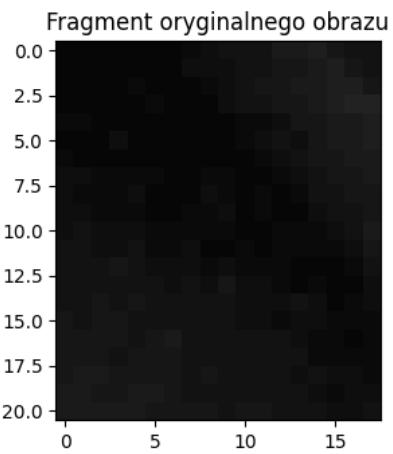
Metoda nearest

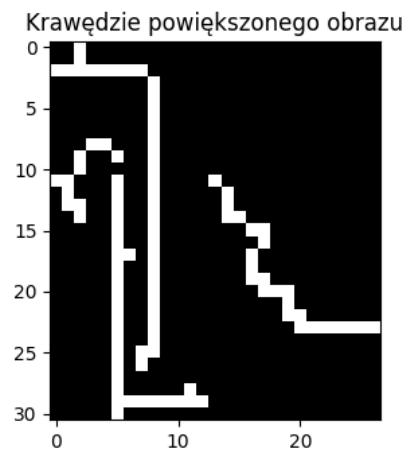
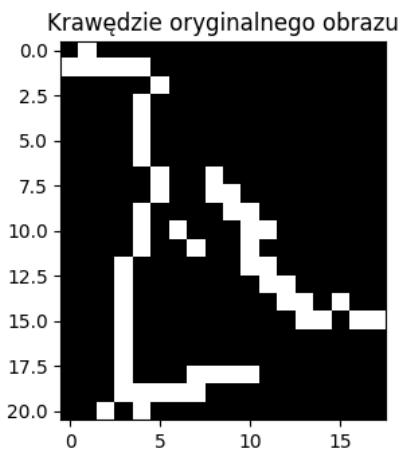
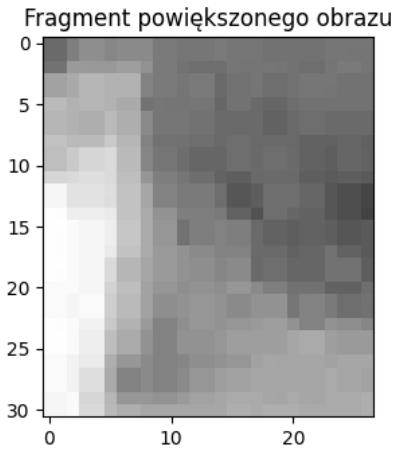
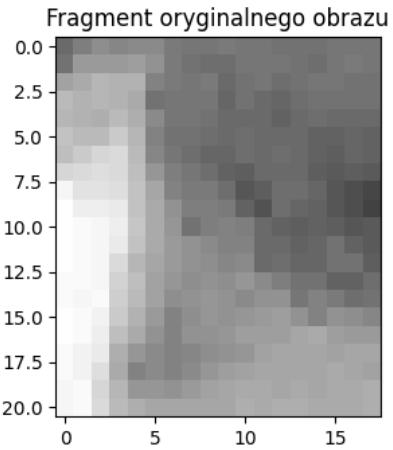


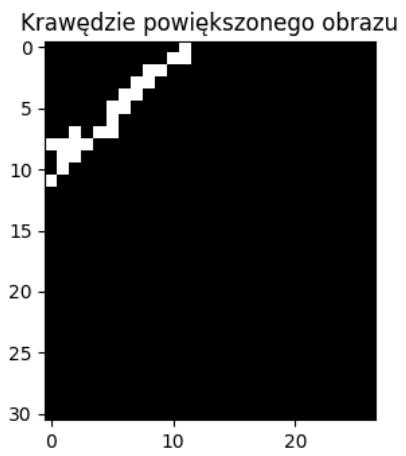
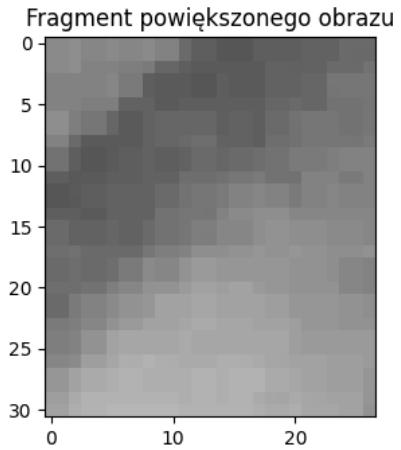
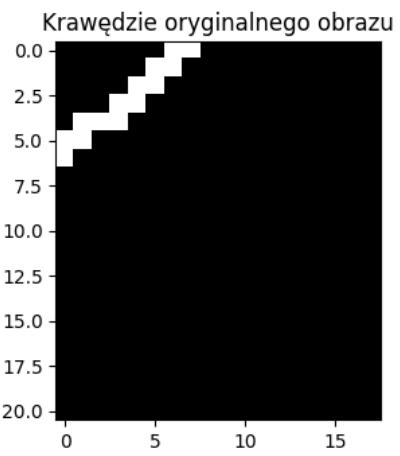
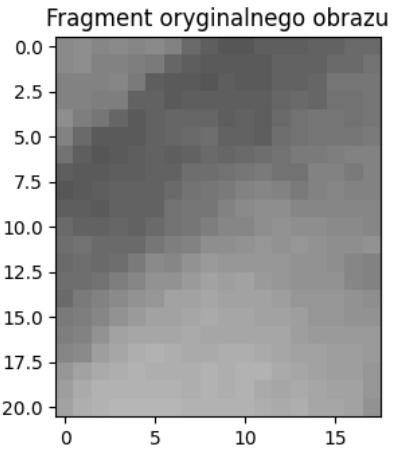




Metoda bilinear

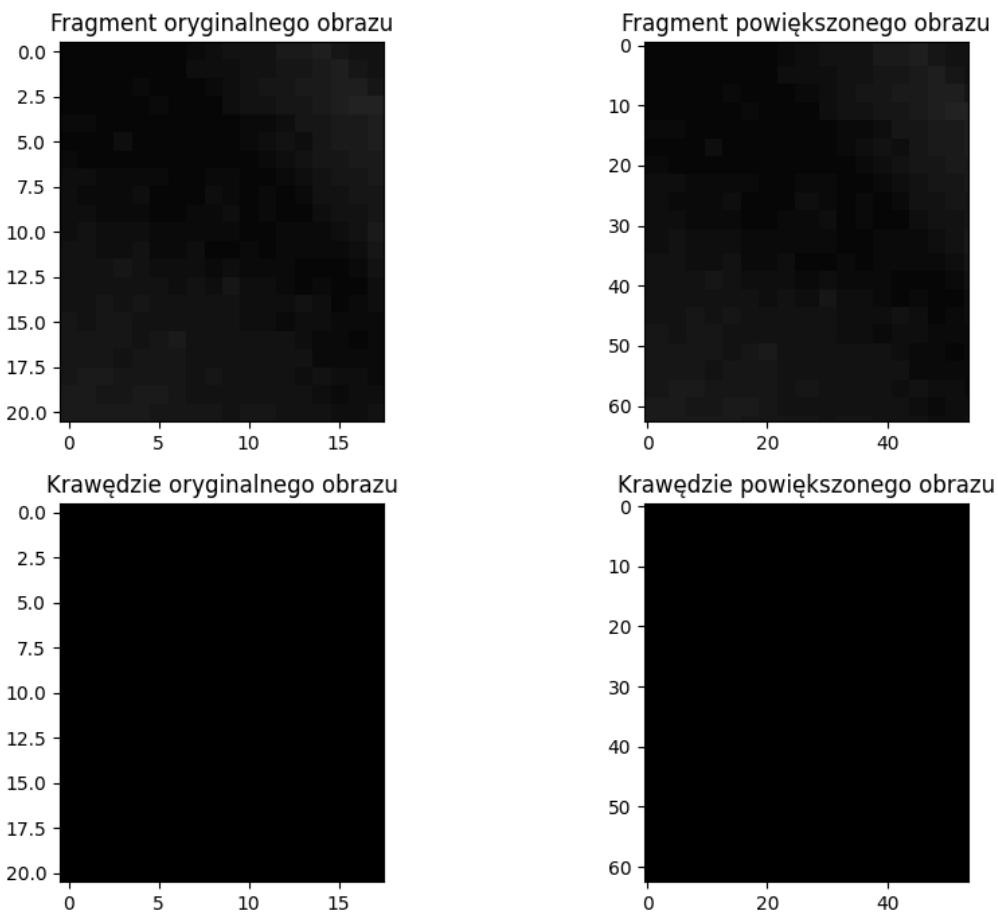


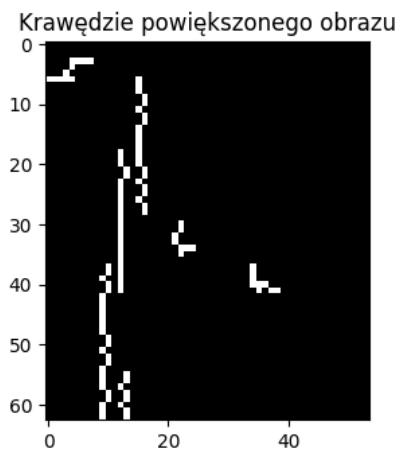
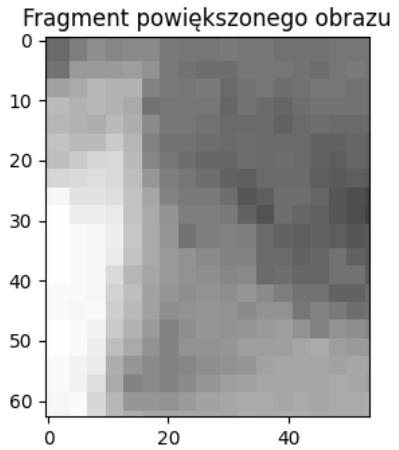
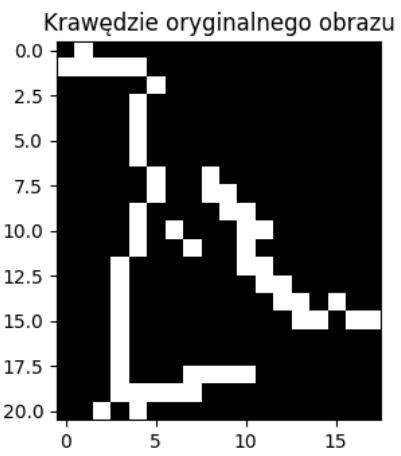
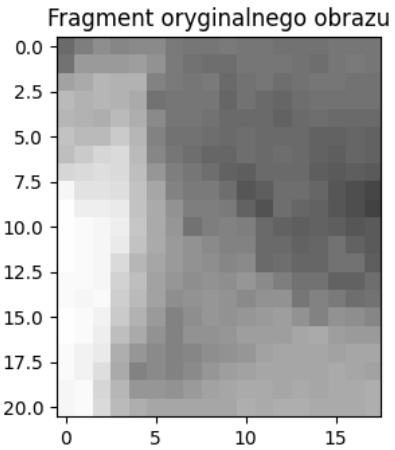


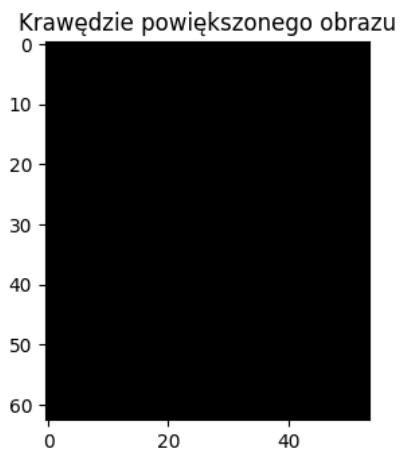
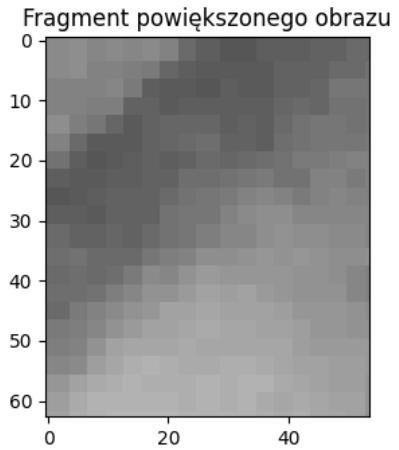
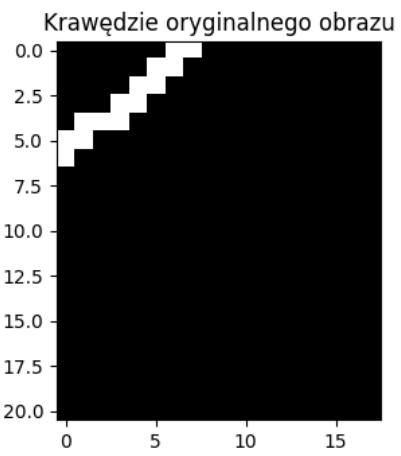
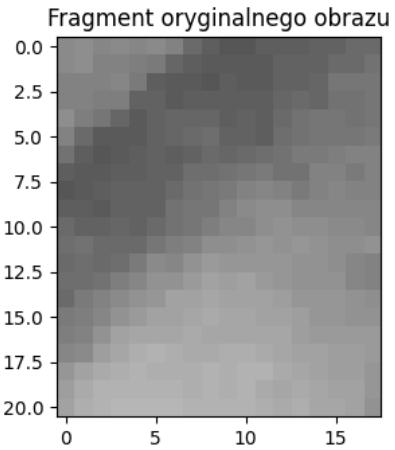


Powiększenie o x3

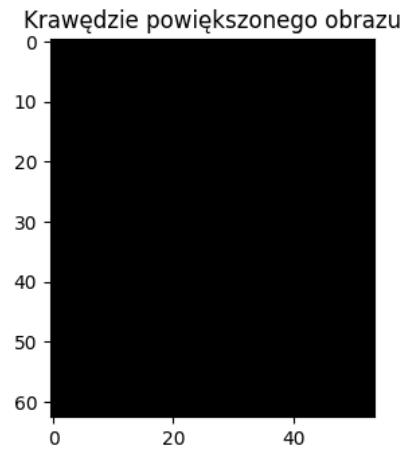
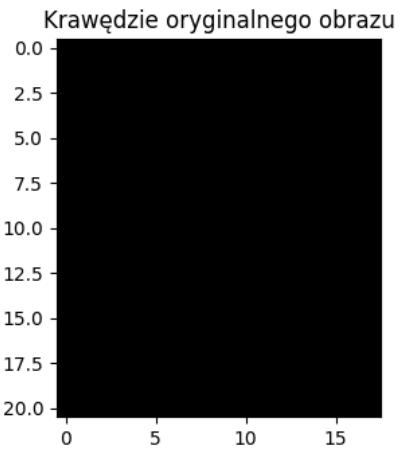
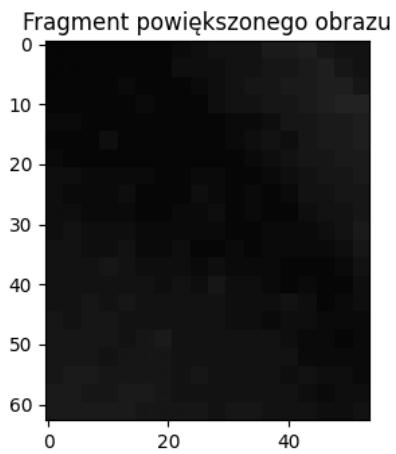
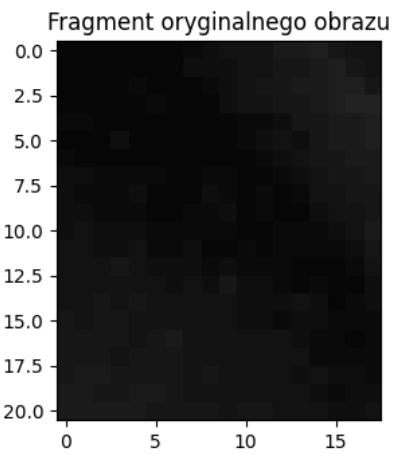
Metoda nearest

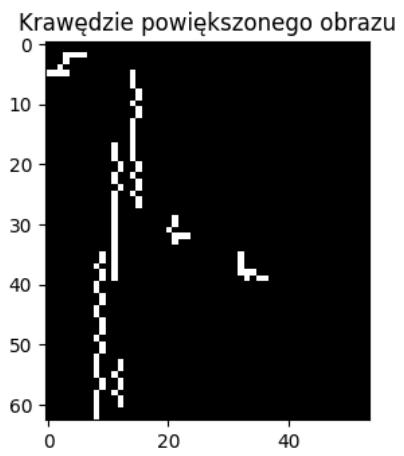
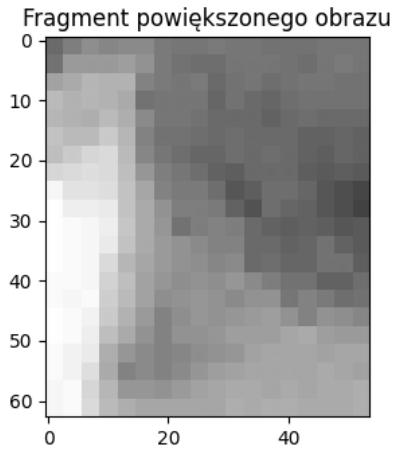
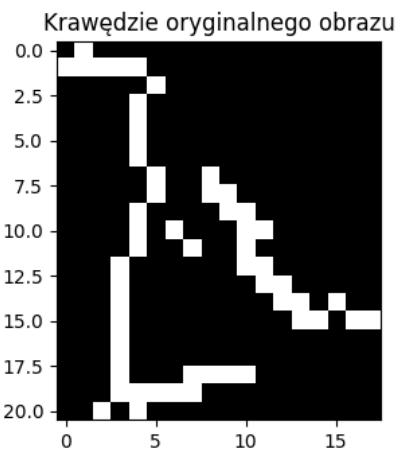
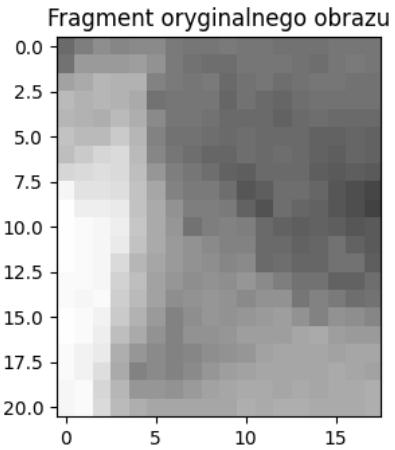


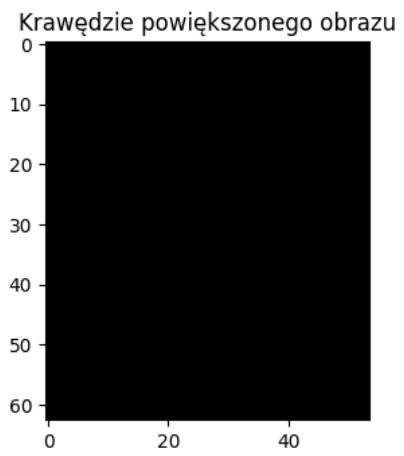
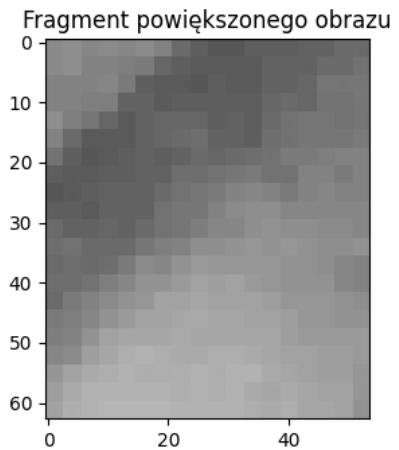
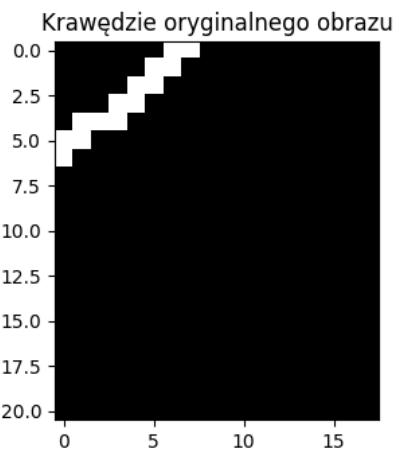
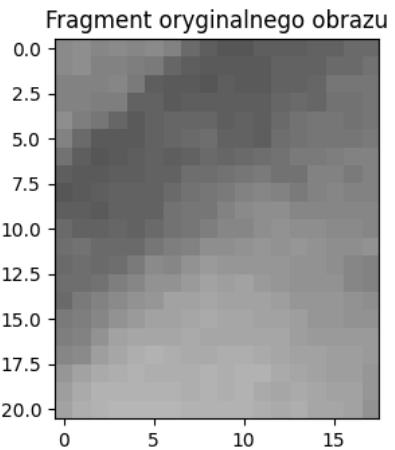




Metoda bilinear

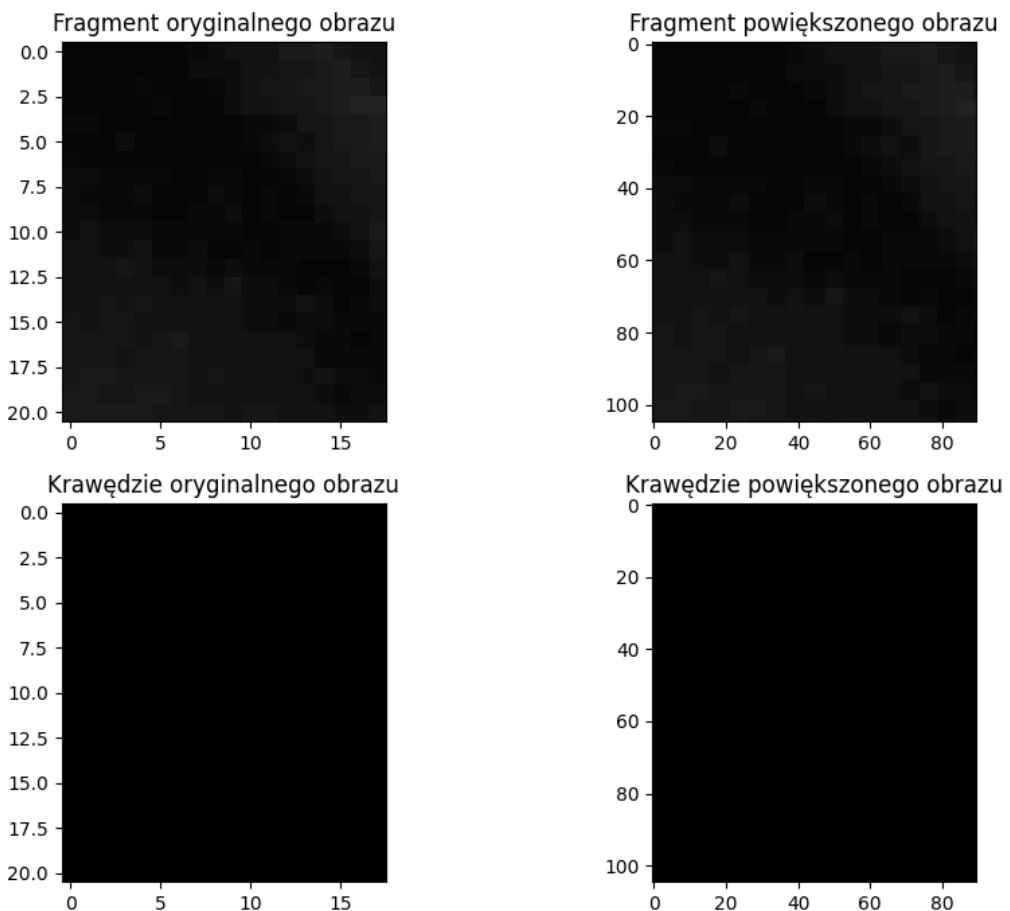


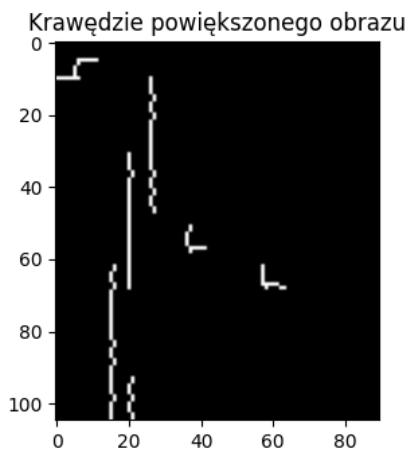
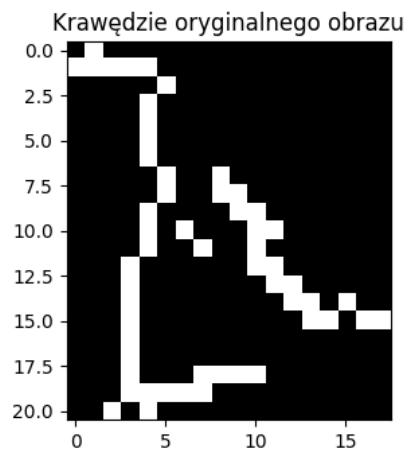
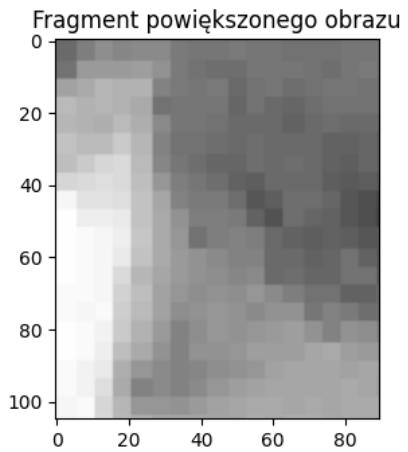
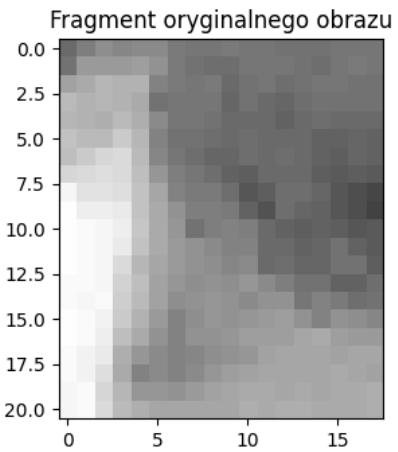


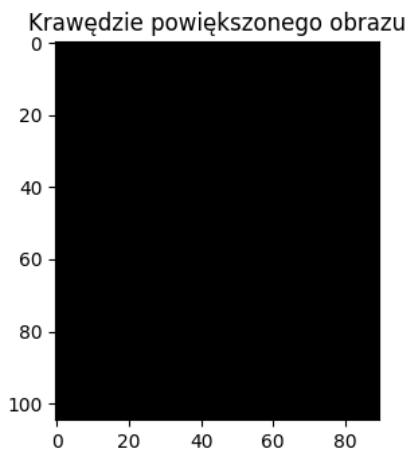
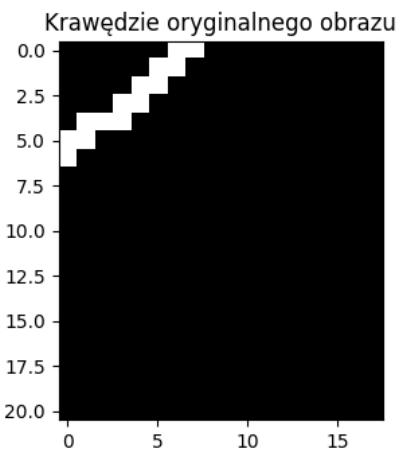
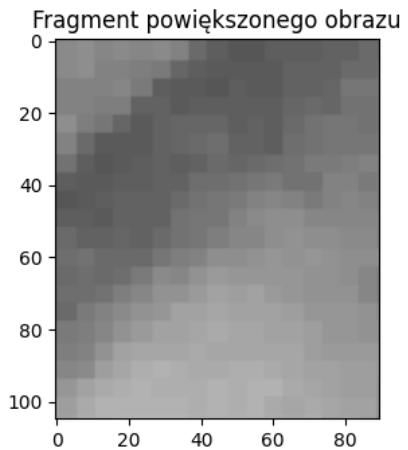
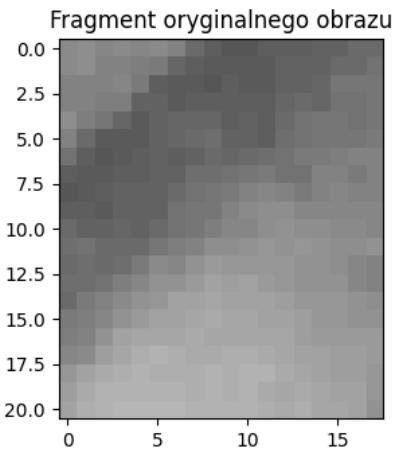


Powiększenie o x5

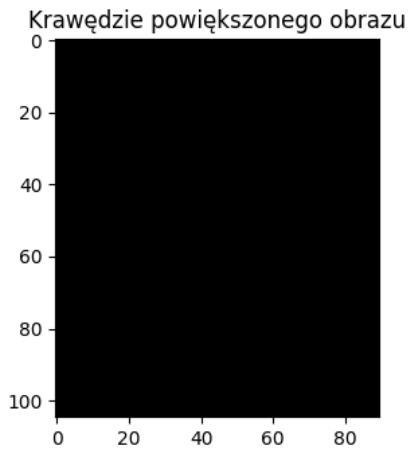
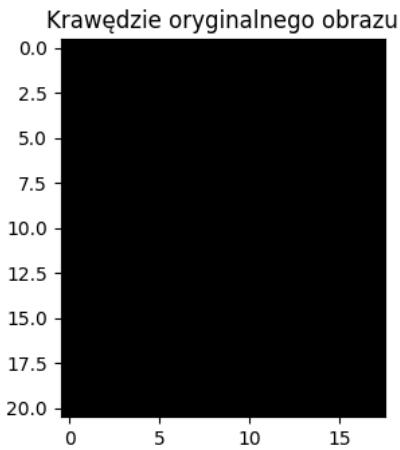
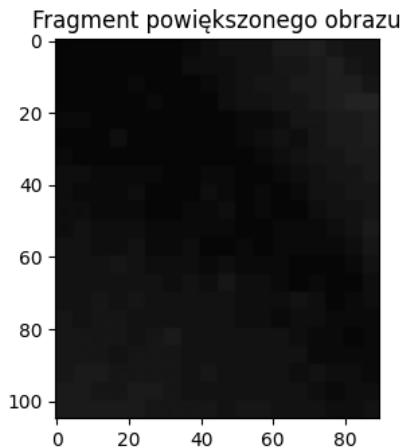
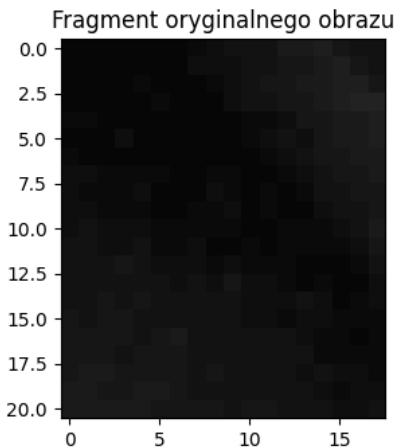
Metoda nearest

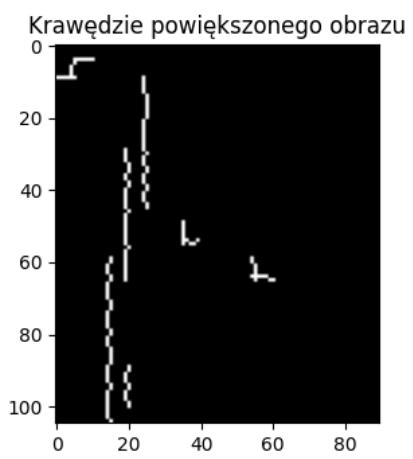
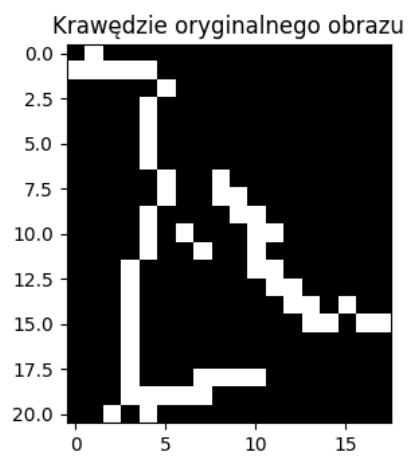
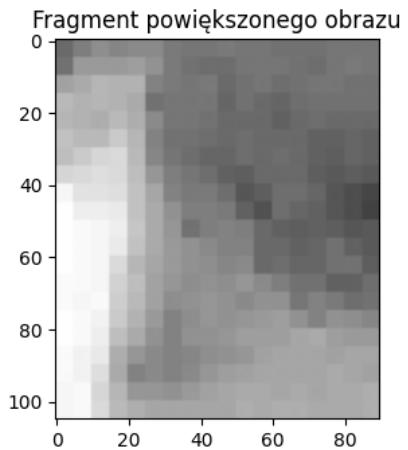
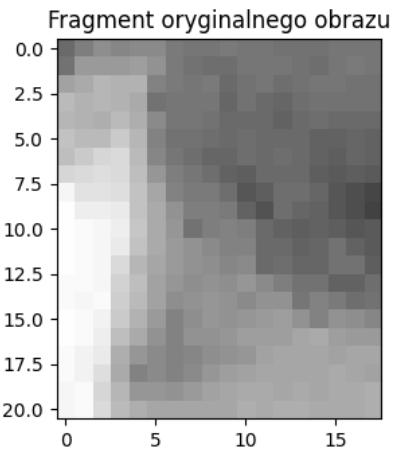


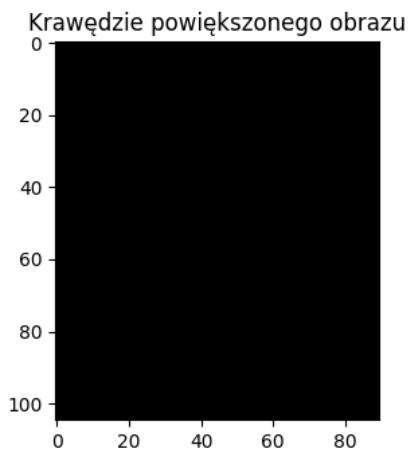
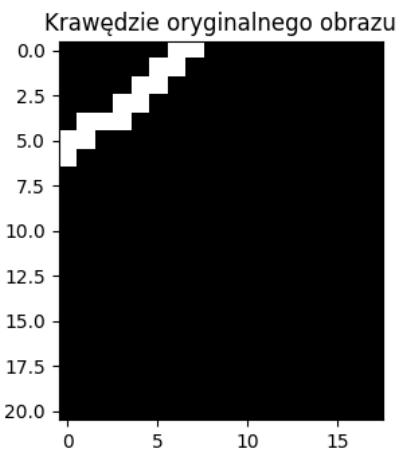
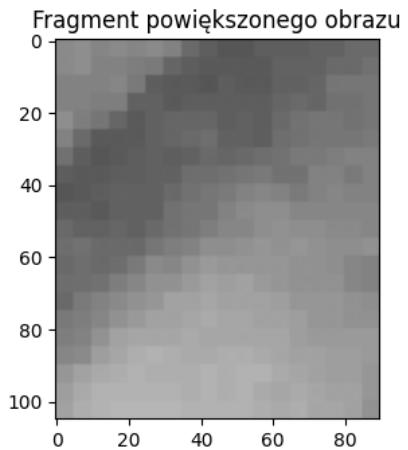
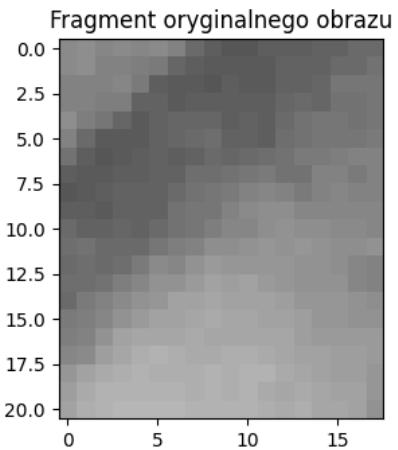




Metoda bilinear





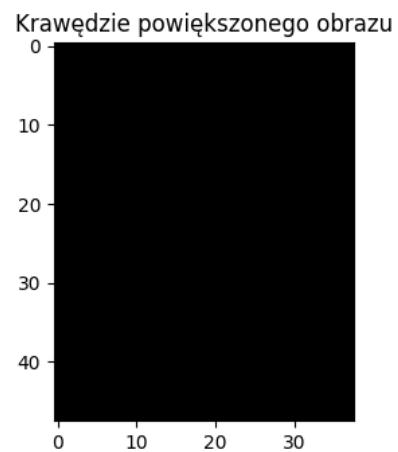
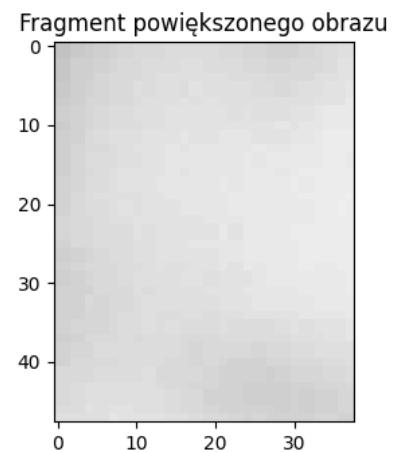
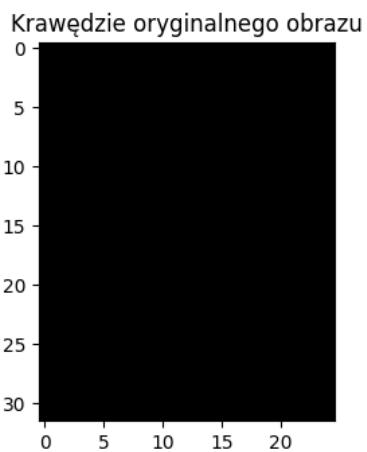
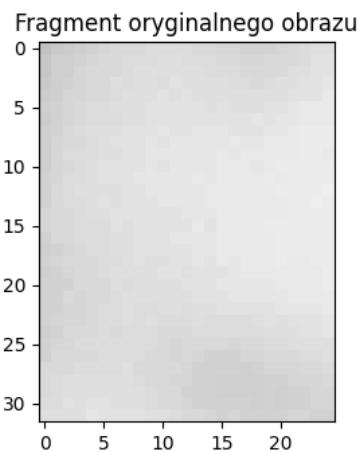


Zdjęcie - IMG_SMALL/SMALL_0003.png

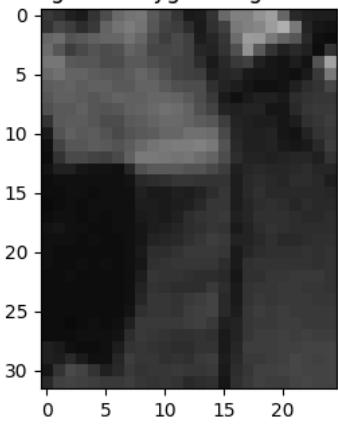


Powiększenie o x1.5

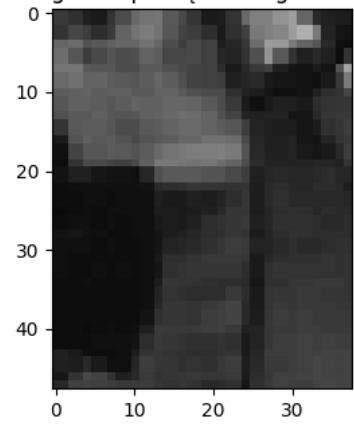
Metoda nearest



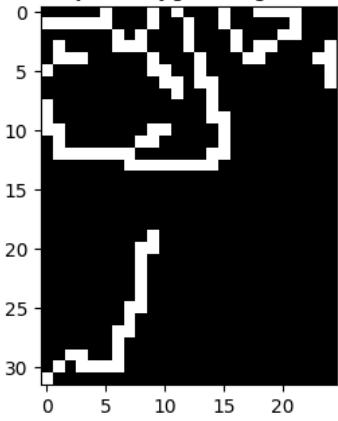
Fragment oryginalnego obrazu



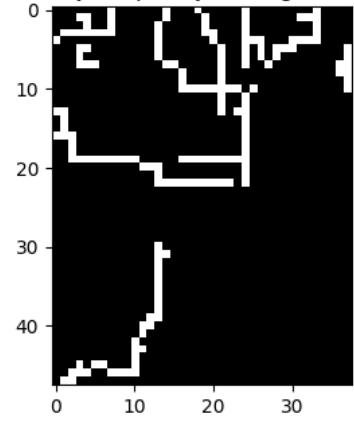
Fragment powiększonego obrazu



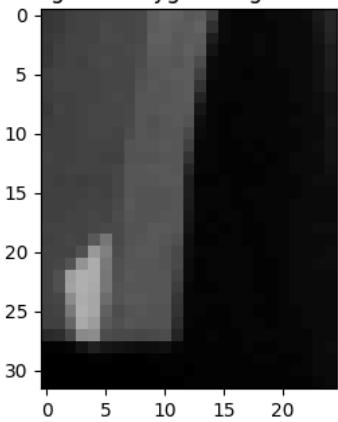
Krawędzie oryginalnego obrazu



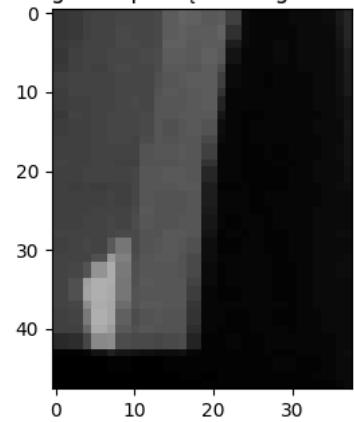
Krawędzie powiększonego obrazu



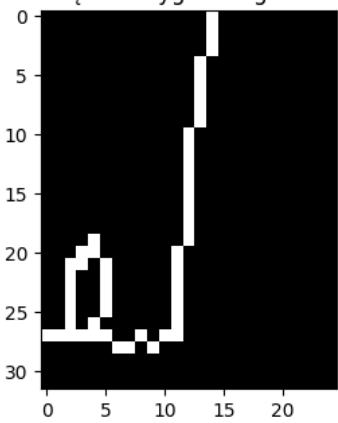
Fragment oryginalnego obrazu



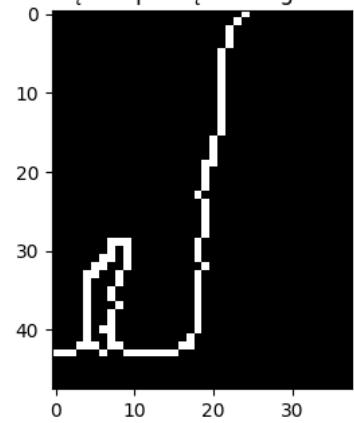
Fragment powiększonego obrazu



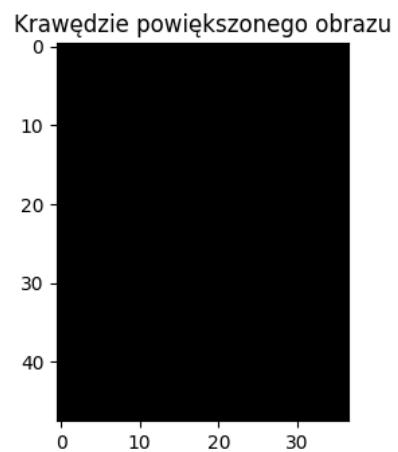
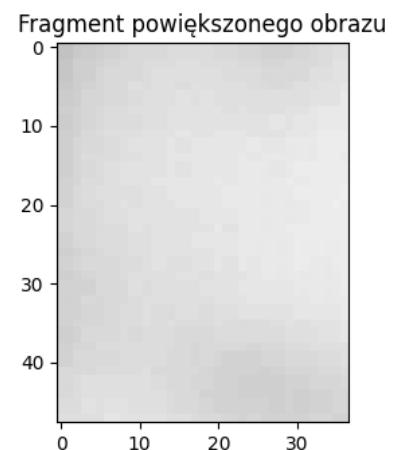
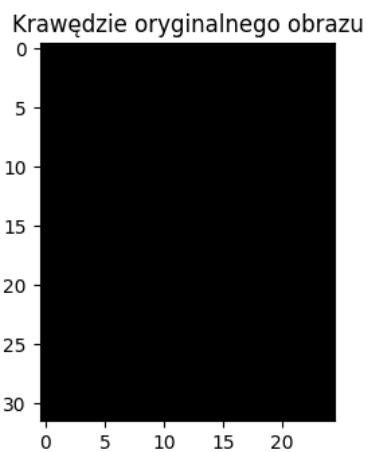
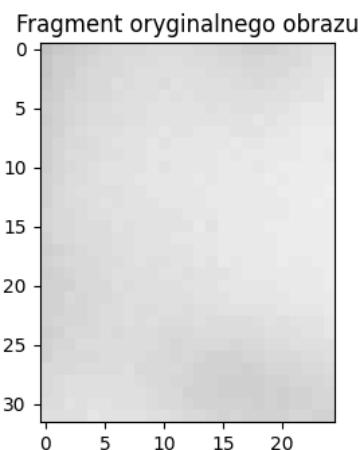
Krawędzie oryginalnego obrazu



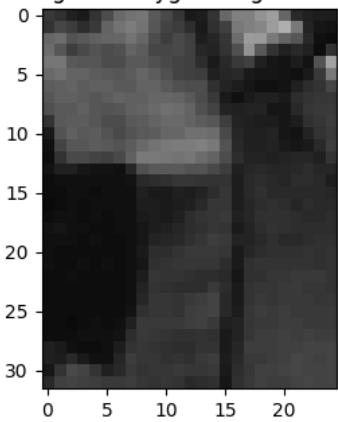
Krawędzie powiększonego obrazu



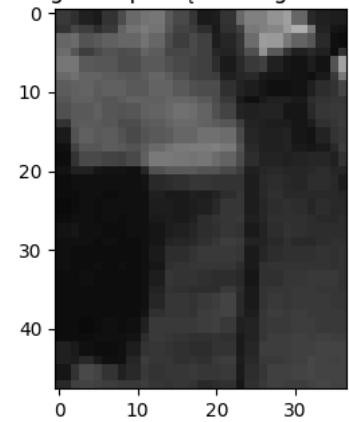
Metoda bilinear



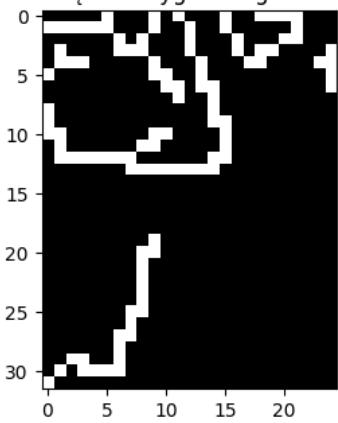
Fragment oryginalnego obrazu



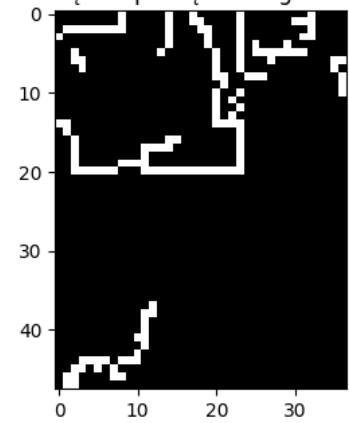
Fragment powiększonego obrazu



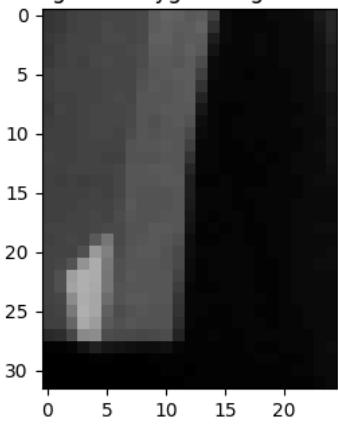
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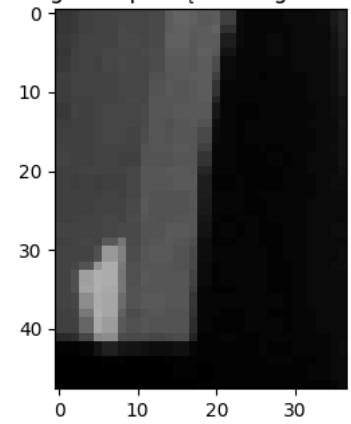
Krawędzie powiększonego obrazu



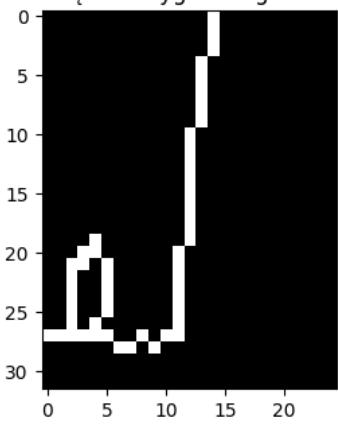
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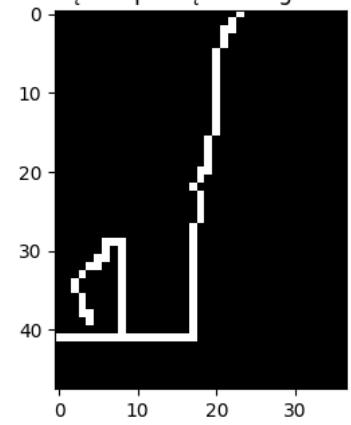
Fragment powiększonego obrazu



Krawędzie oryginalnego obrazu

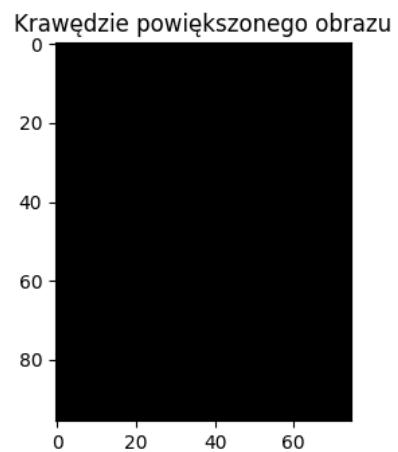
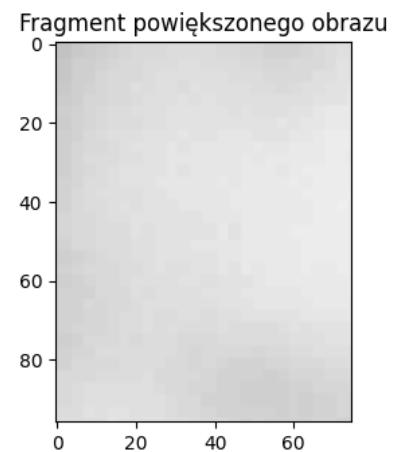
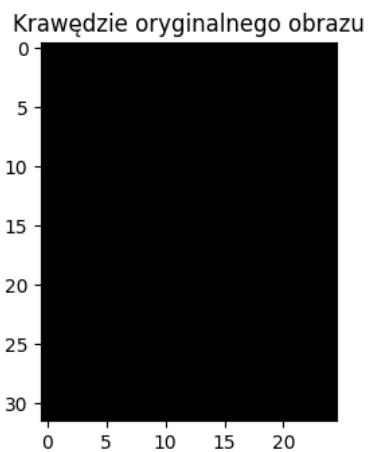
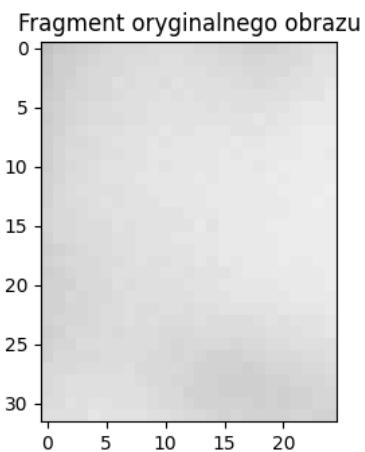


Krawędzie powiększonego obrazu

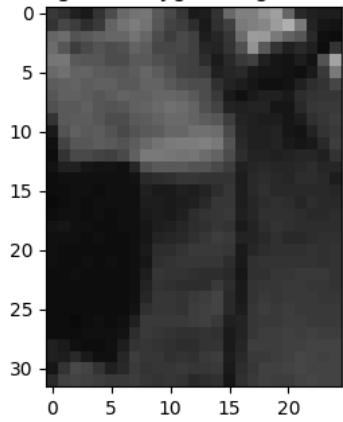


Powiększenie o x3

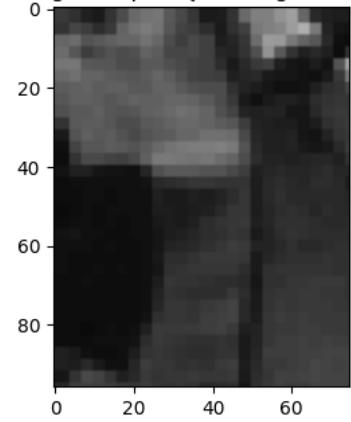
Metoda nearest



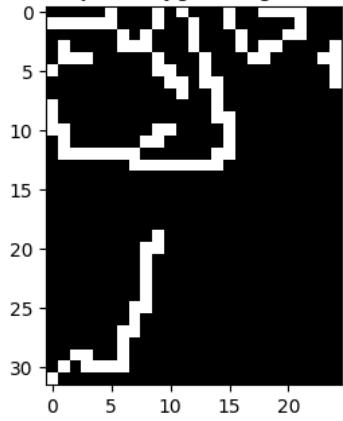
Fragment oryginalnego obrazu



Fragment powiększonego obrazu



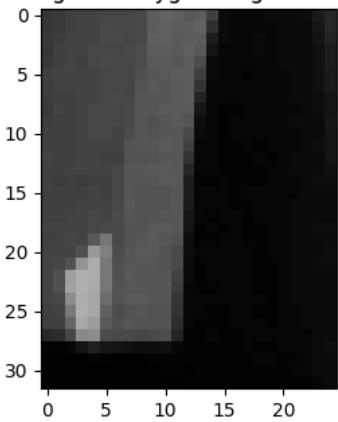
Krawędzie oryginalnego obrazu



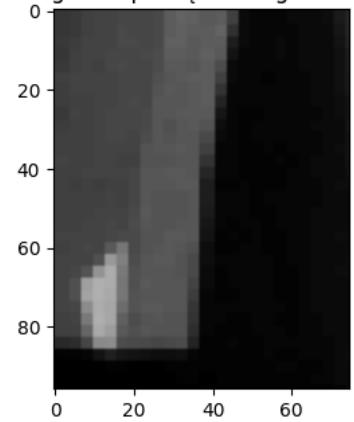
Krawędzie powiększonego obrazu



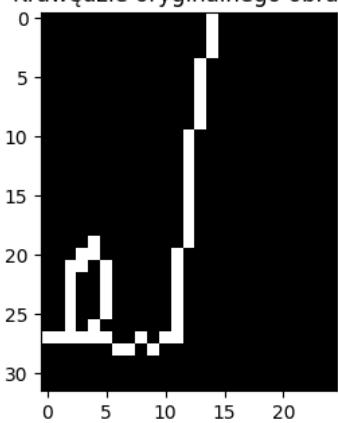
Fragment oryginalnego obrazu



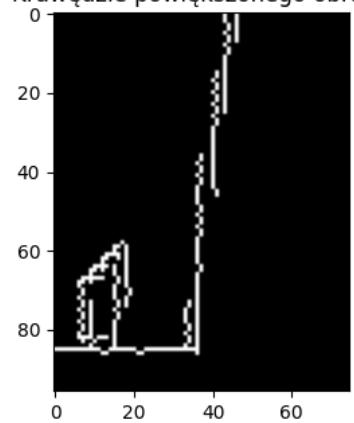
Fragment powiększonego obrazu



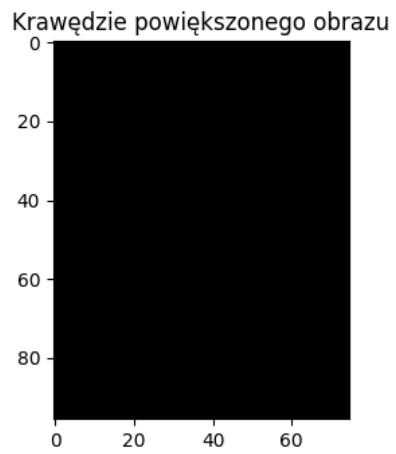
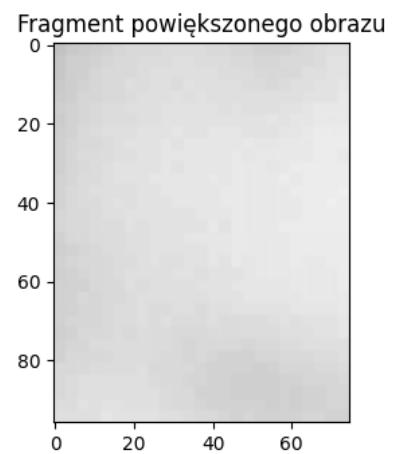
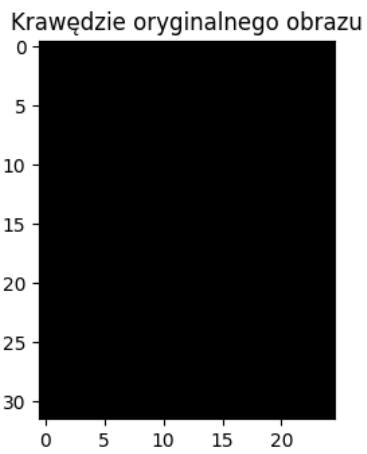
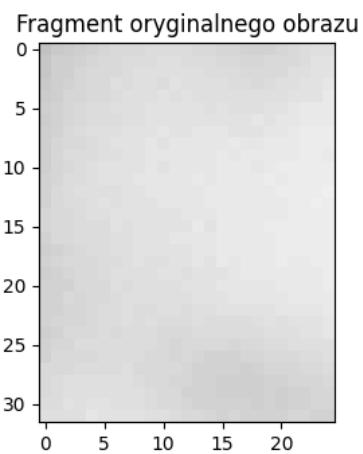
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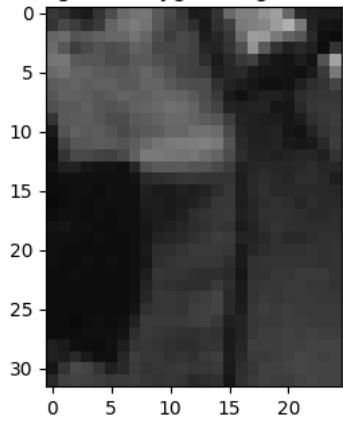
Krawędzie powiększonego obrazu



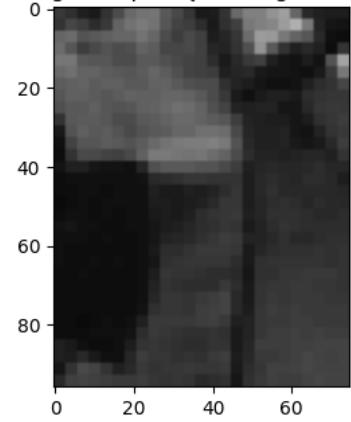
Metoda bilinear



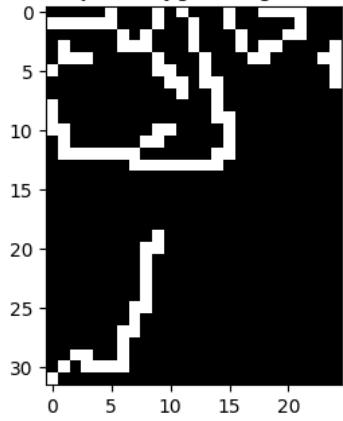
Fragment oryginalnego obrazu



Fragment powiększonego obrazu



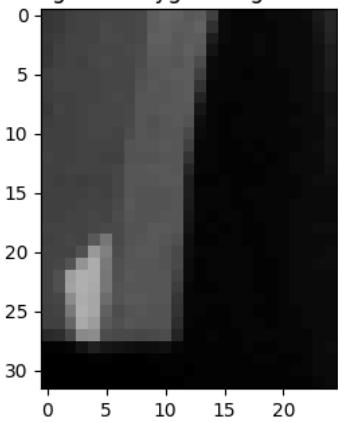
Krawędzie oryginalnego obrazu



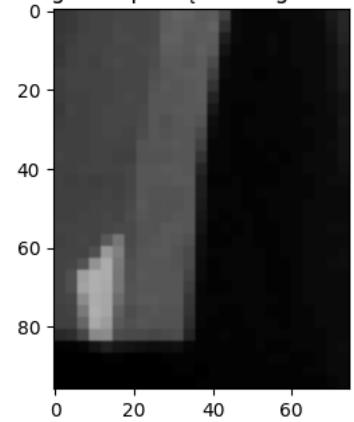
Krawędzie powiększonego obrazu



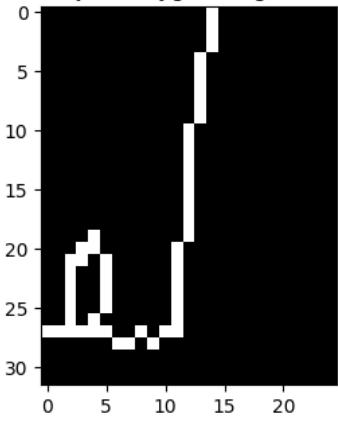
Fragment oryginalnego obrazu



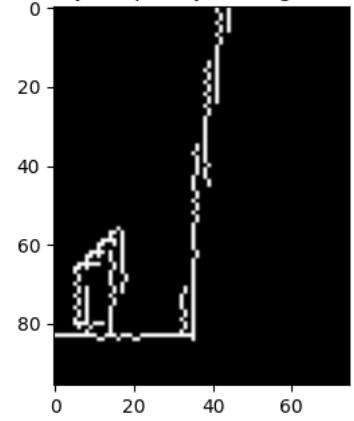
Fragment powiększonego obrazu



Krawędzie oryginalnego obrazu

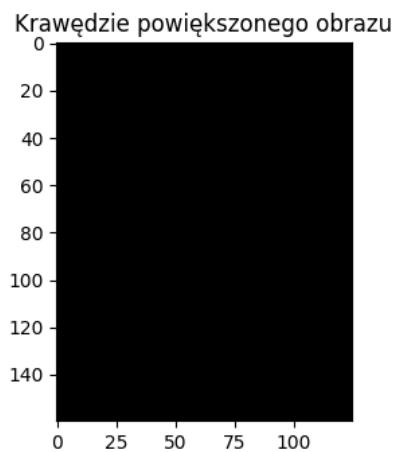
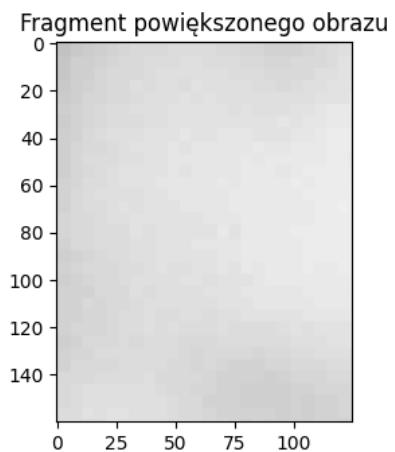
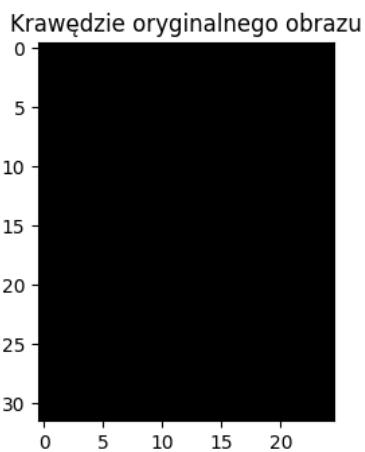
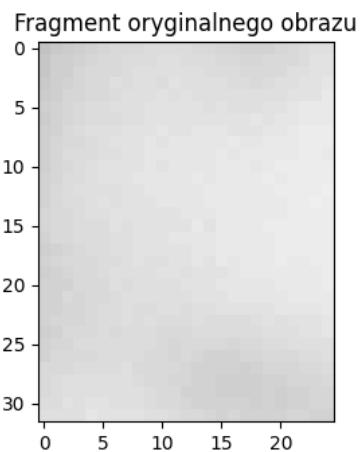


Krawędzie powiększonego obrazu

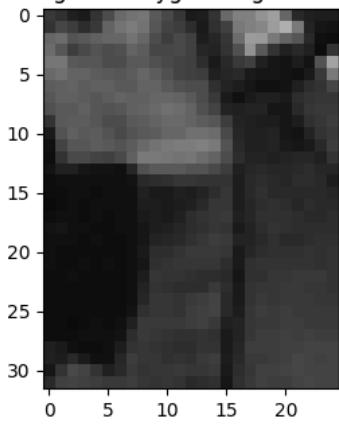


Powiększenie o x5

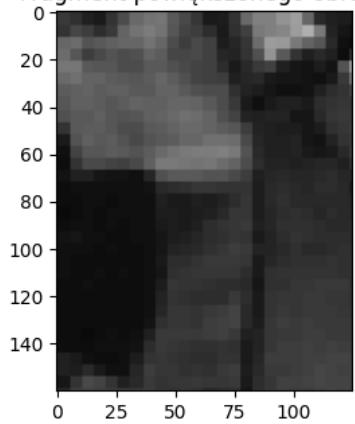
Metoda nearest



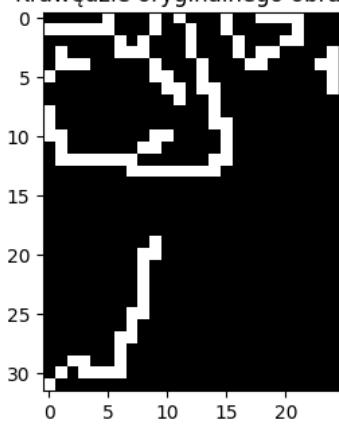
Fragment oryginalnego obrazu



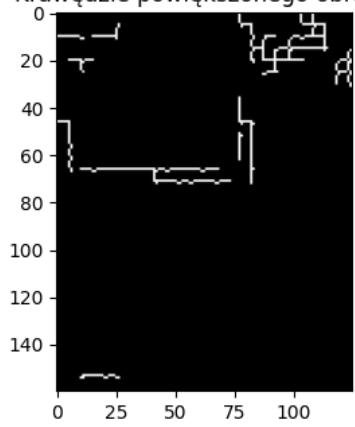
Fragment powiększonego obrazu



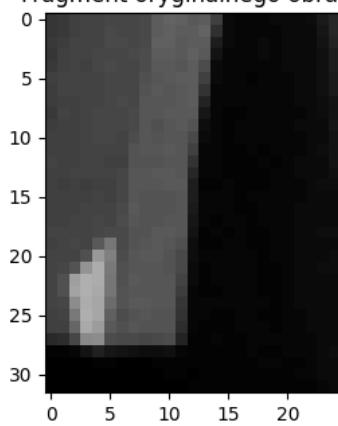
Krawędzie oryginalnego obrazu



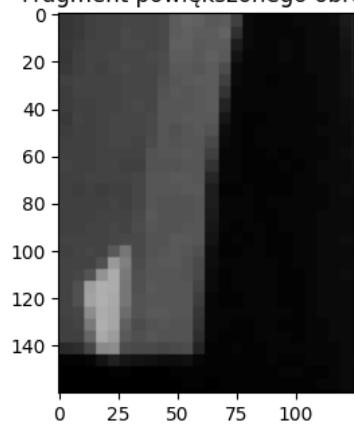
Krawędzie powiększonego obrazu



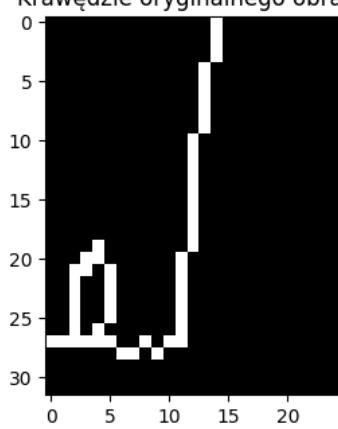
Fragment oryginalnego obrazu



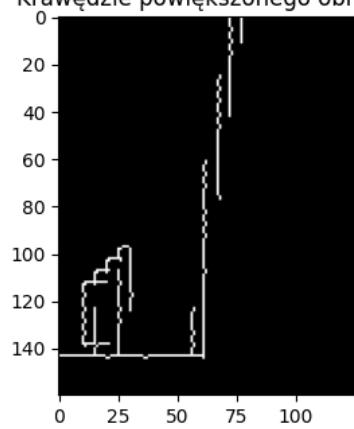
Fragment powiększonego obrazu



Krawędzie oryginalnego obrazu

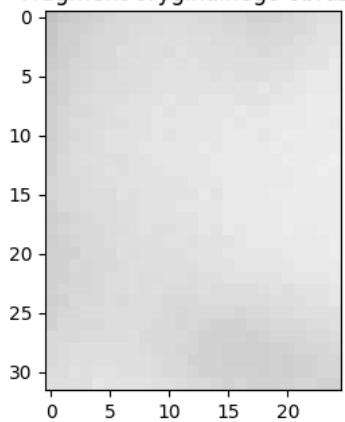


Krawędzie powiększonego obrazu

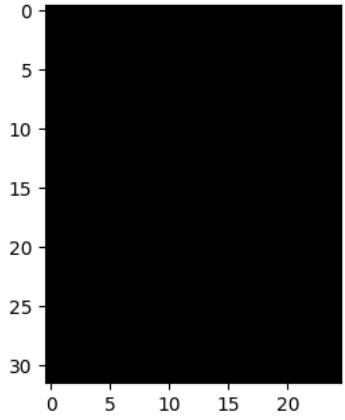


Metoda bilinear

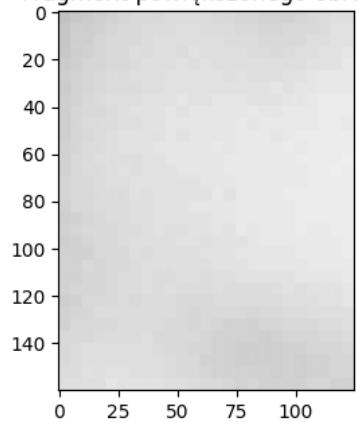
Fragment oryginalnego obrazu



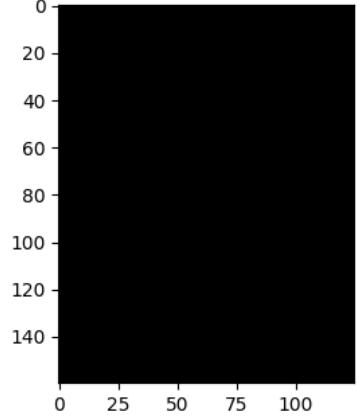
Krawędzie oryginalnego obrazu



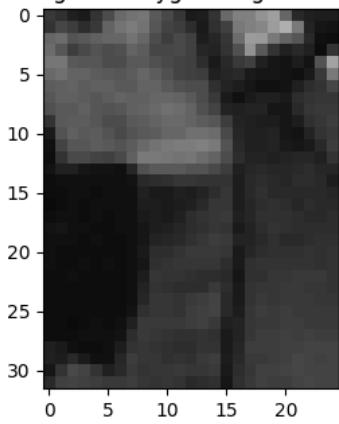
Fragment powiększonego obrazu



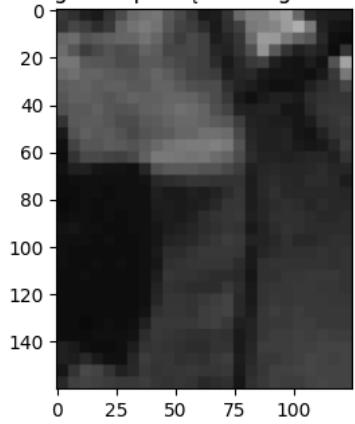
Krawędzie powiększonego obrazu



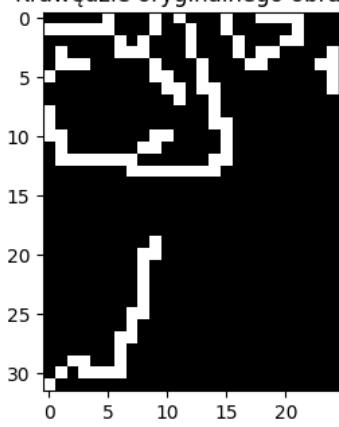
Fragment oryginalnego obrazu



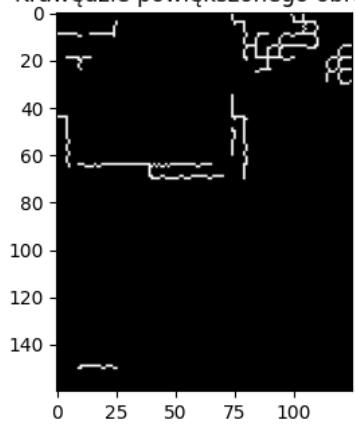
Fragment powiększonego obrazu



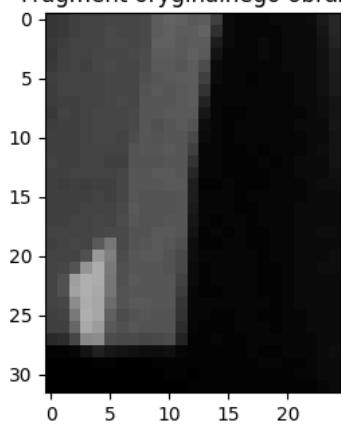
Krawędzie oryginalnego obrazu



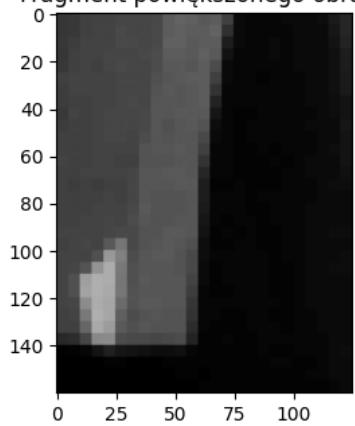
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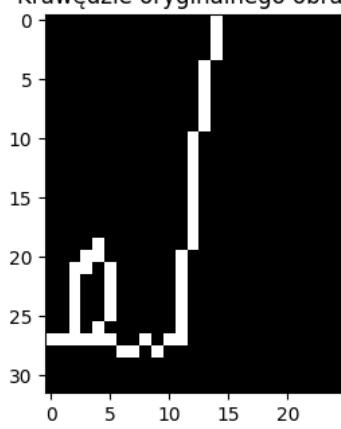
Fragment oryginalnego obrazu



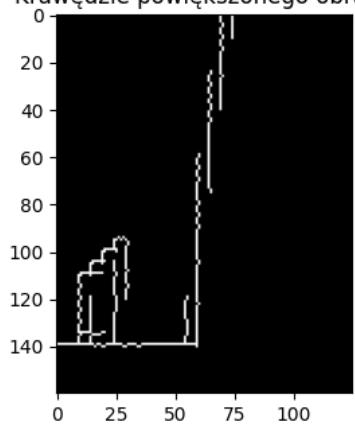
Fragment powiększonego obrazu



Krawędzie oryginalnego obrazu



Krawędzie powiększonego obrazu

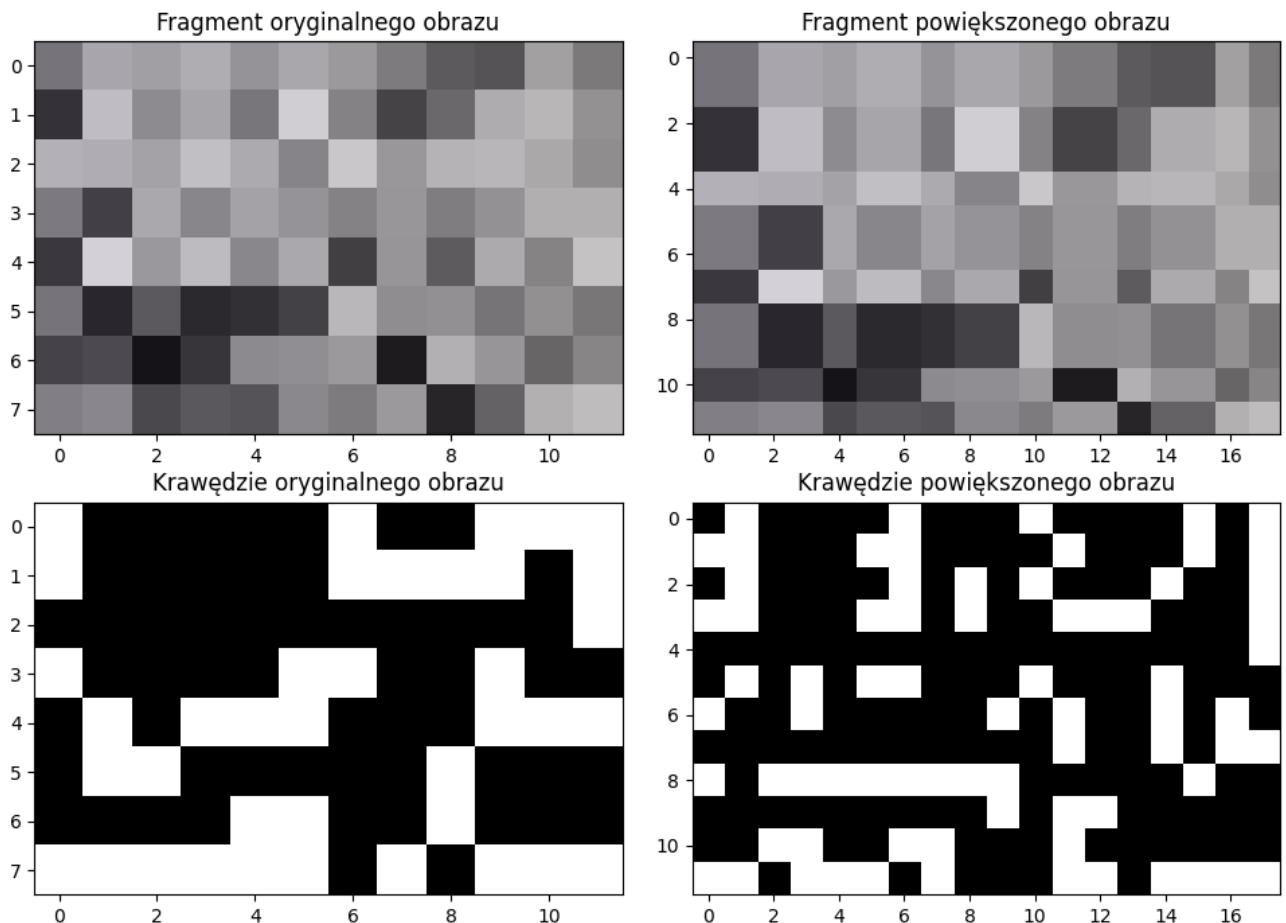


Zdjęcie - IMG_SMALL/SMALL_0010.jpg

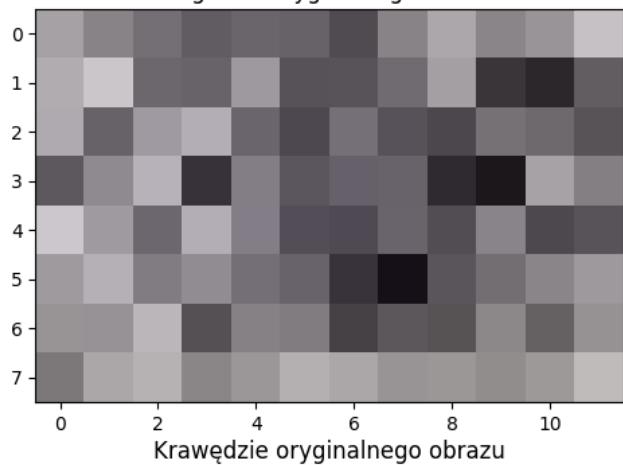


Powiększenie o x1.5

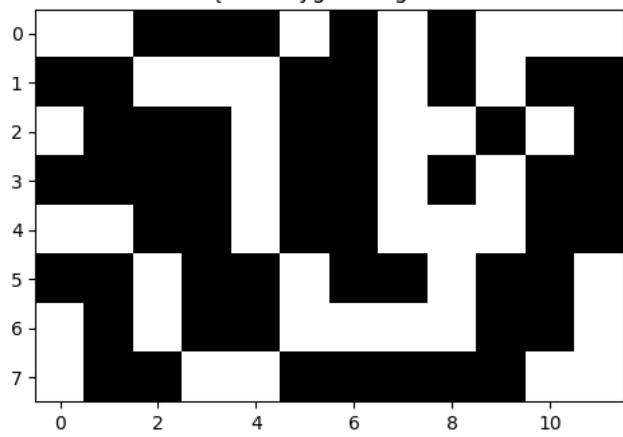
Metoda nearest



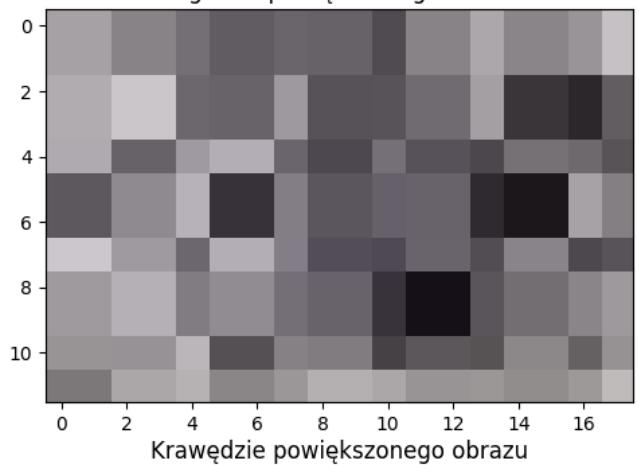
Fragment oryginalnego obrazu



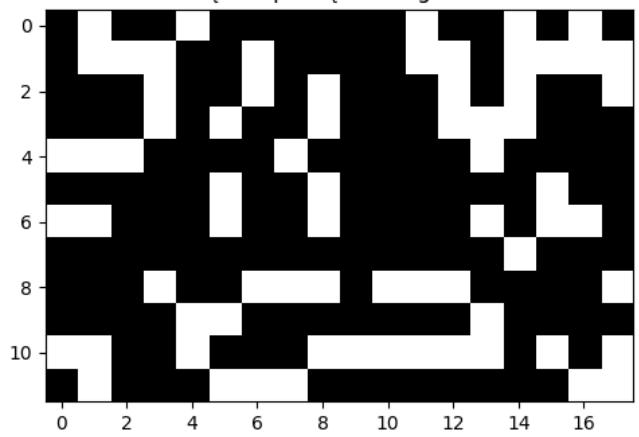
Krawędzie oryginalnego obrazu



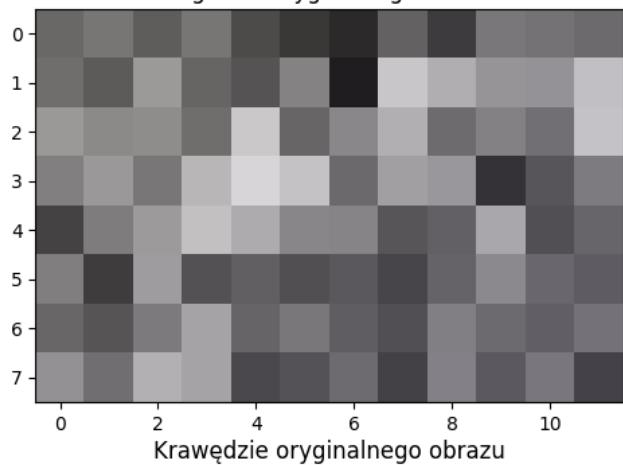
Fragment powiększonego obrazu



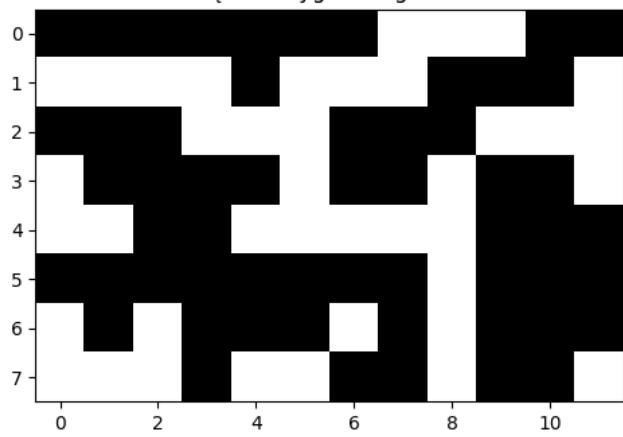
Krawędzie powiększonego obrazu



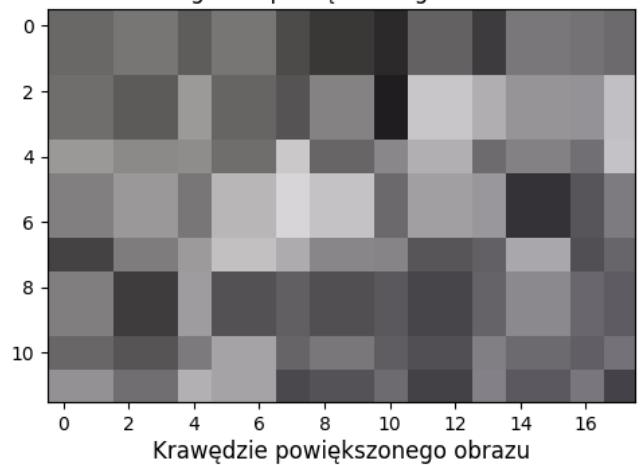
Fragment oryginalnego obrazu



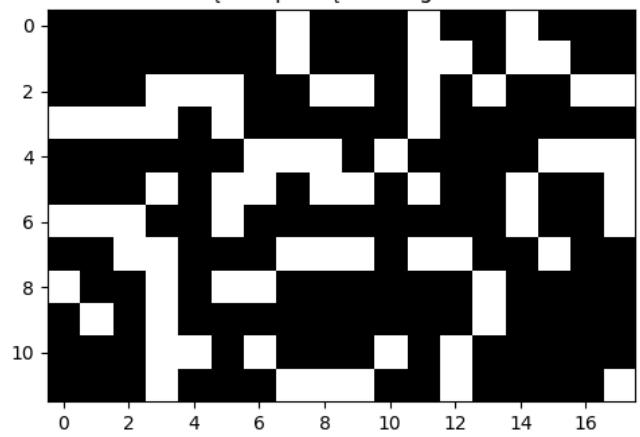
Krawędzie oryginalnego obrazu



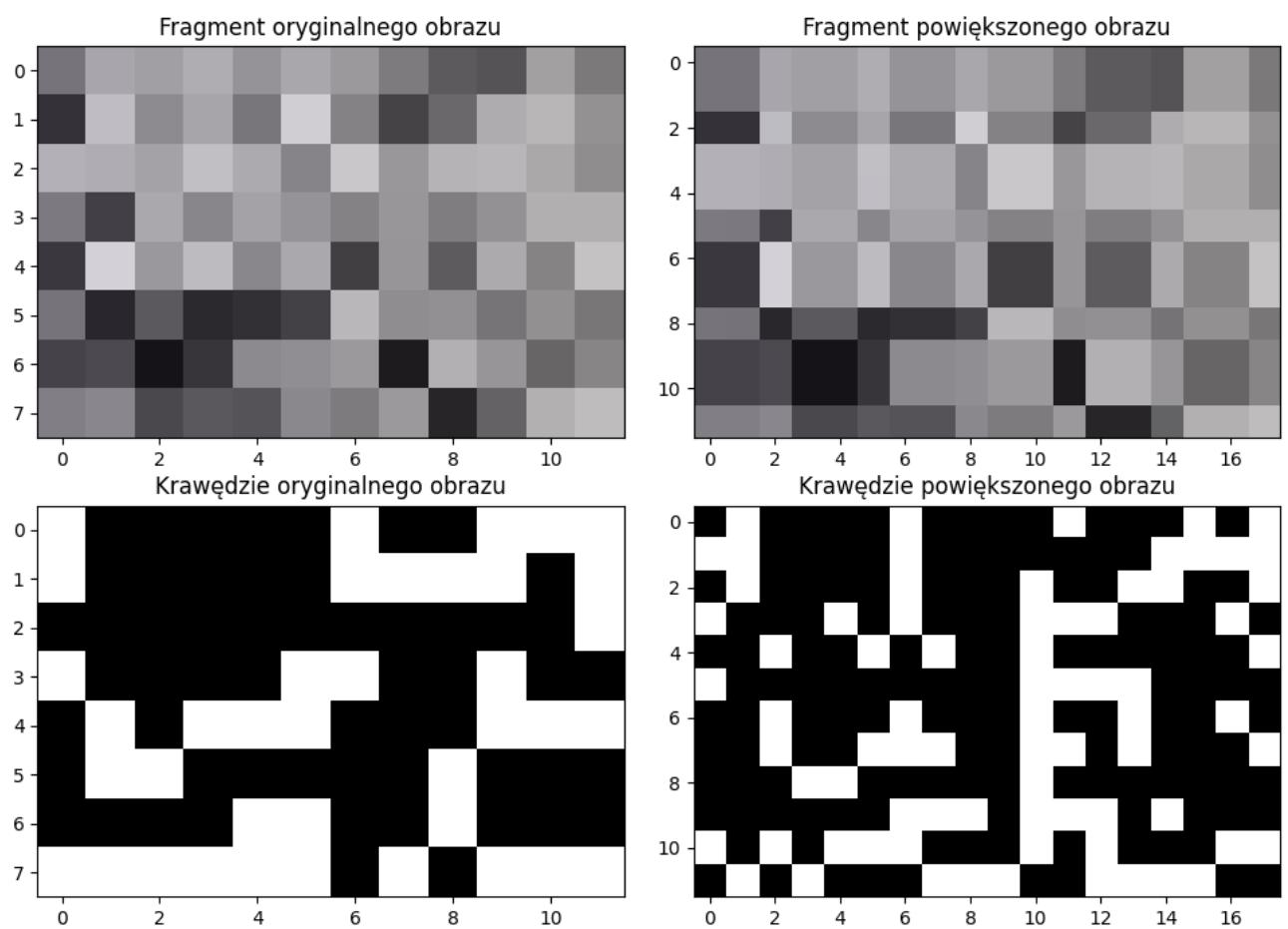
Fragment powiększonego obrazu



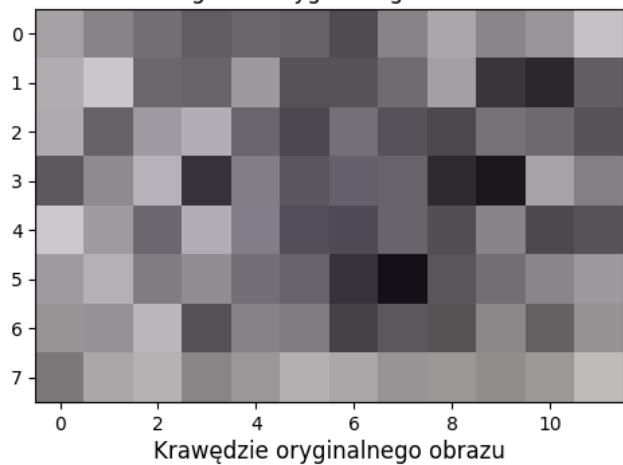
Krawędzie powiększonego obrazu



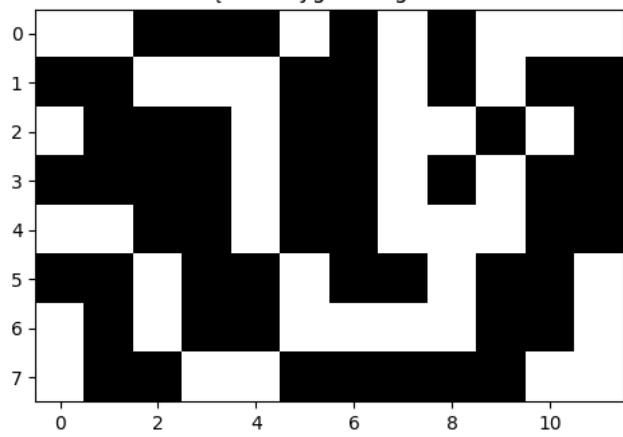
Metoda bilinear



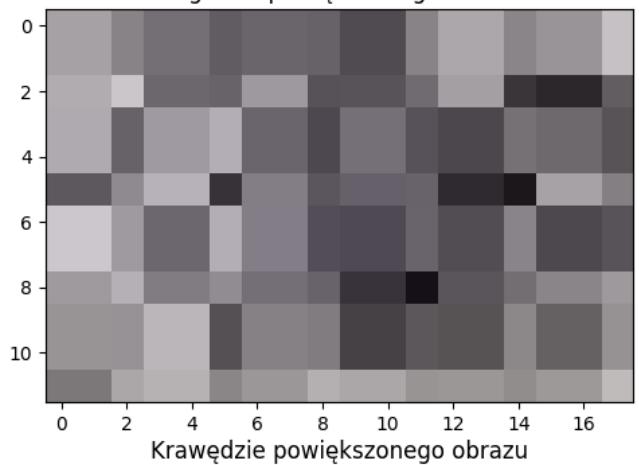
Fragment oryginalnego obrazu



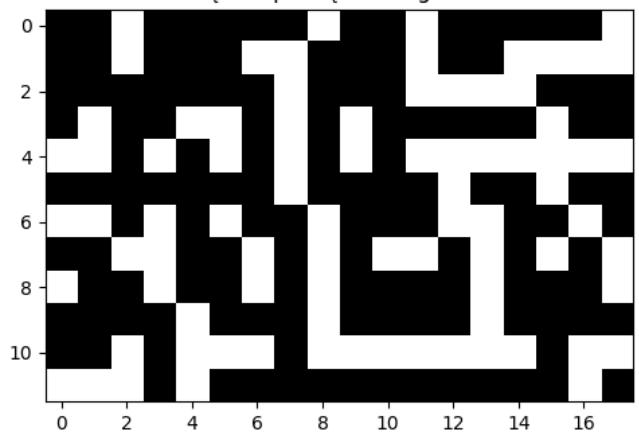
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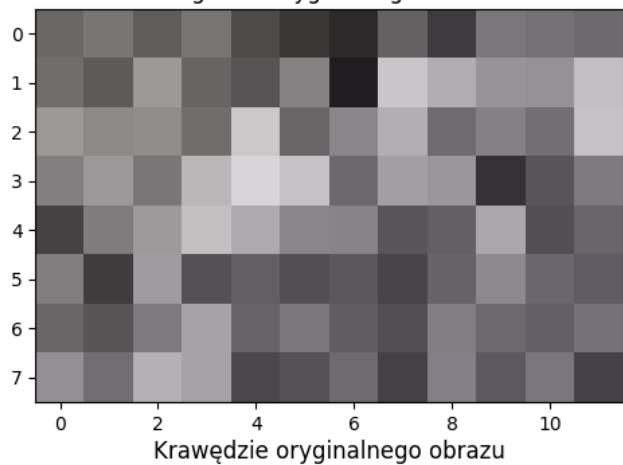
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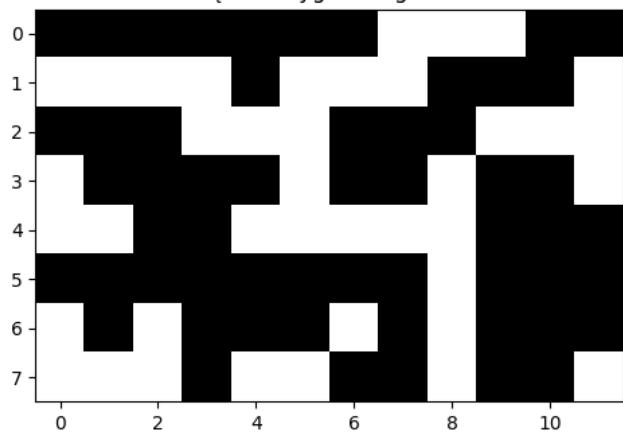
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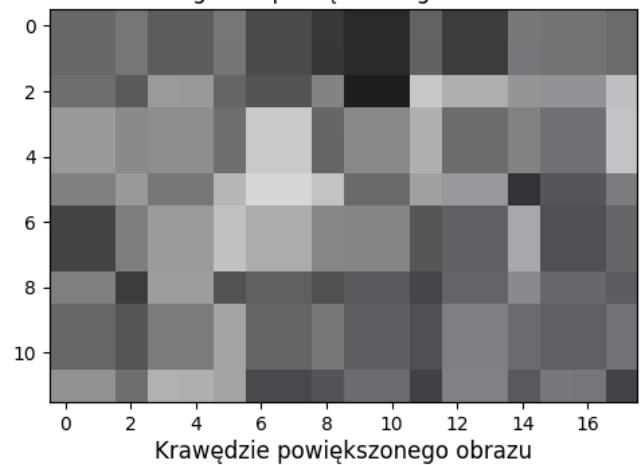
Fragment oryginalnego obrazu



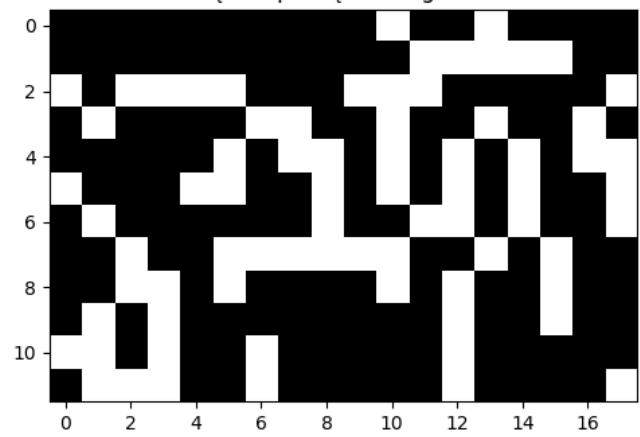
Krawędzie oryginalnego obrazu



Fragment powiększonego obrazu

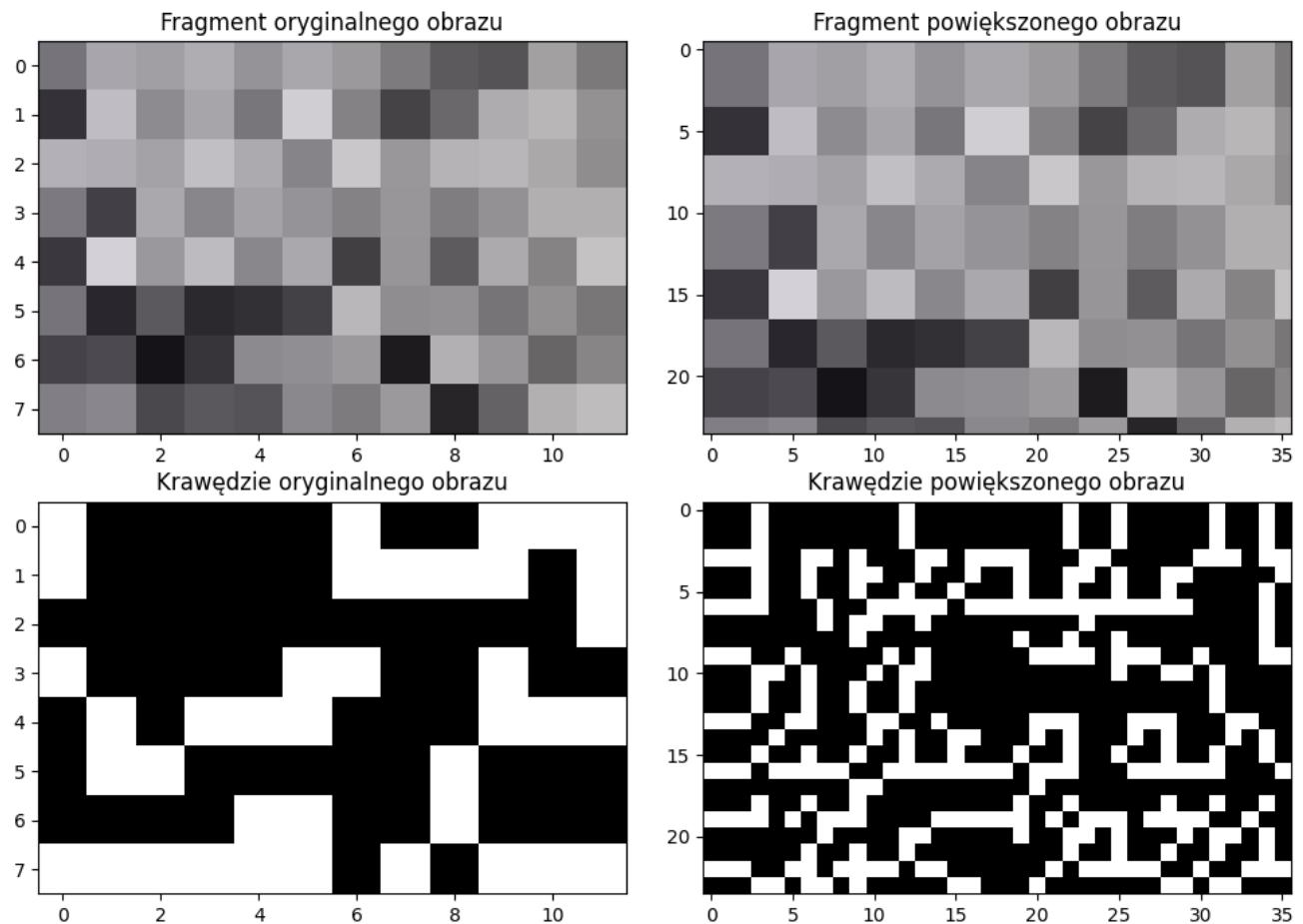


Krawędzie powiększonego obrazu

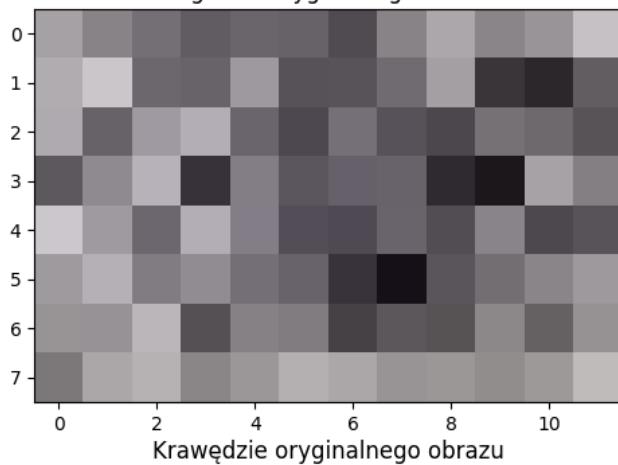


Powiększenie o x3

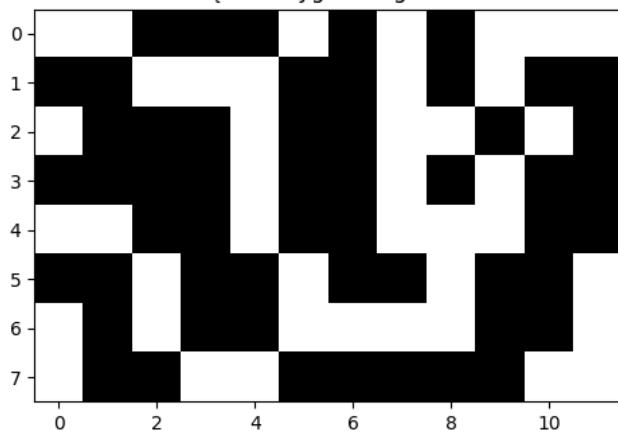
Metoda nearest



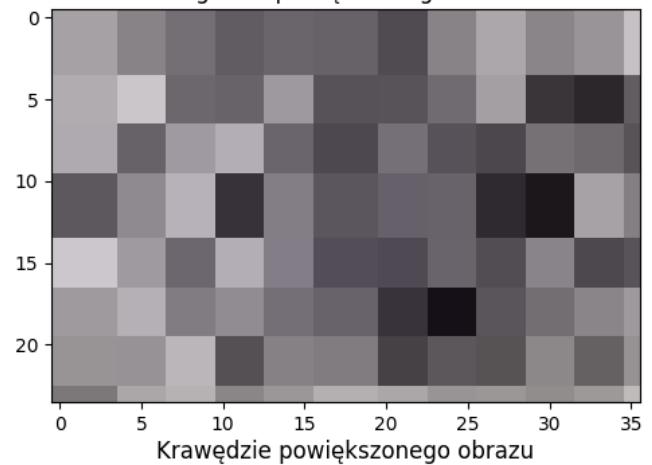
Fragment oryginalnego obrazu



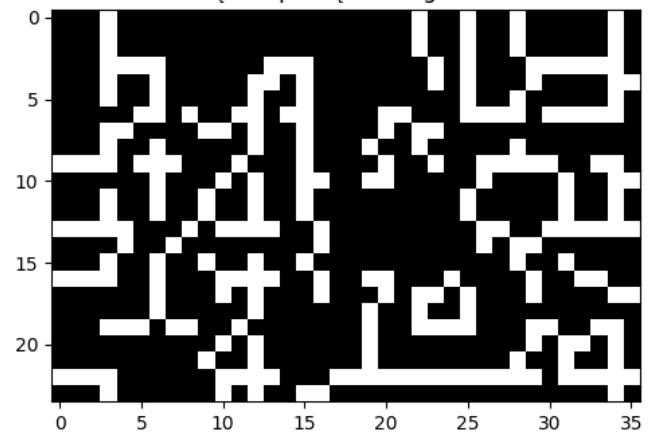
Krawędzie oryginalnego obrazu



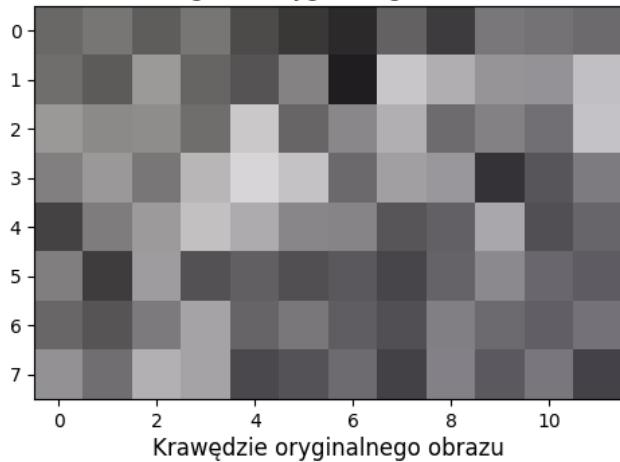
Fragment powiększonego obrazu



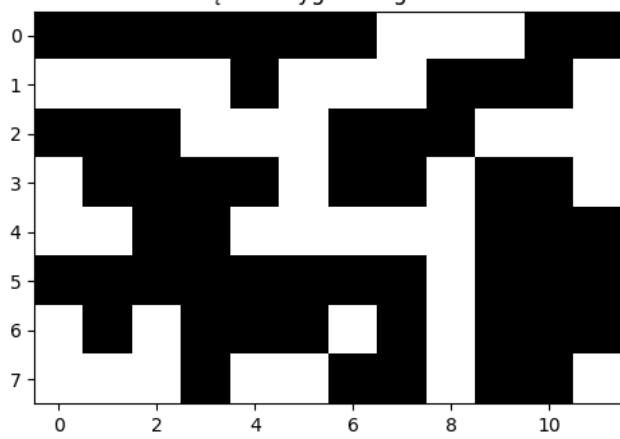
Krawędzie powiększonego obrazu



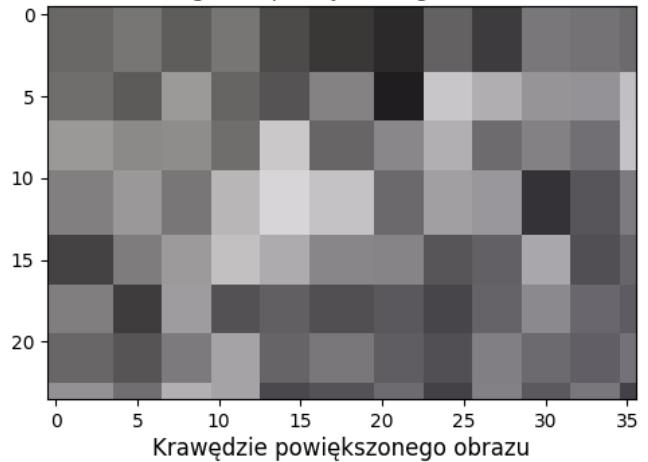
Fragment oryginalnego obrazu



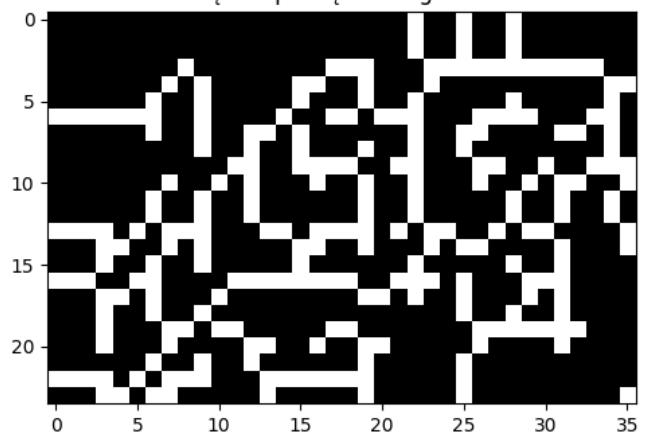
Krawędzie oryginalnego obrazu



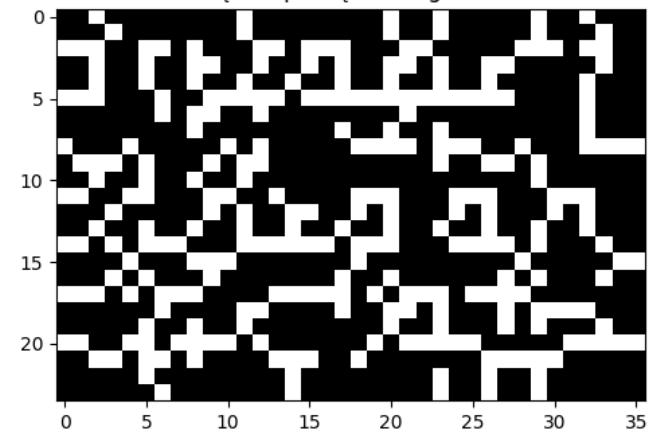
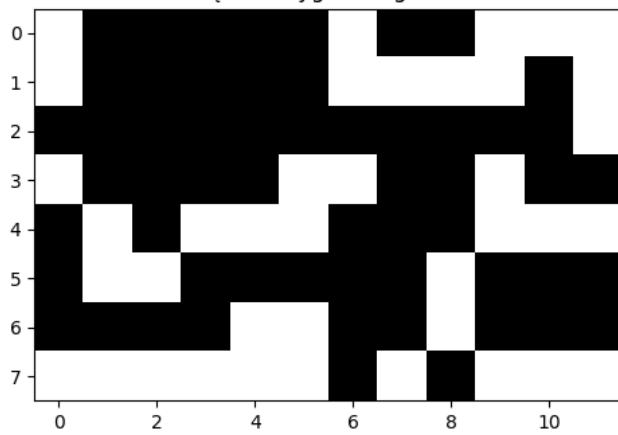
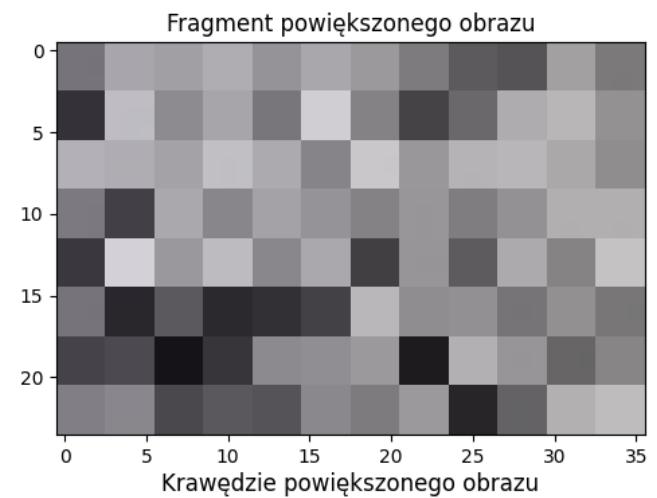
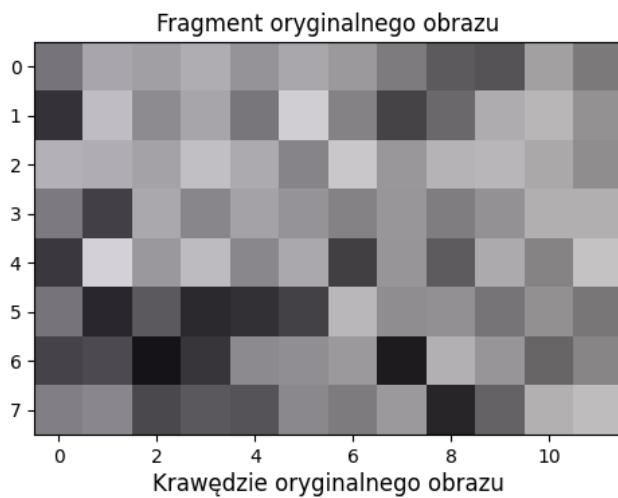
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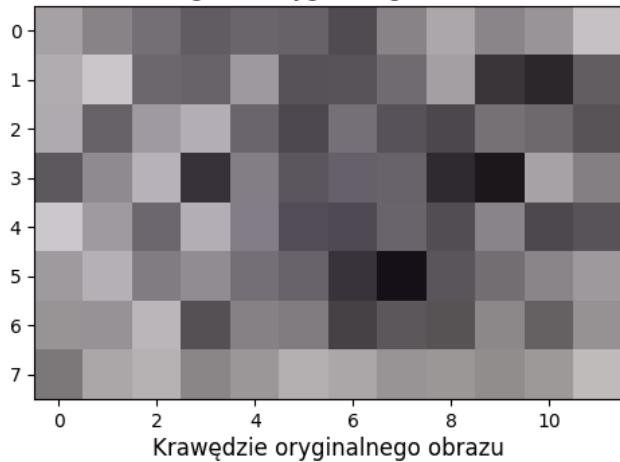
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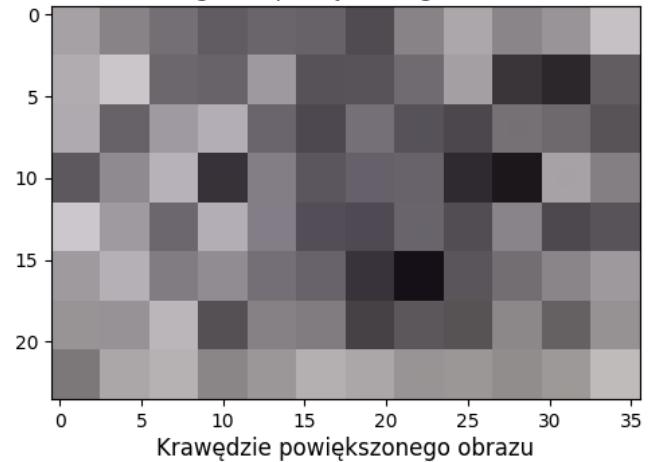
Metoda bilinear



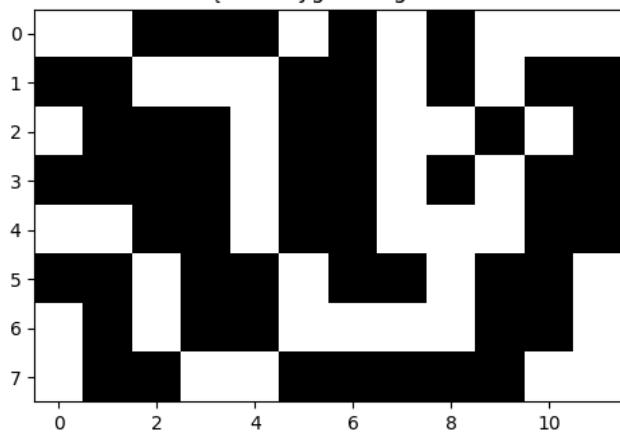
Fragment oryginalnego obrazu



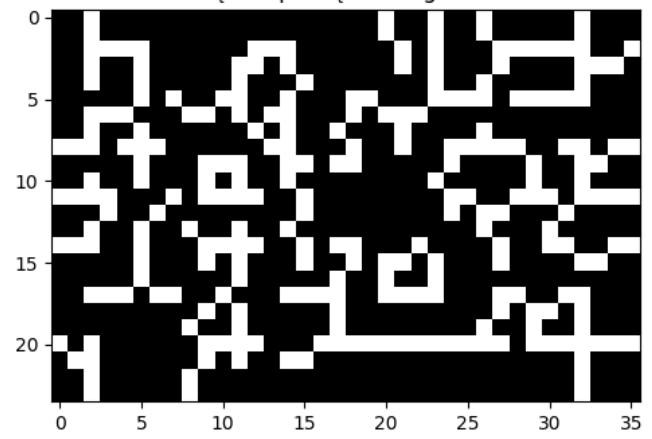
Fragment powiększonego obrazu



Krawędzie oryginalnego obrazu



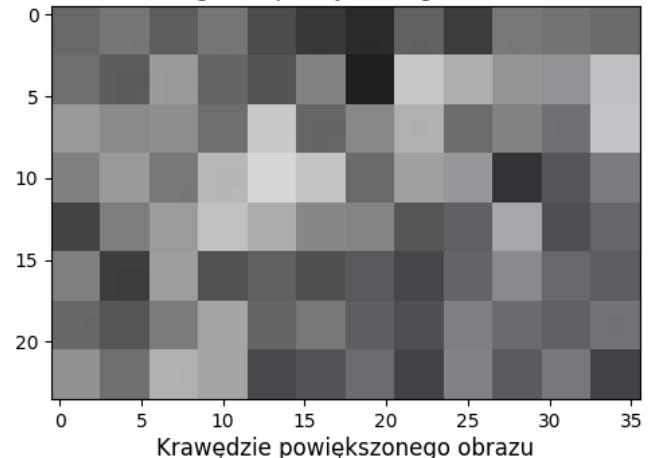
Krawędzie powiększonego obrazu



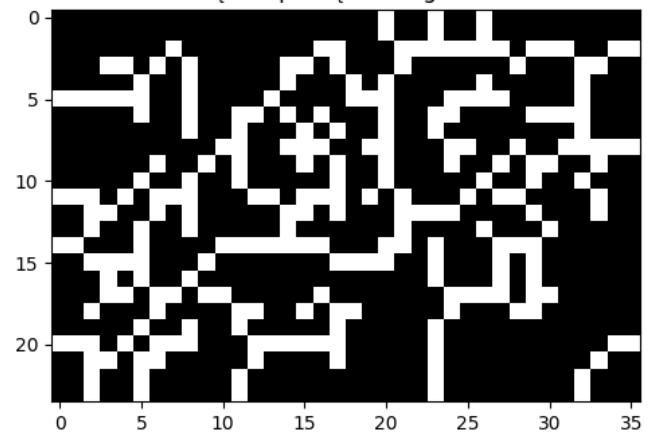
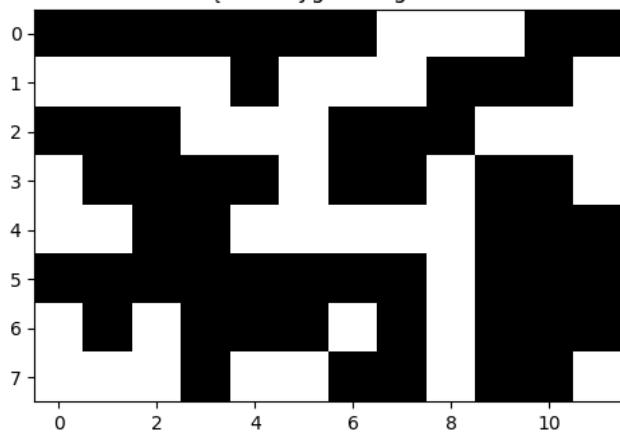
Fragment oryginalnego obrazu



Fragment powiększonego obrazu

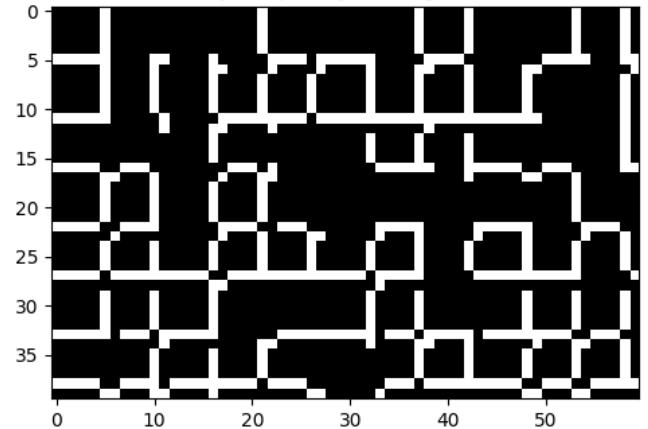
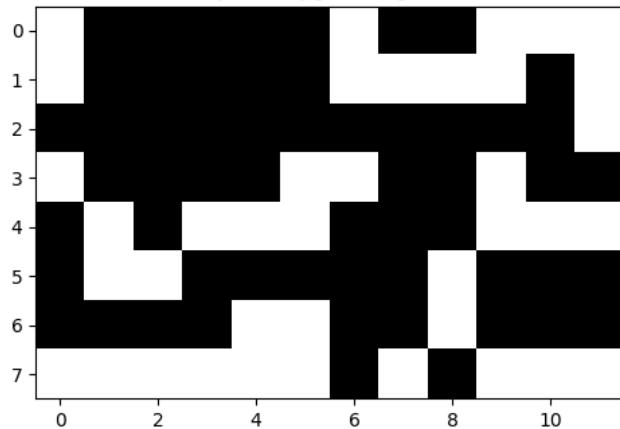
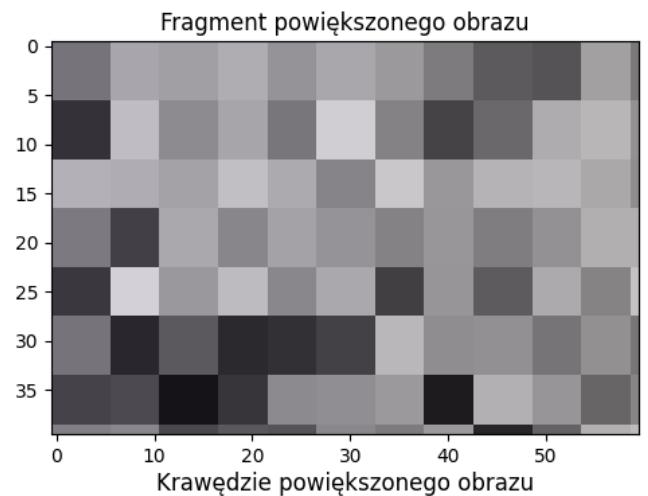
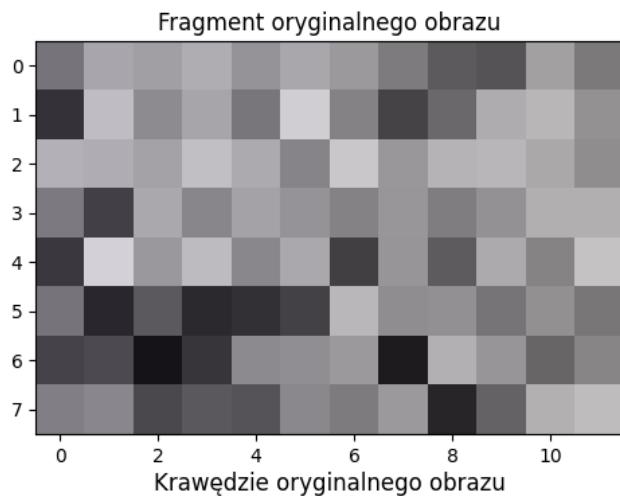


Krawędzie oryginalnego obrazu

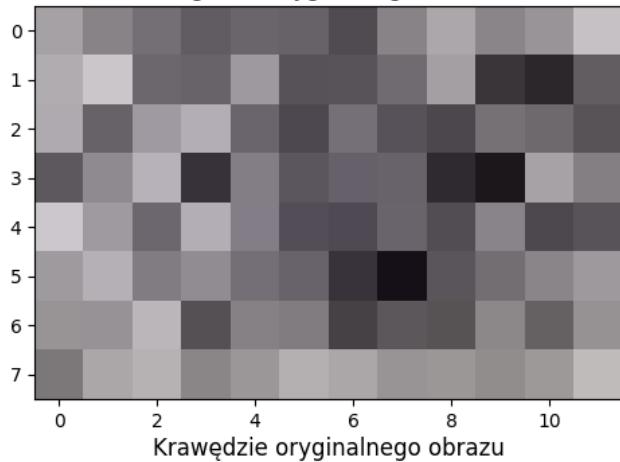


Powiększenie o x5

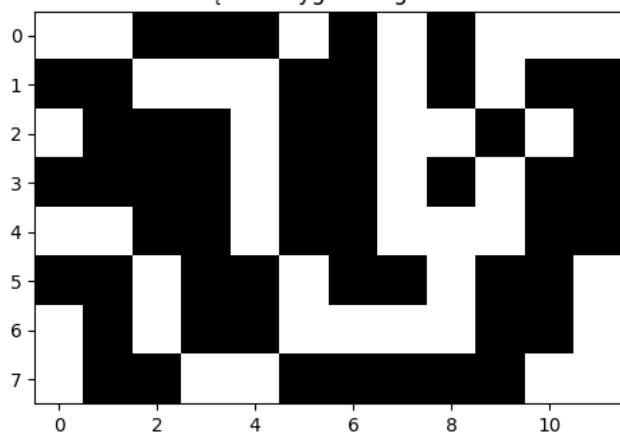
Metoda nearest



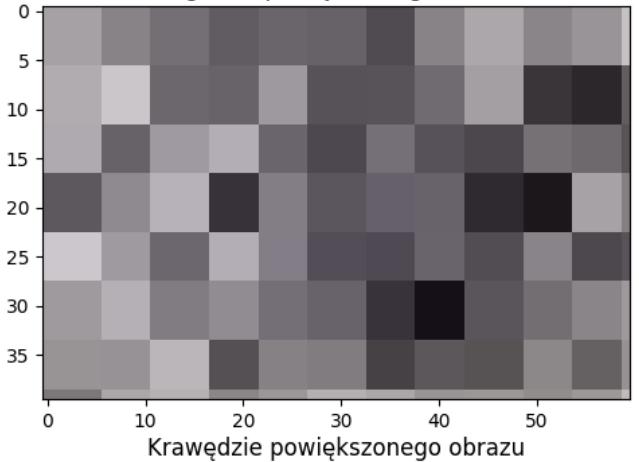
Fragment oryginalnego obrazu



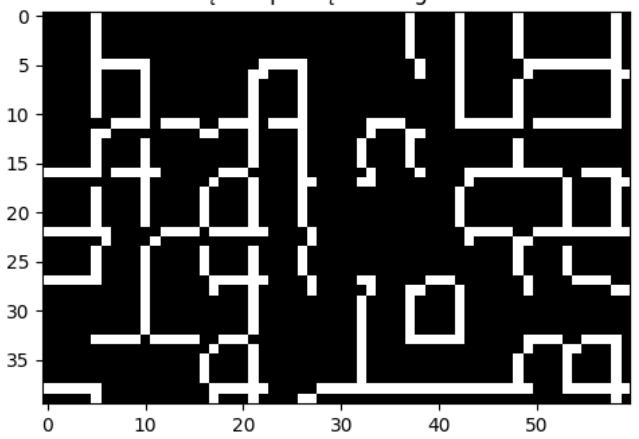
Krawędzie oryginalnego obrazu



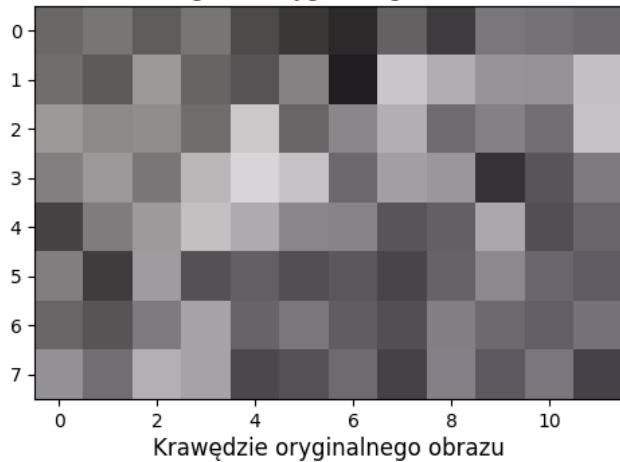
Fragment powiększonego obrazu



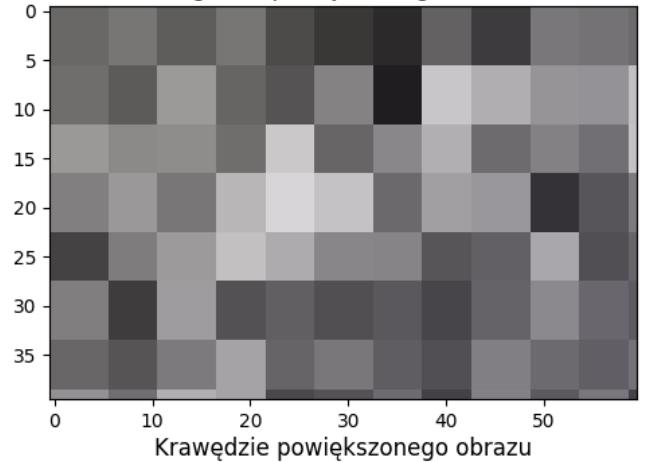
Krawędzie powiększonego obrazu



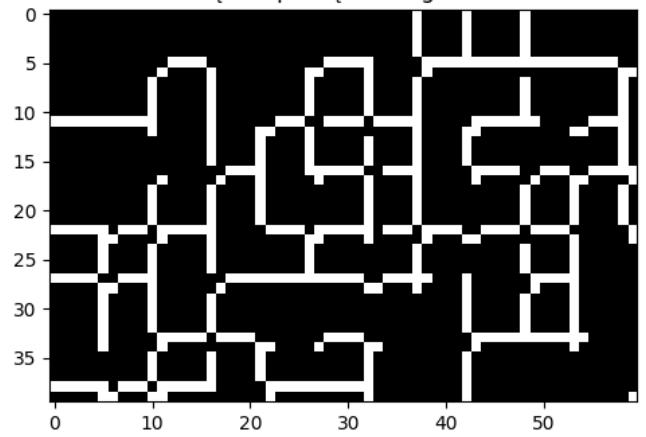
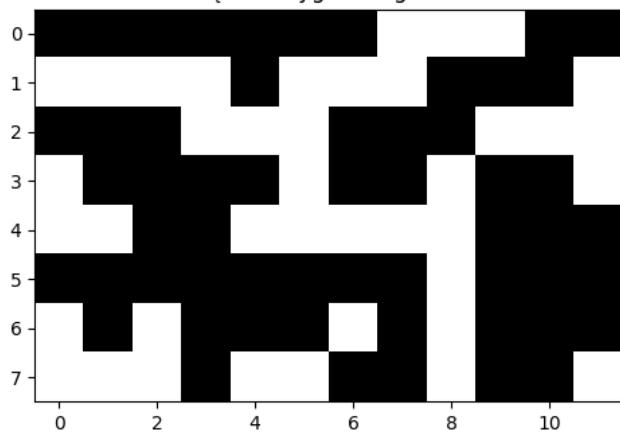
Fragment oryginalnego obrazu



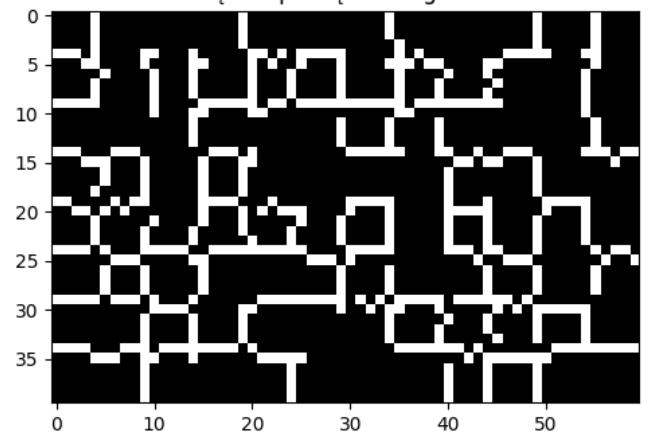
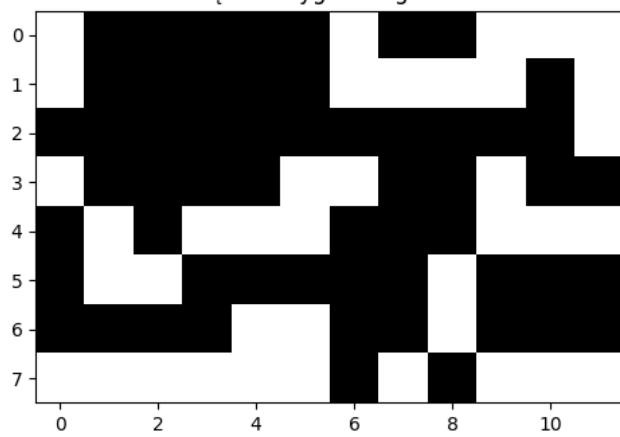
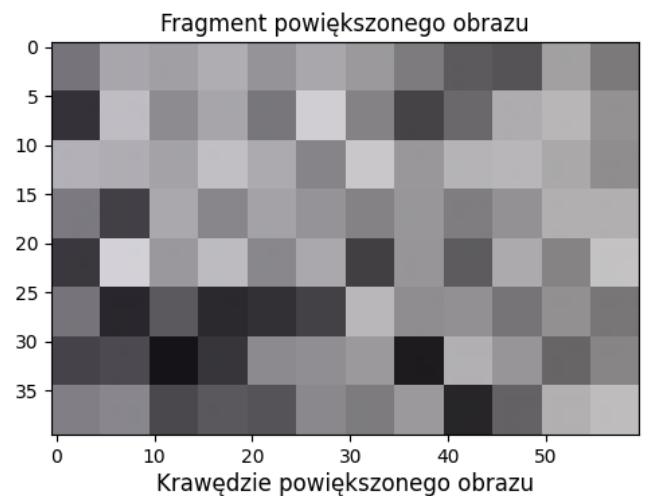
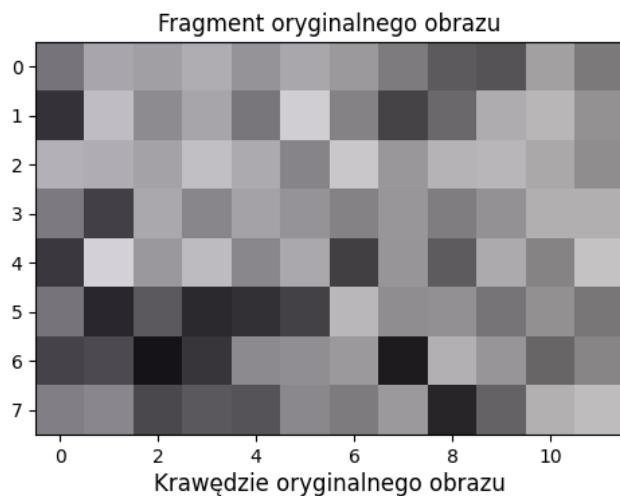
Fragment powiększonego obrazu



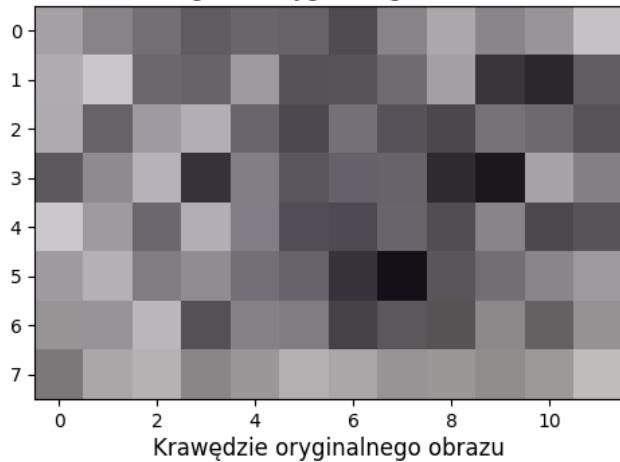
Krawędzie oryginalnego obrazu



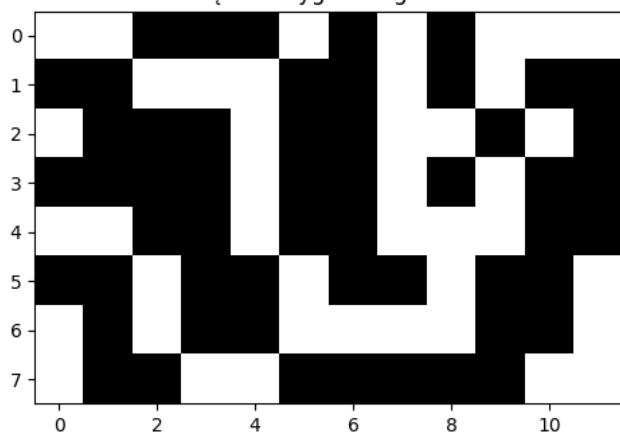
Metoda bilinear



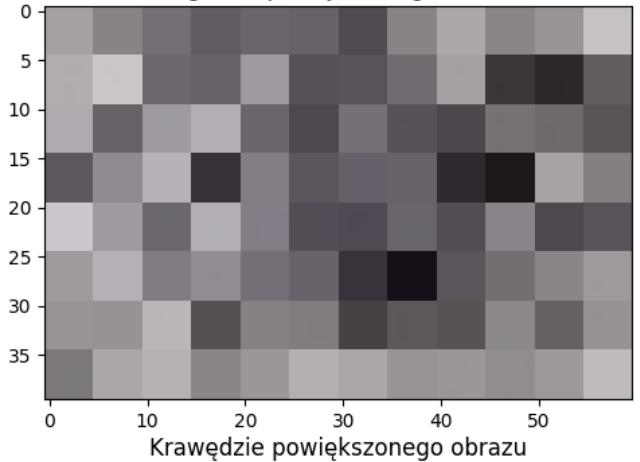
Fragment oryginalnego obrazu



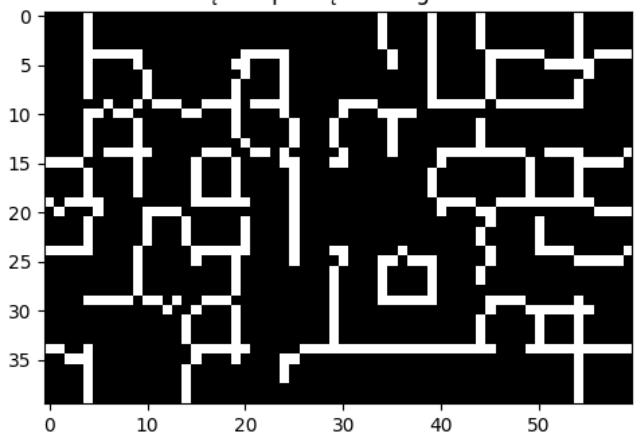
Krawędzie oryginalnego obrazu

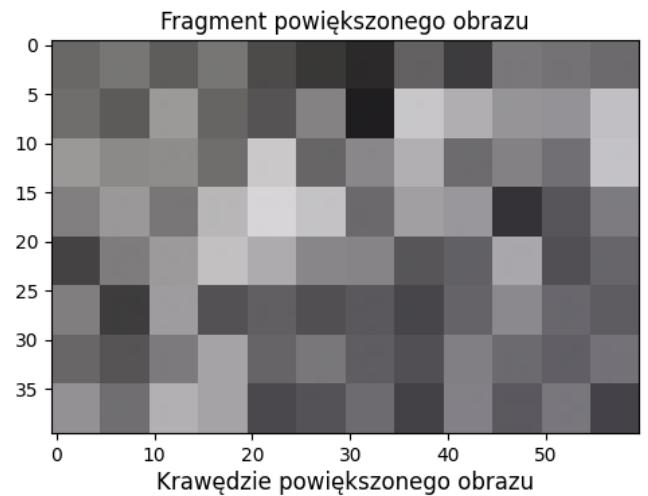
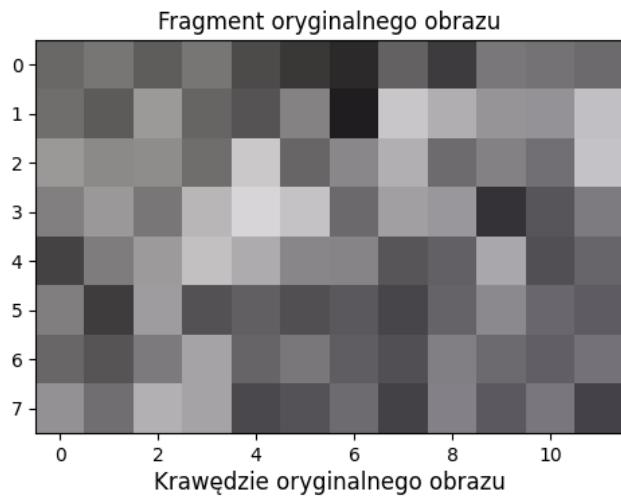


Fragment powiększonego obrazu



Krawędzie powiększonego obrazu



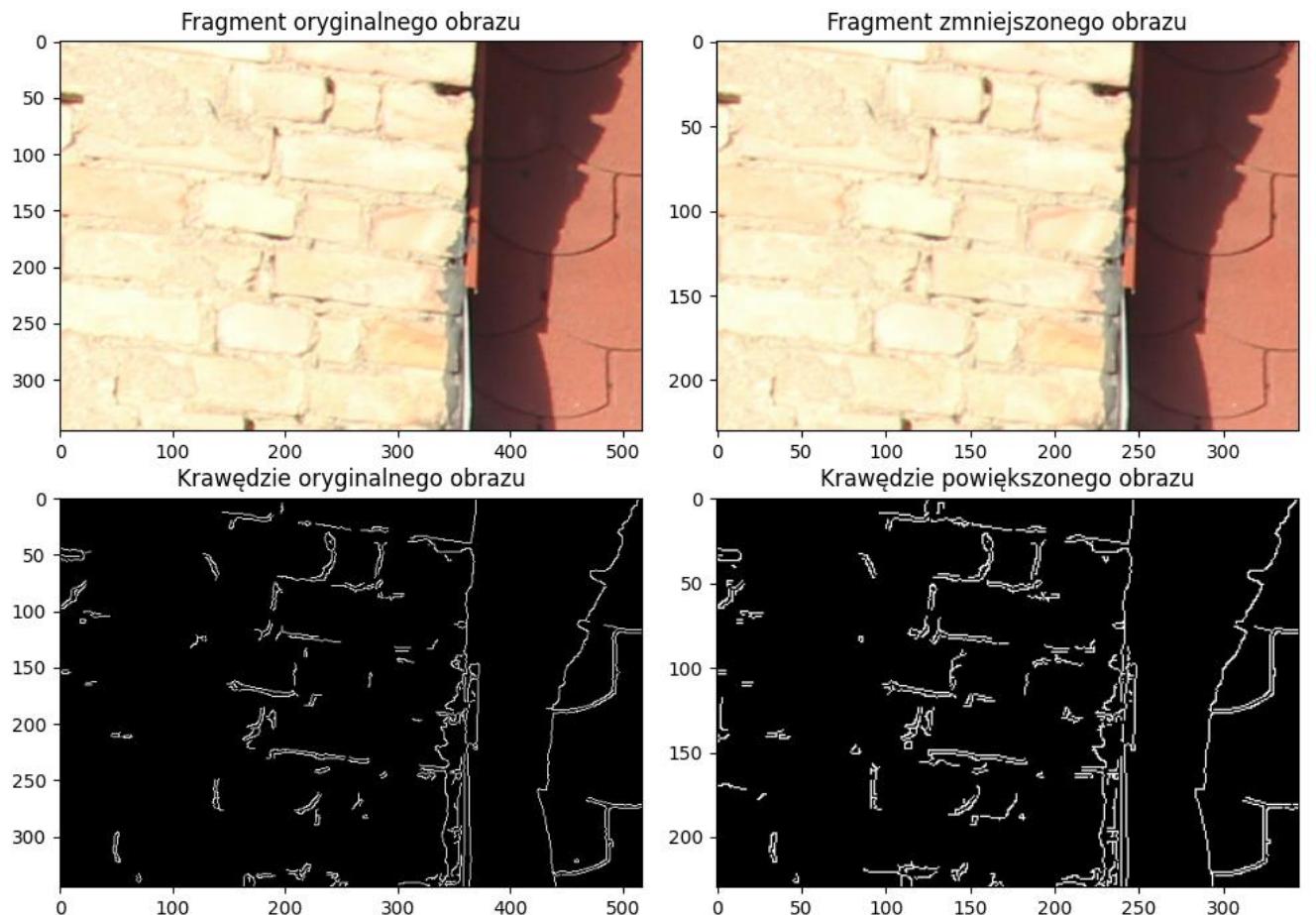


Zdjęcie - IMG_BIG/BIG_0001.jpg



Pomniejszenie o x1.5

Metoda mean



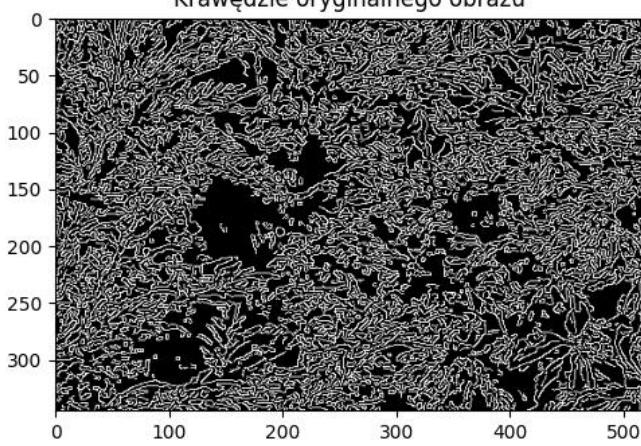
Fragment oryginalnego obrazu



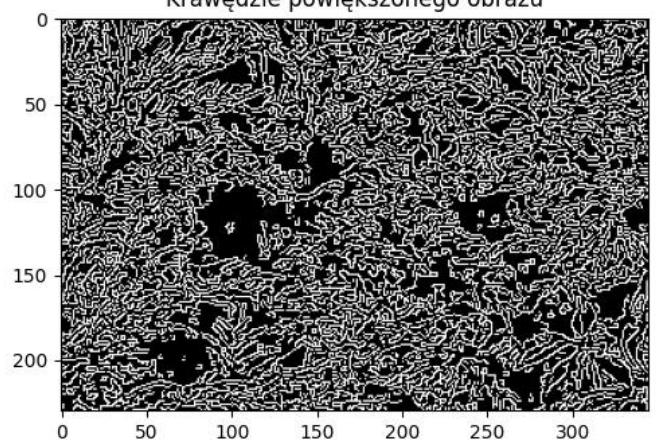
Fragment zmniejszonego obrazu



Krawędzie oryginalnego obrazu



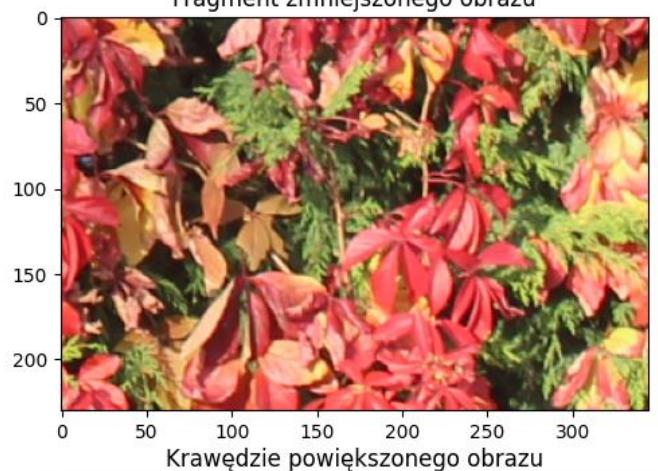
Krawędzie powiększonego obrazu



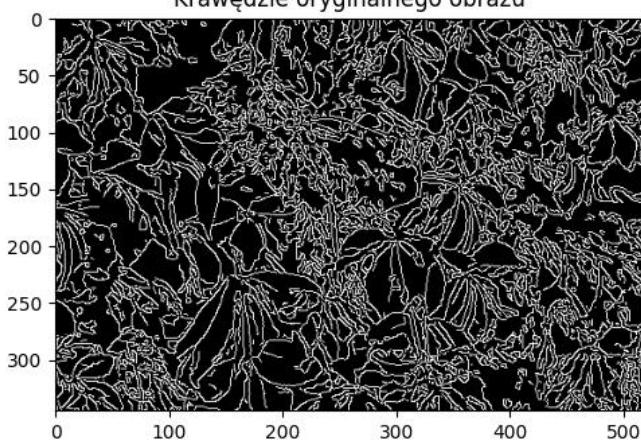
Fragment oryginalnego obrazu



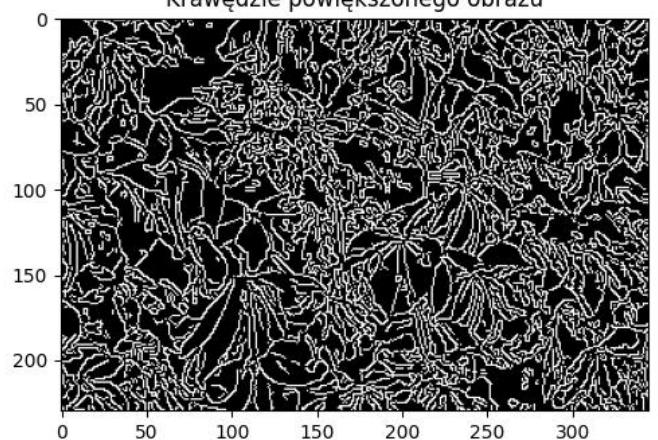
Fragment zmniejszonego obrazu



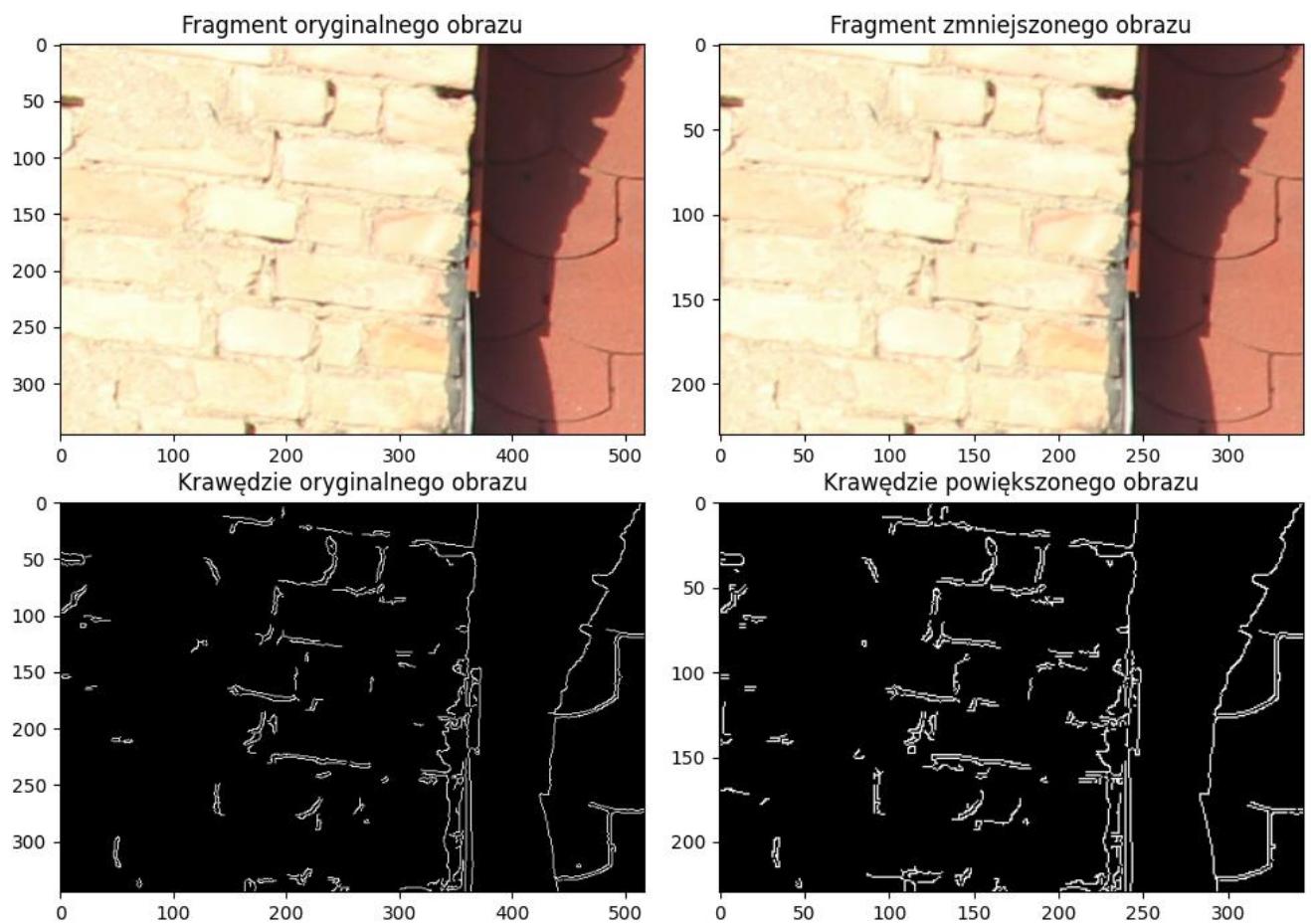
Krawędzie oryginalnego obrazu

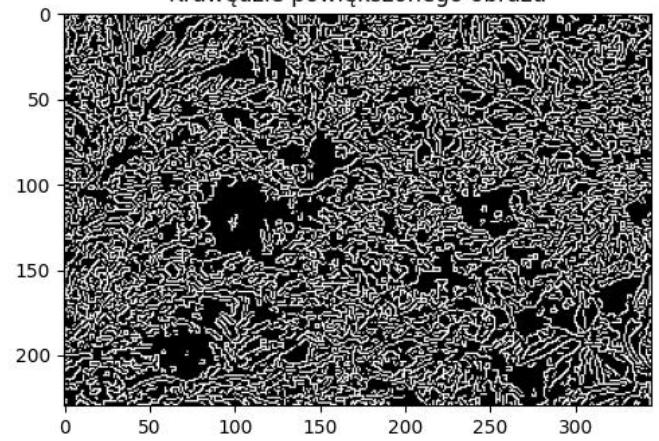
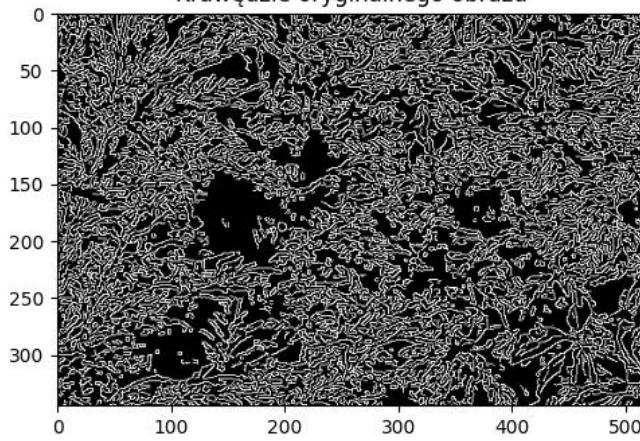
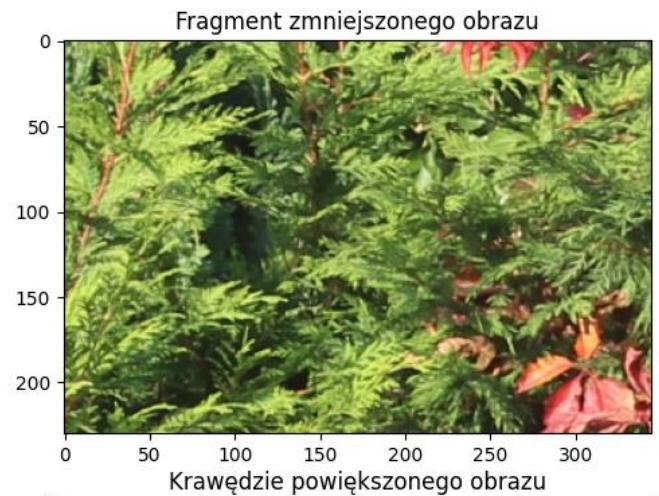


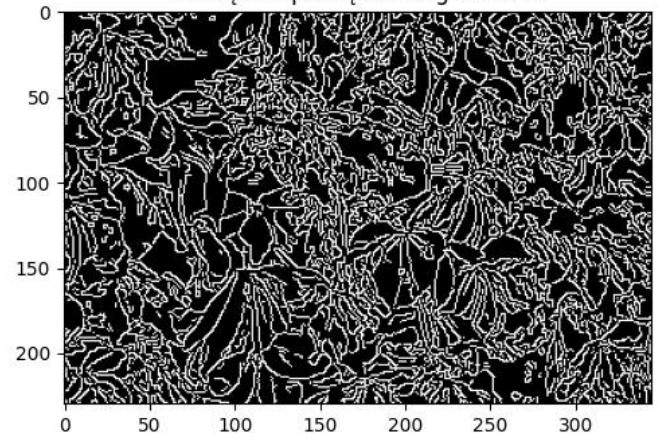
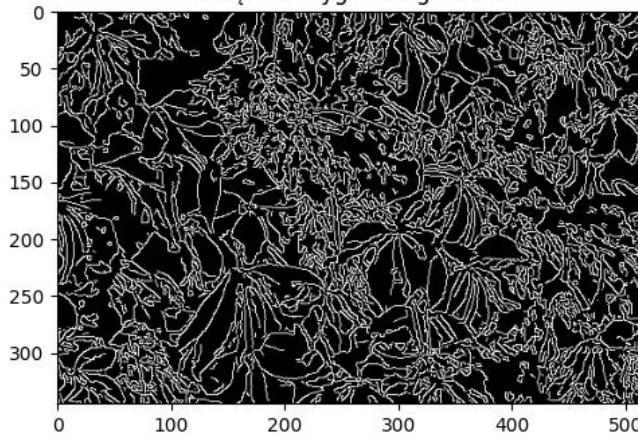
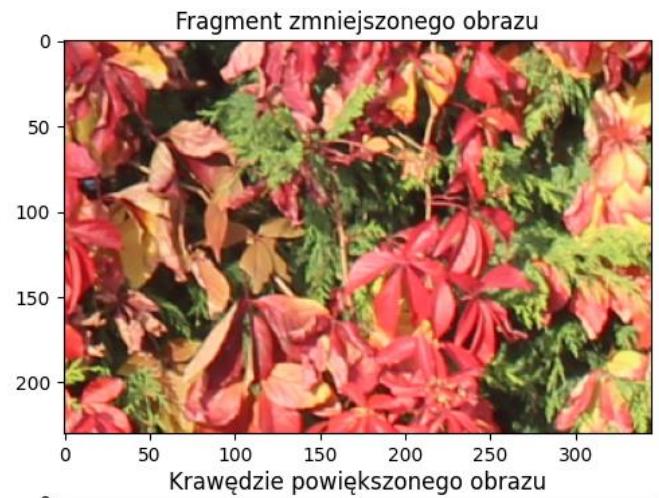
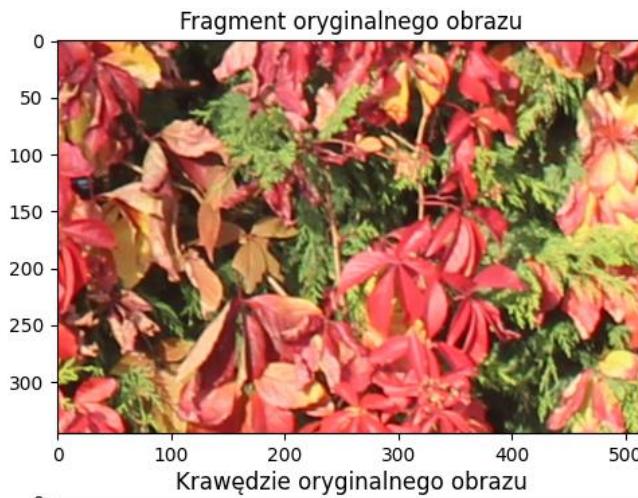
Krawędzie powiększonego obrazu



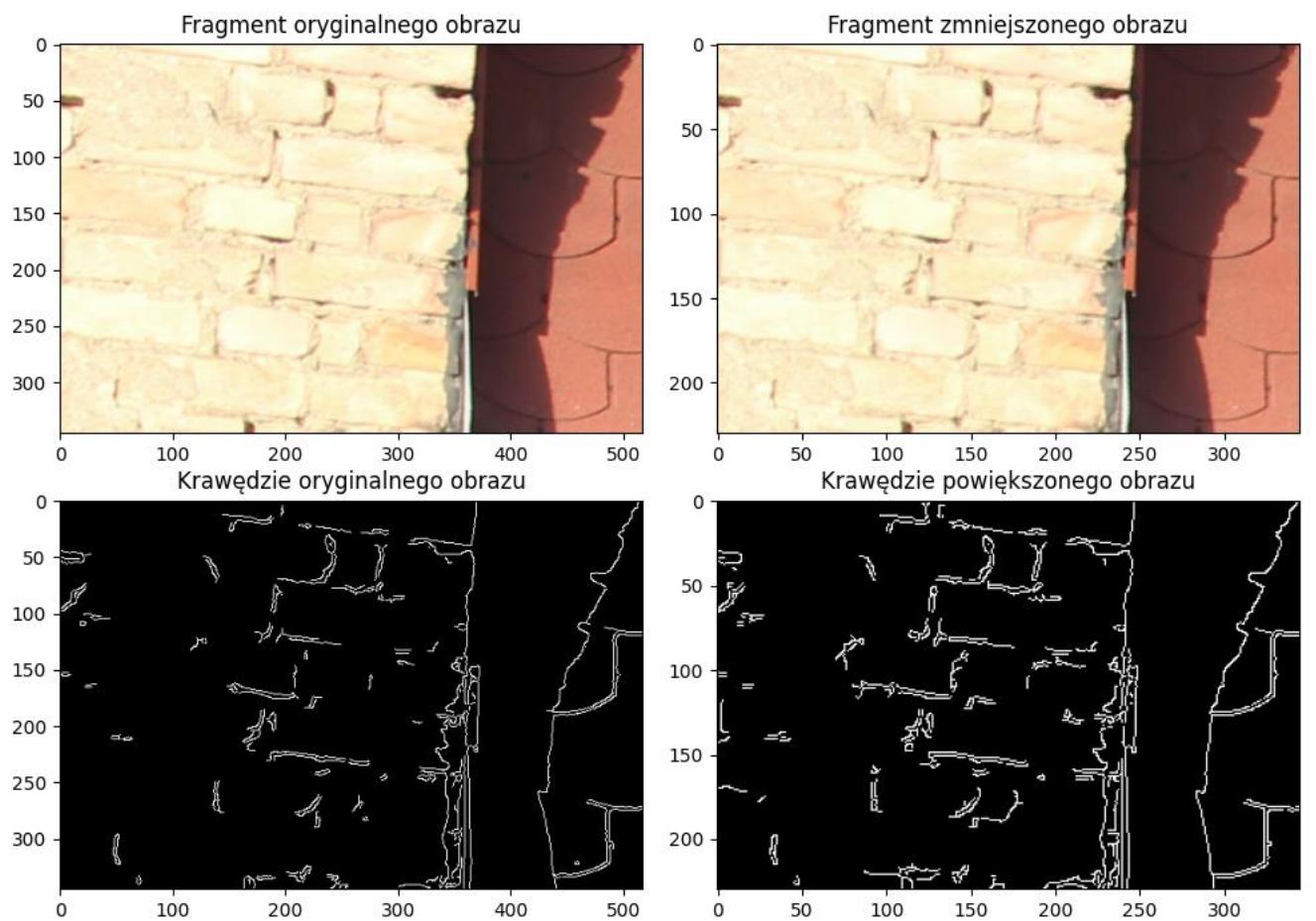
Metoda median

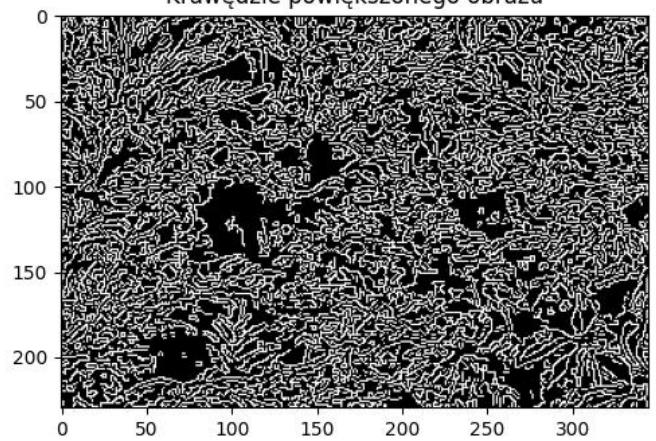
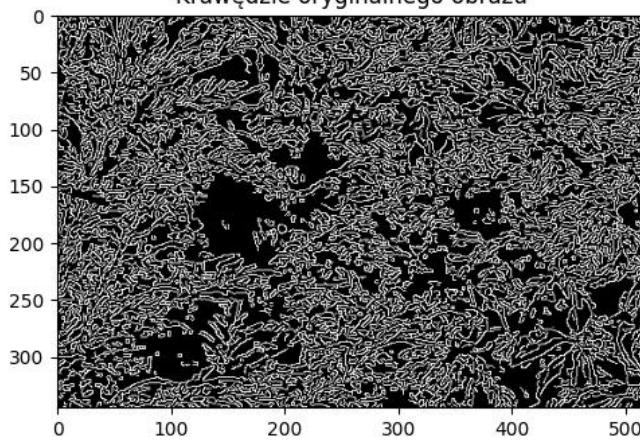
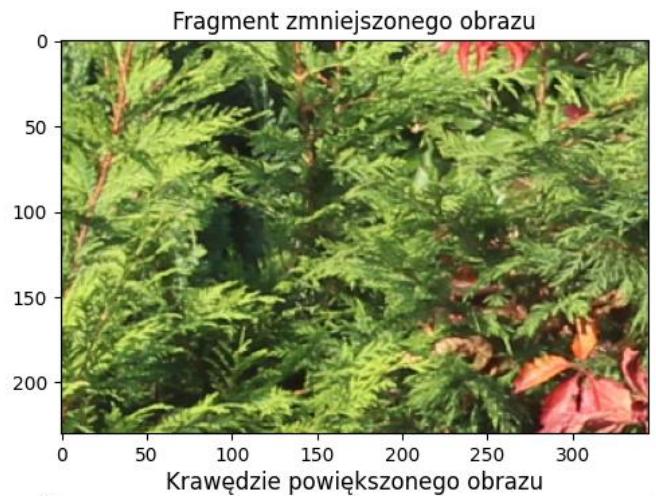
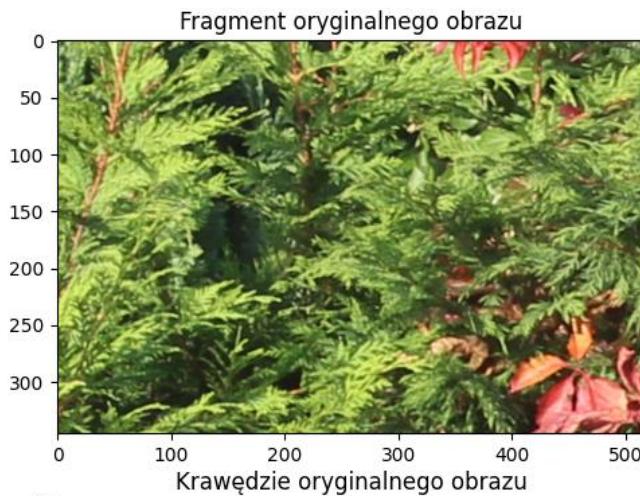


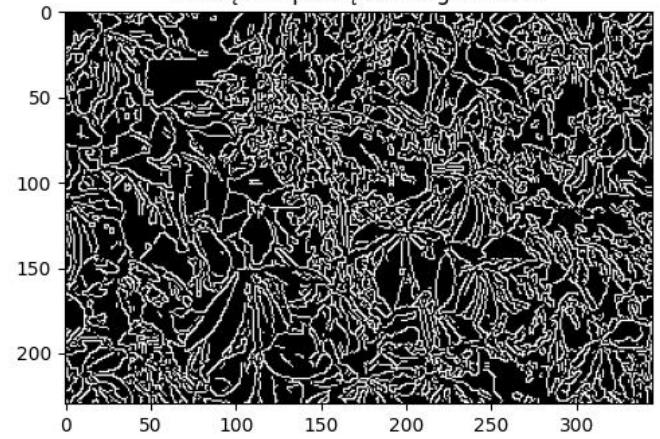
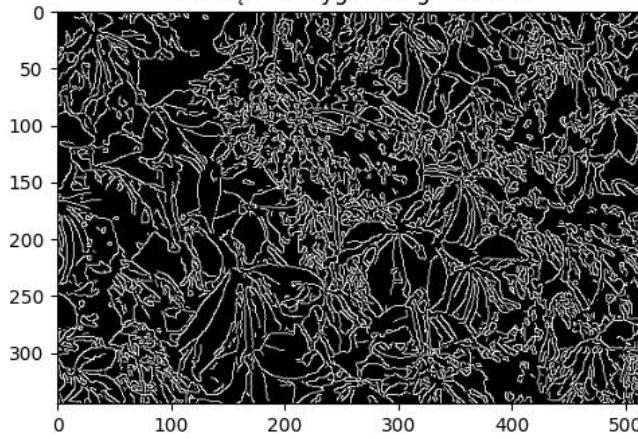
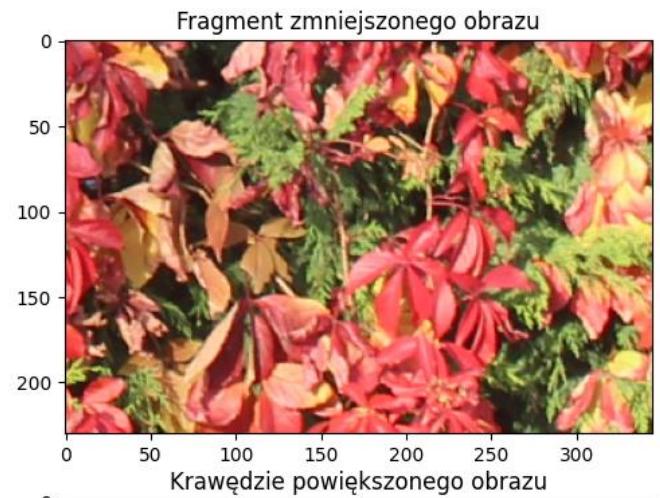
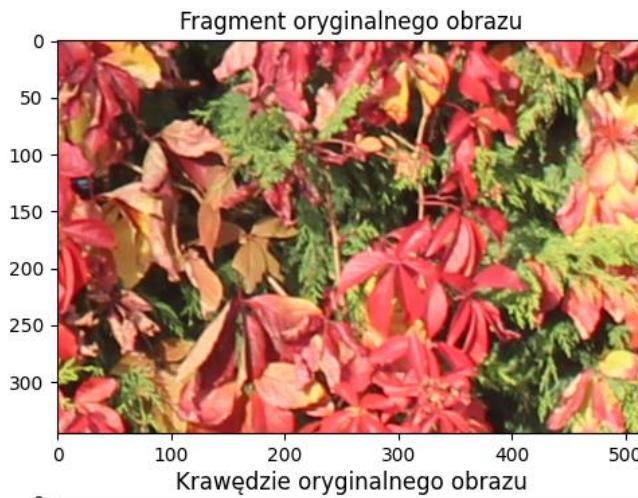




Metoda weighted_average

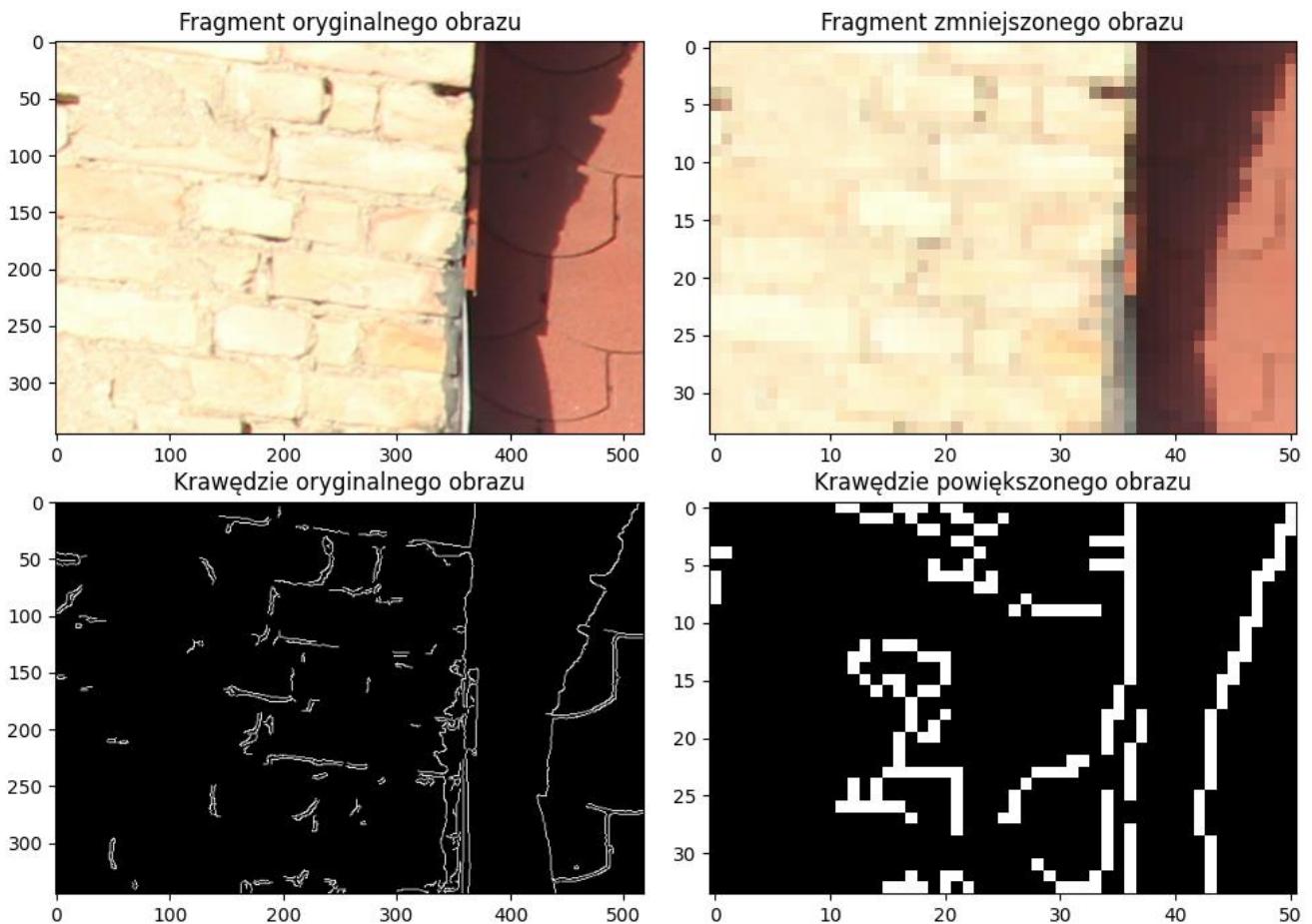


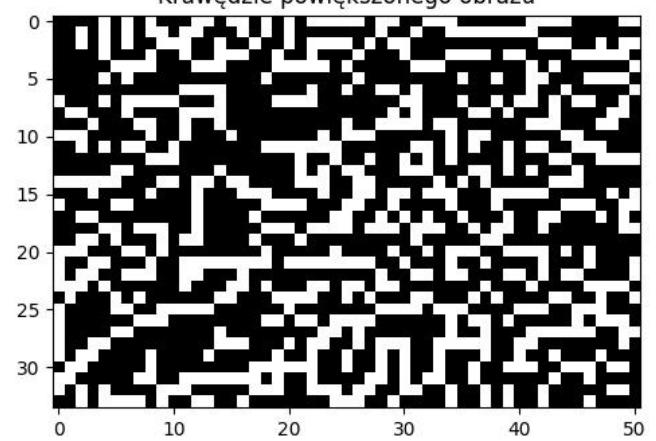
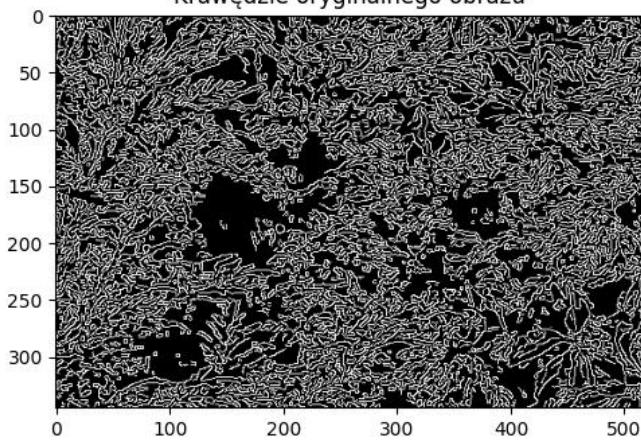
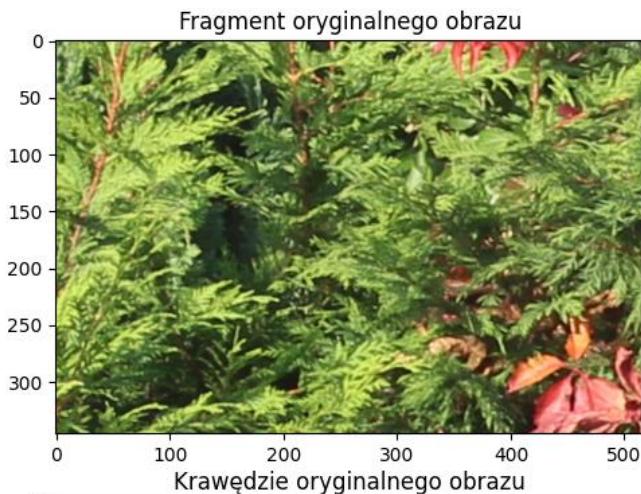




Pomniejszenie o x10

Metoda mean





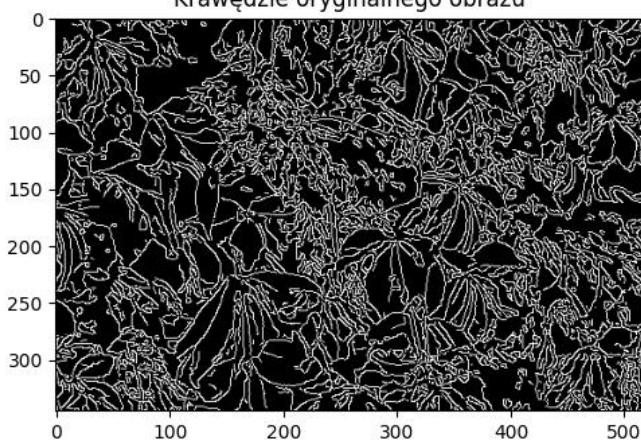
Fragment oryginalnego obrazu



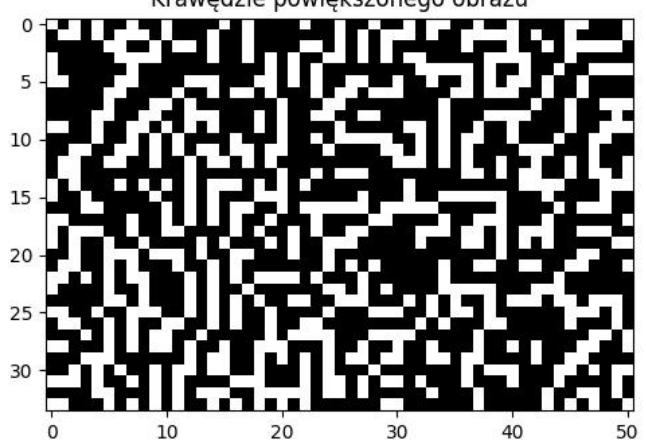
Fragment zmniejszonego obrazu



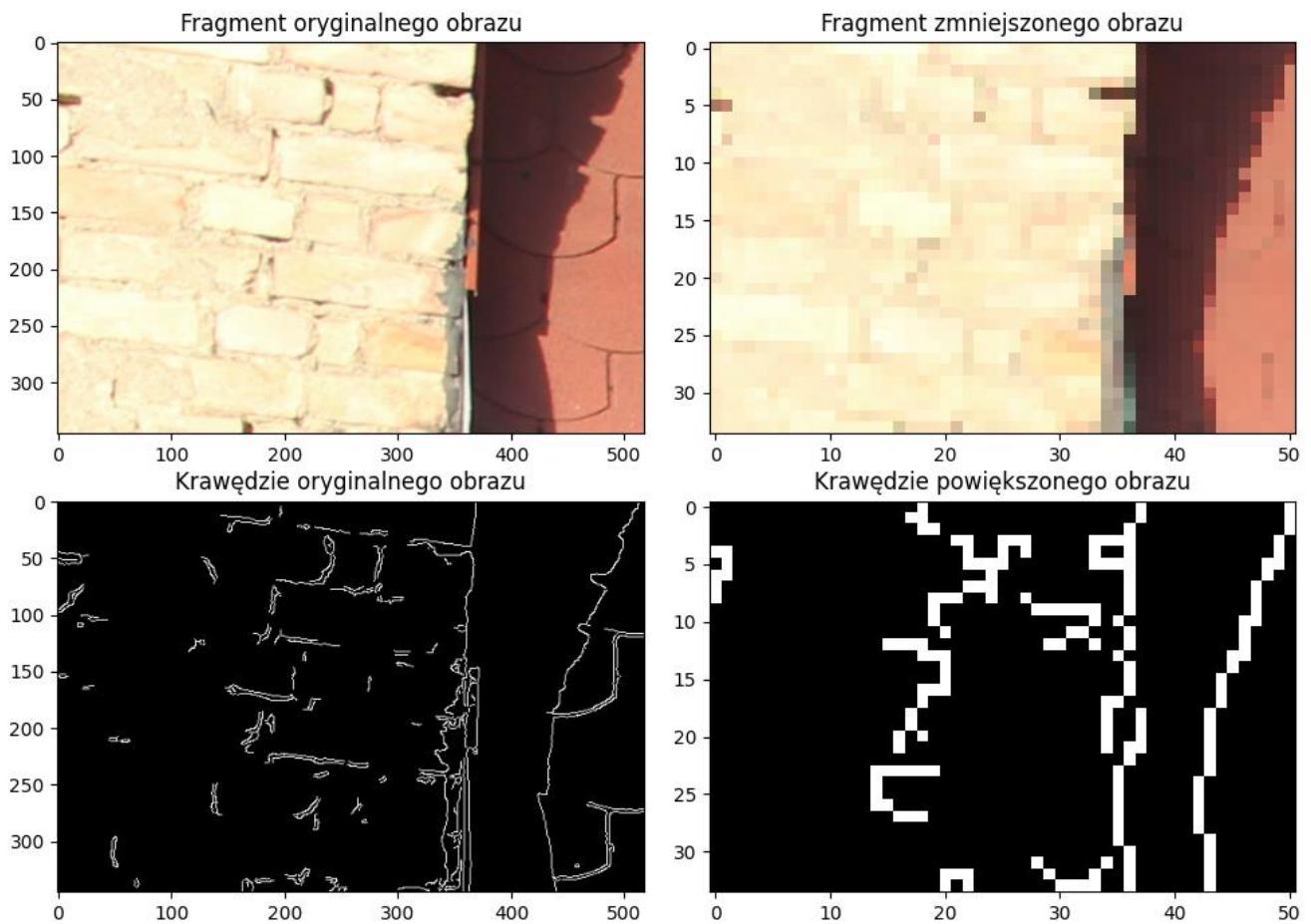
Krawędzie oryginalnego obrazu

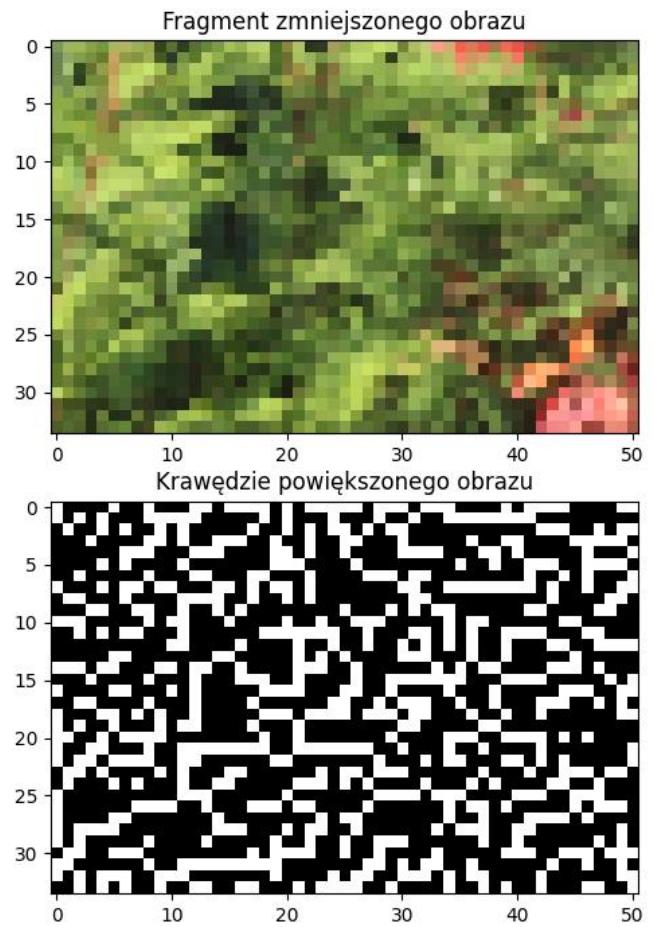
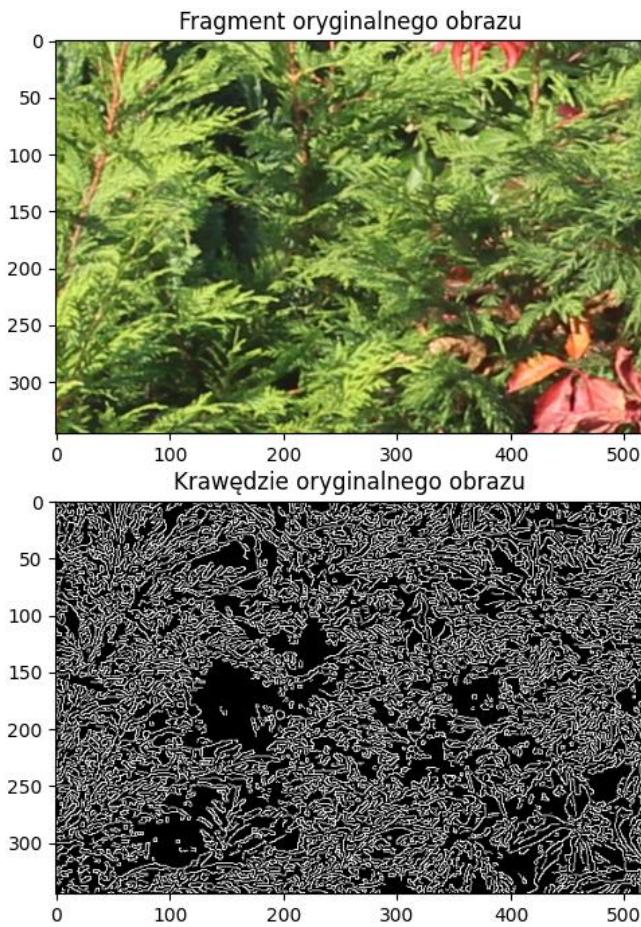


Krawędzie powiększonego obrazu



Metoda median





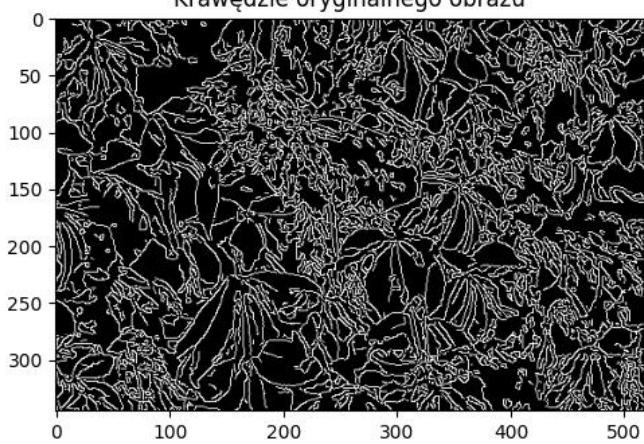
Fragment oryginalnego obrazu



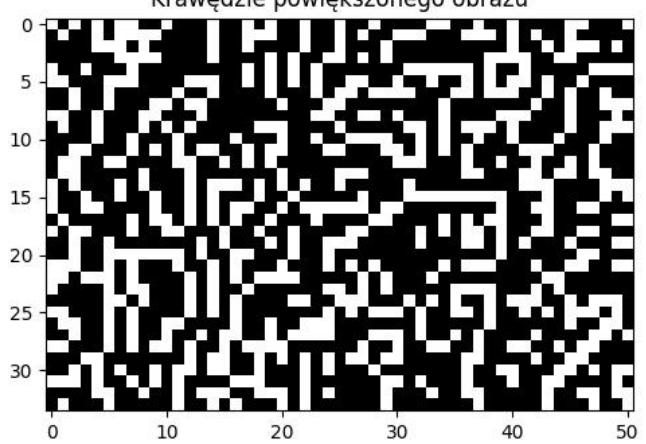
Fragment zmniejszonego obrazu



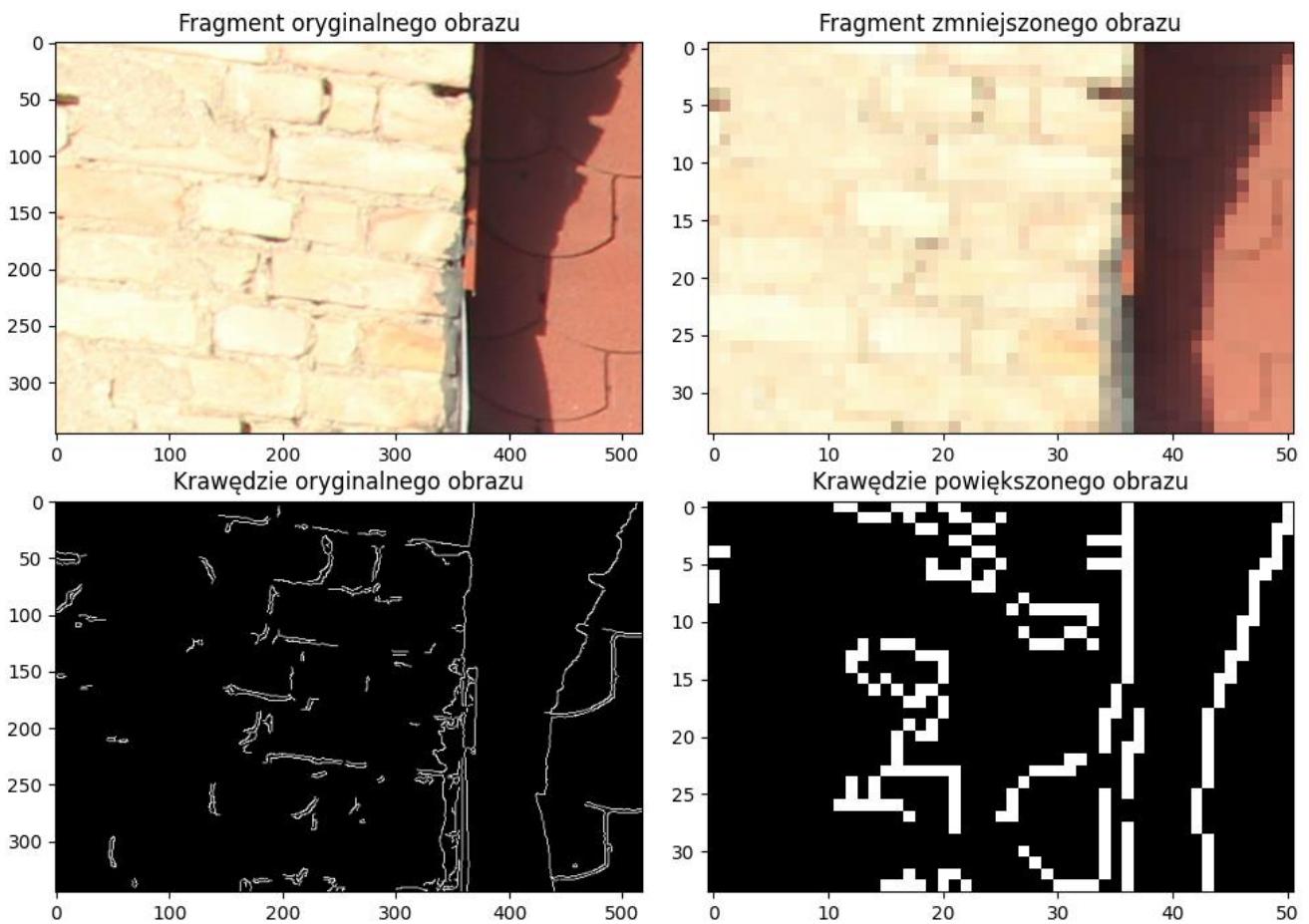
Krawędzie oryginalnego obrazu

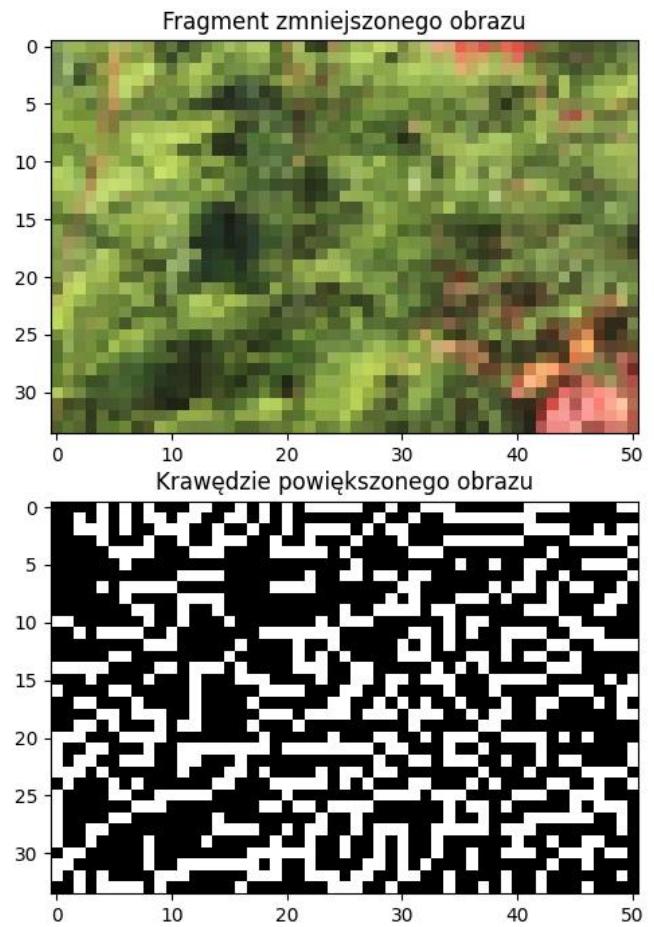
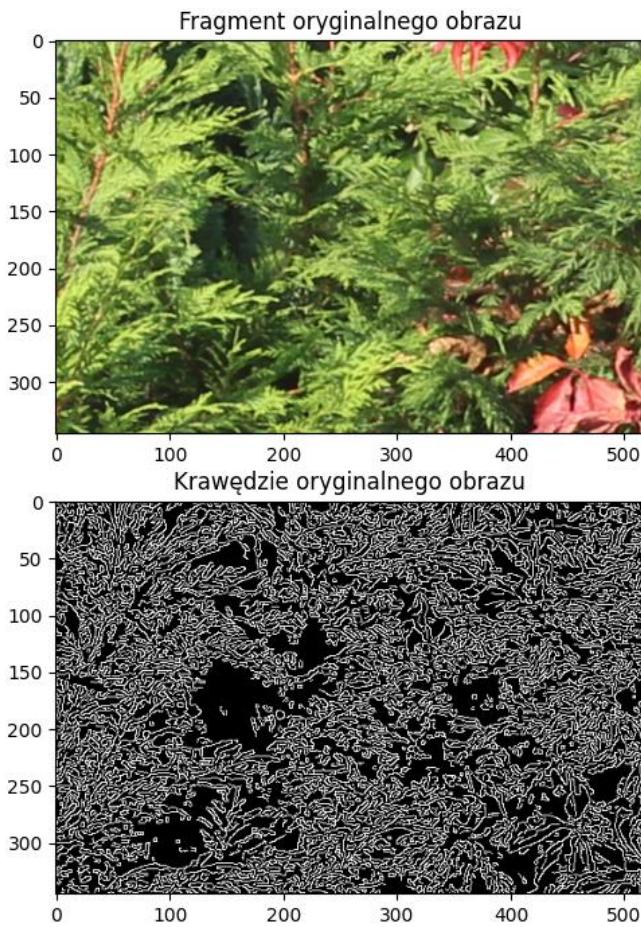


Krawędzie powiększonego obrazu



Metoda weighted_average





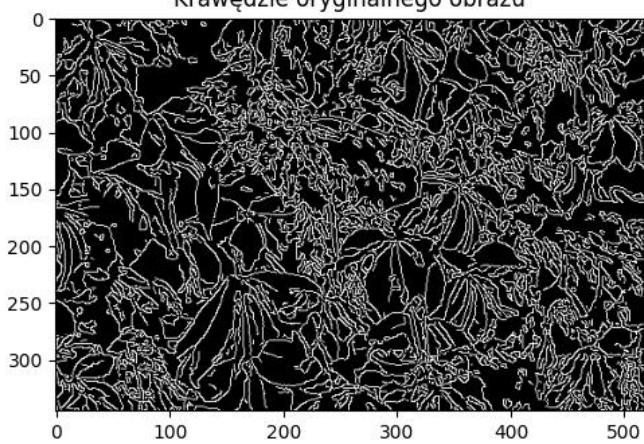
Fragment oryginalnego obrazu



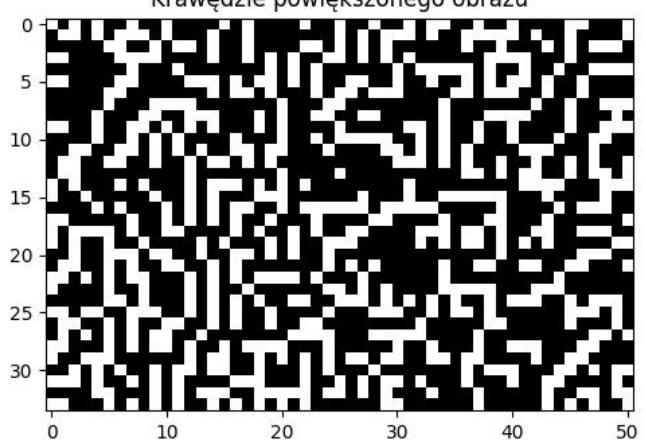
Fragment zmniejszonego obrazu



Krawędzie oryginalnego obrazu

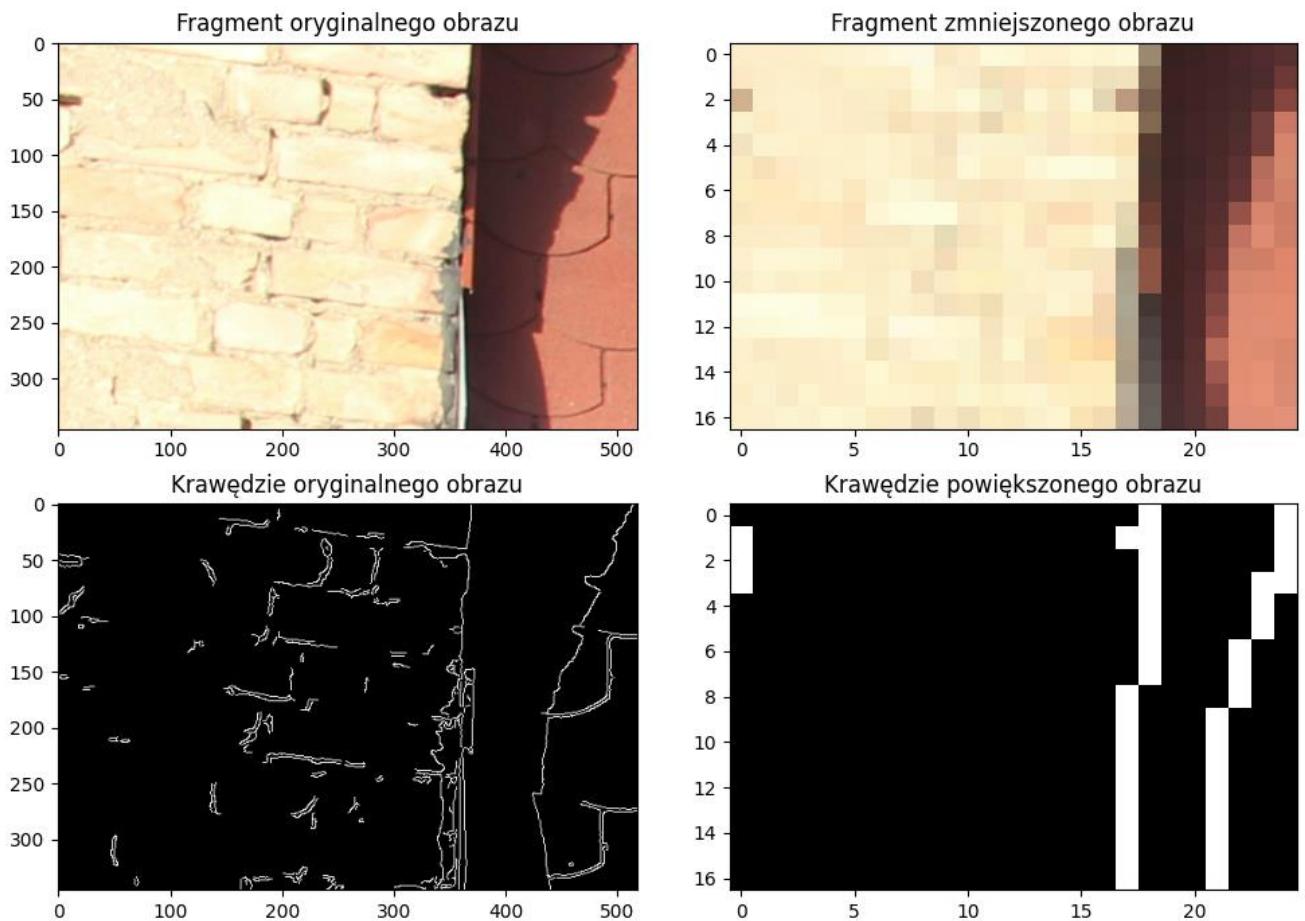


Krawędzie powiększonego obrazu



Pomniejszenie o x20

Metoda mean



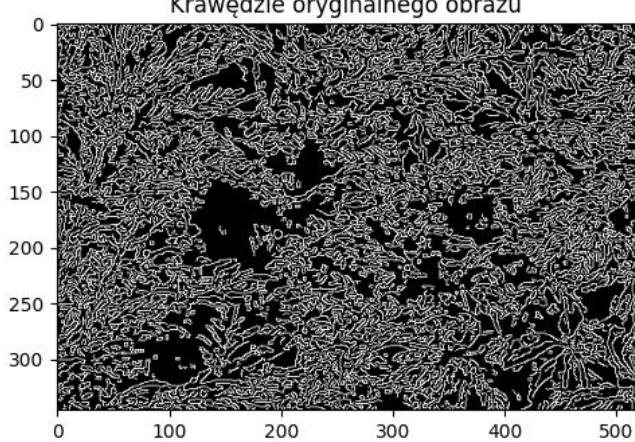
Fragment oryginalnego obrazu



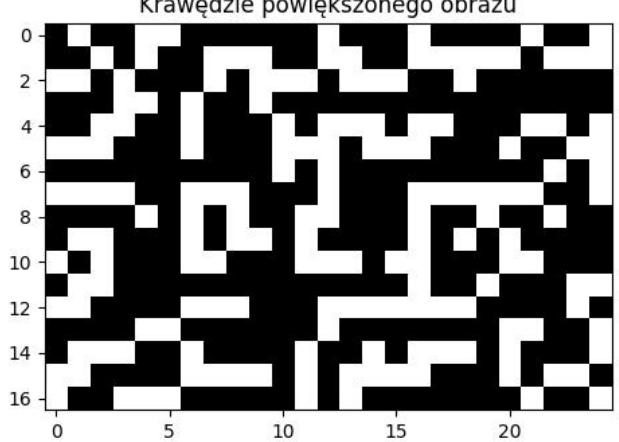
Fragment zmniejszonego obrazu

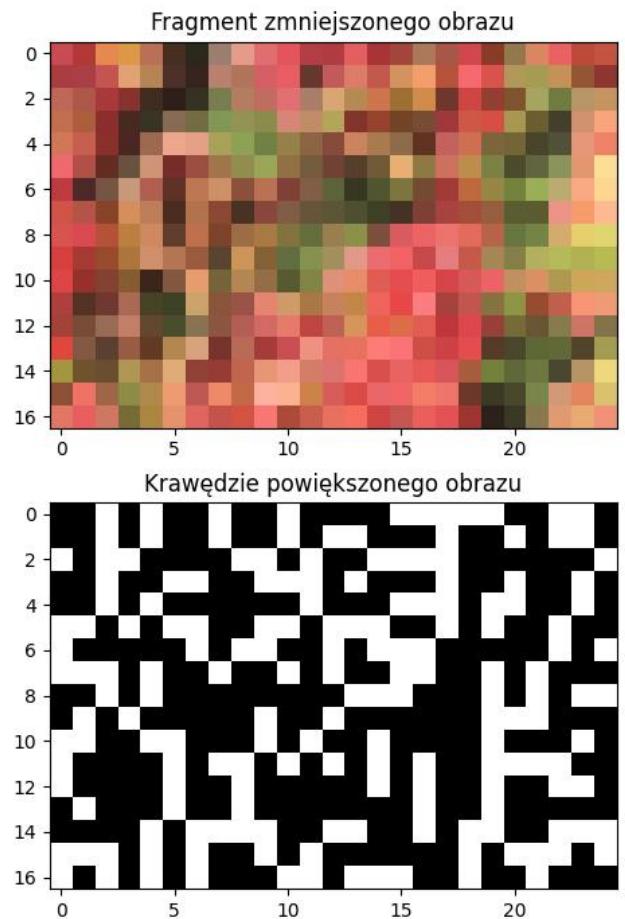
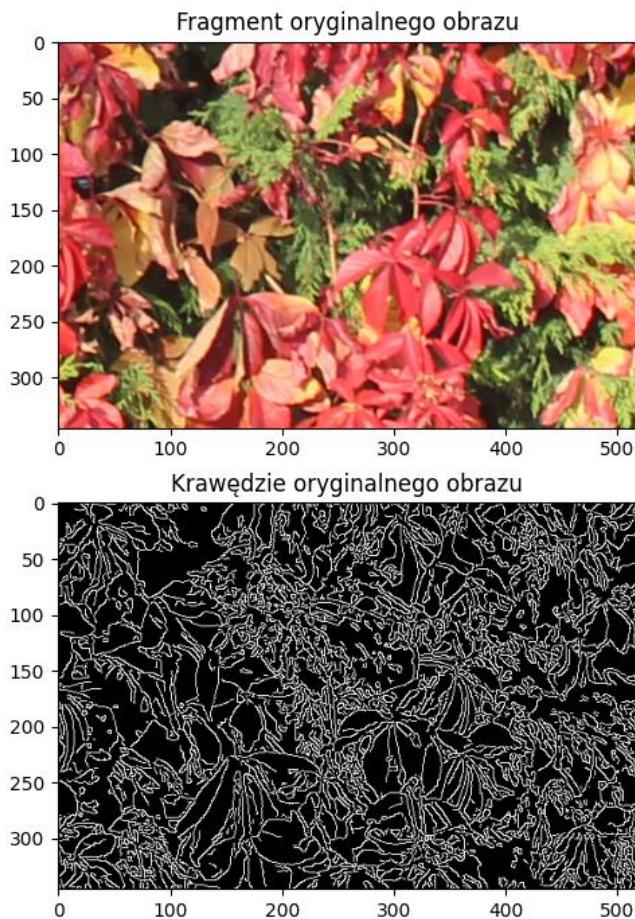


Krawędzie oryginalnego obrazu

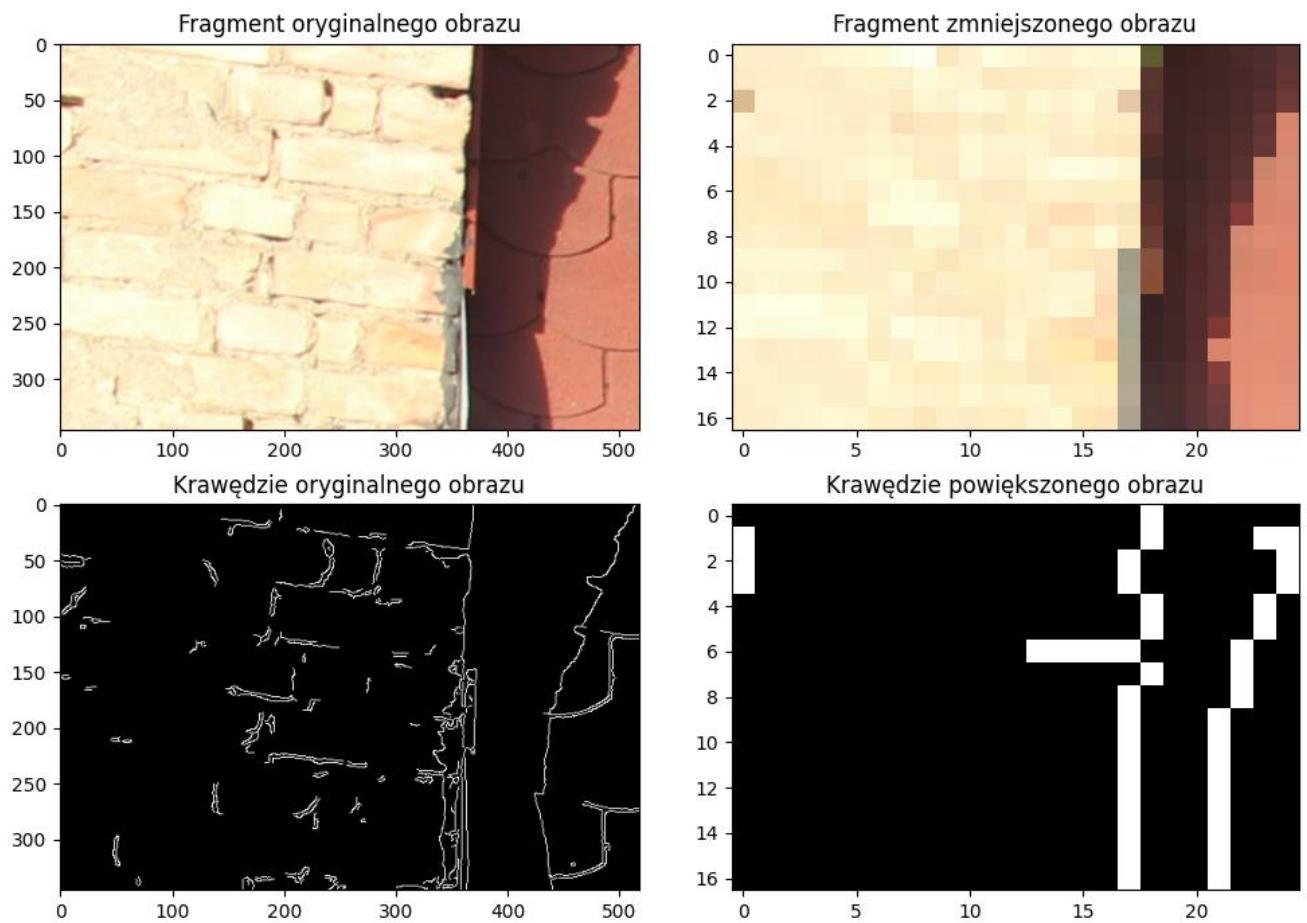


Krawędzie powiększonego obrazu





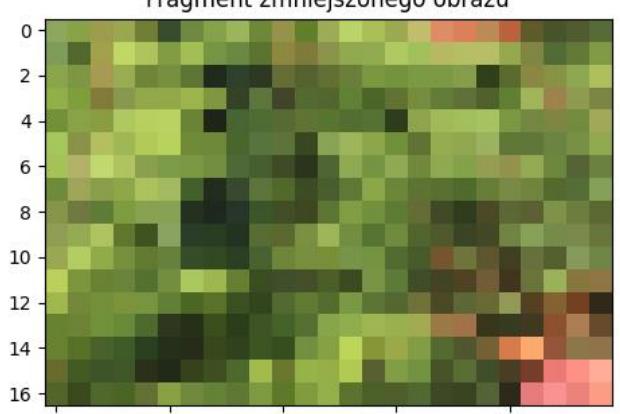
Metoda median



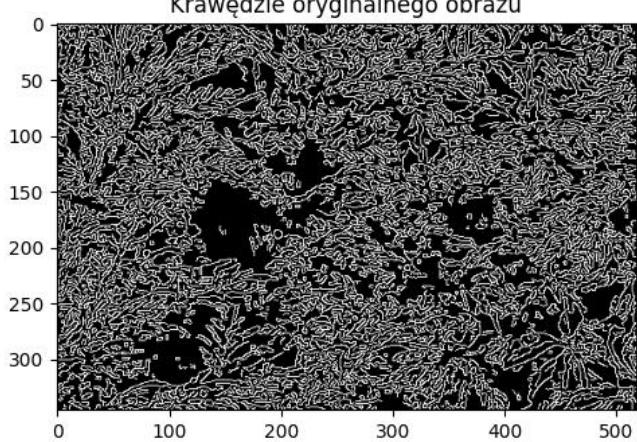
Fragment oryginalnego obrazu



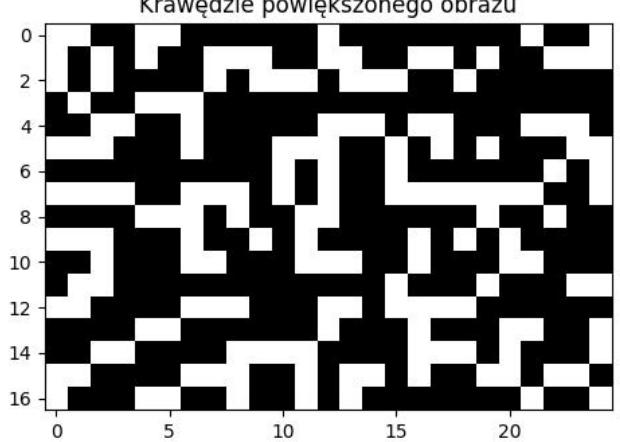
Fragment zmniejszonego obrazu



Krawędzie oryginalnego obrazu



Krawędzie powiększonego obrazu



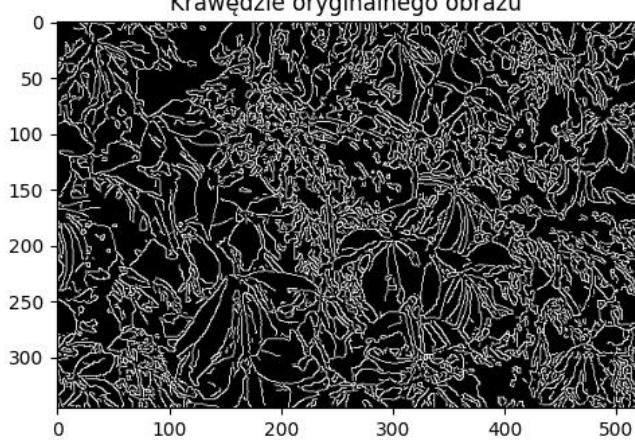
Fragment oryginalnego obrazu



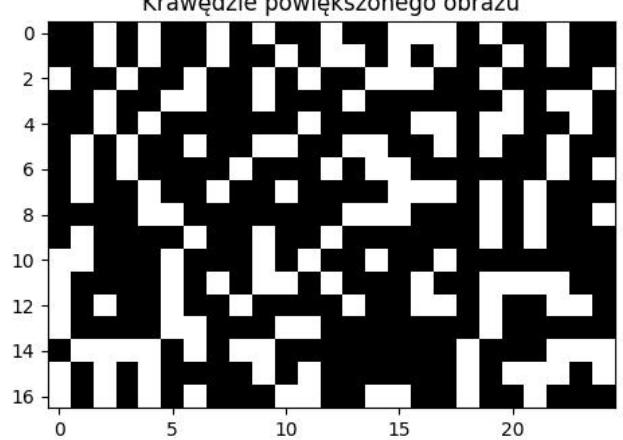
Fragment zmniejszonego obrazu



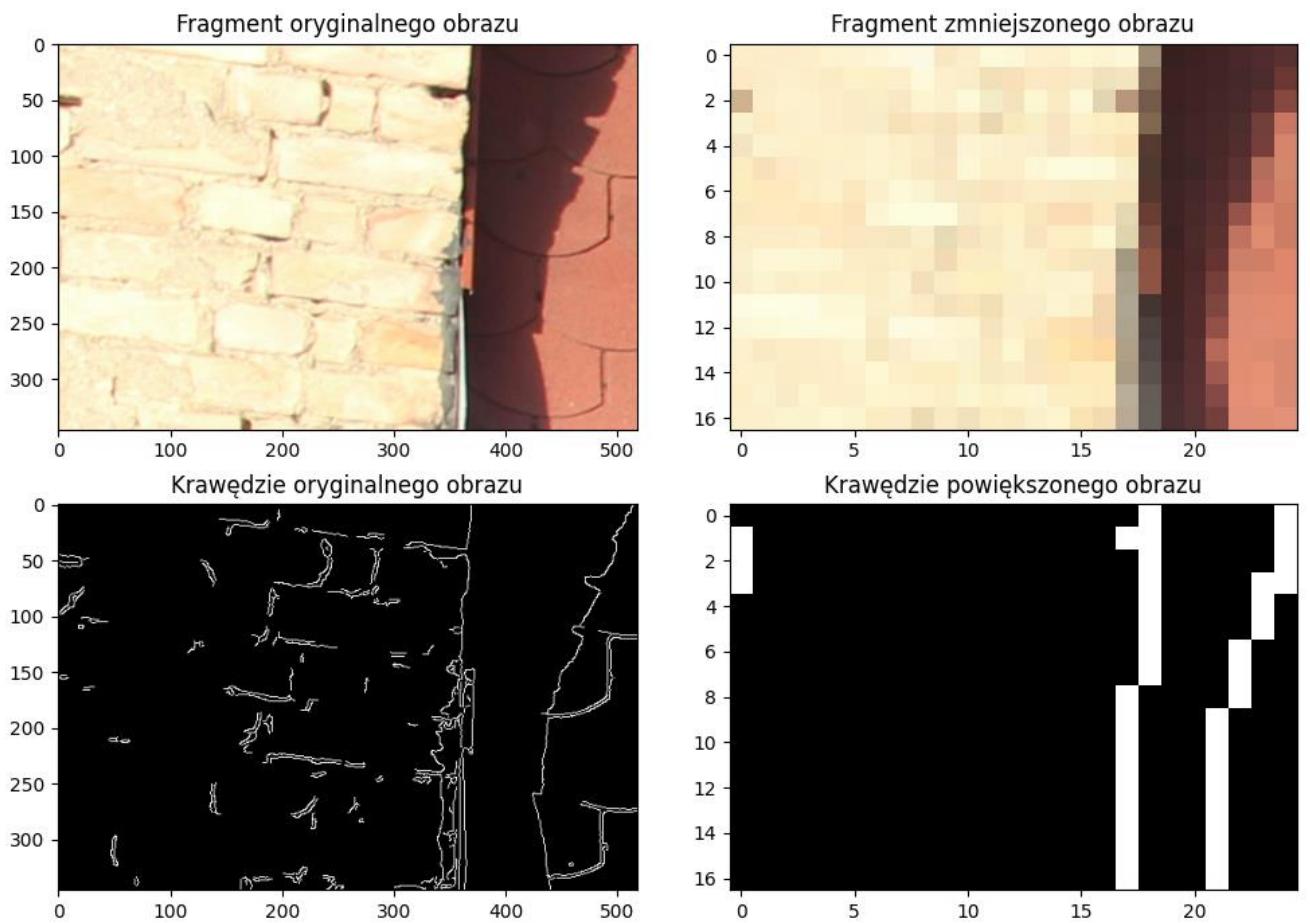
Krawędzie oryginalnego obrazu



Krawędzie powiększonego obrazu



Metoda weighted_average



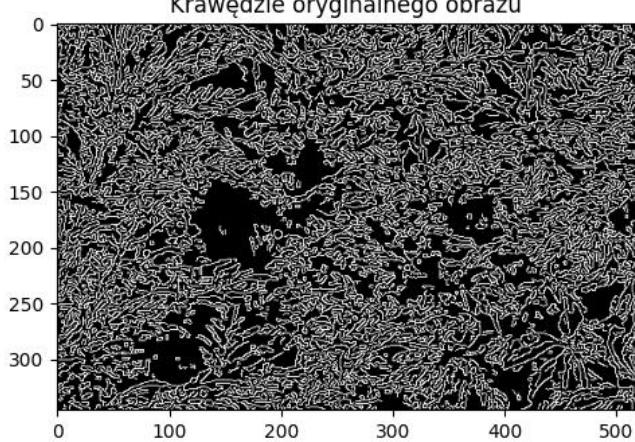
Fragment oryginalnego obrazu



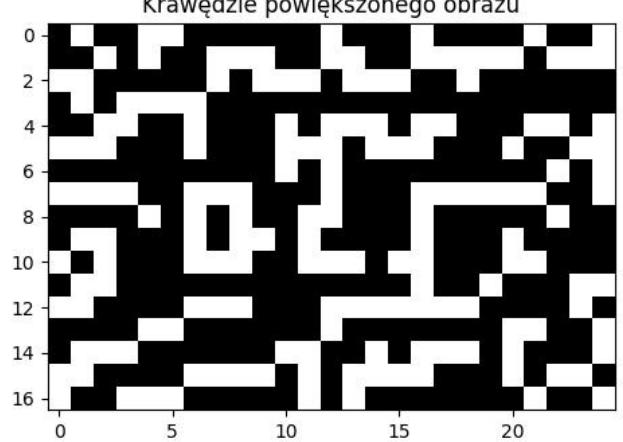
Fragment zmniejszonego obrazu

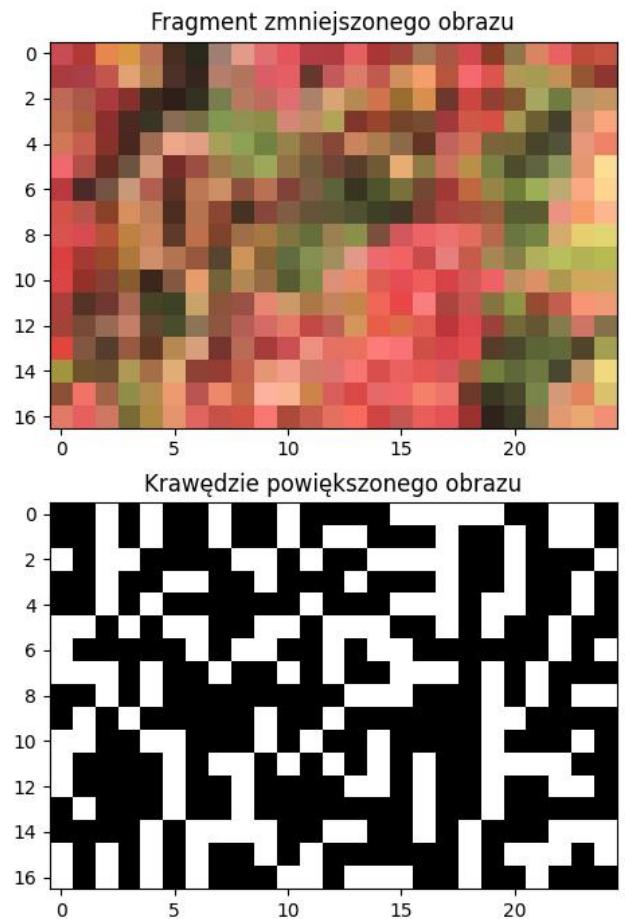
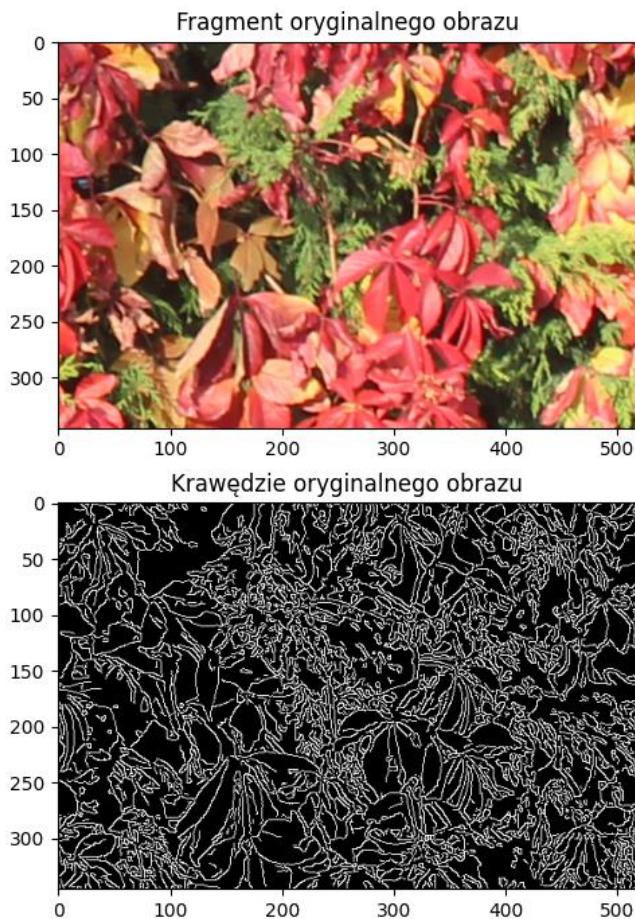


Krawędzie oryginalnego obrazu



Krawędzie powiększonego obrazu



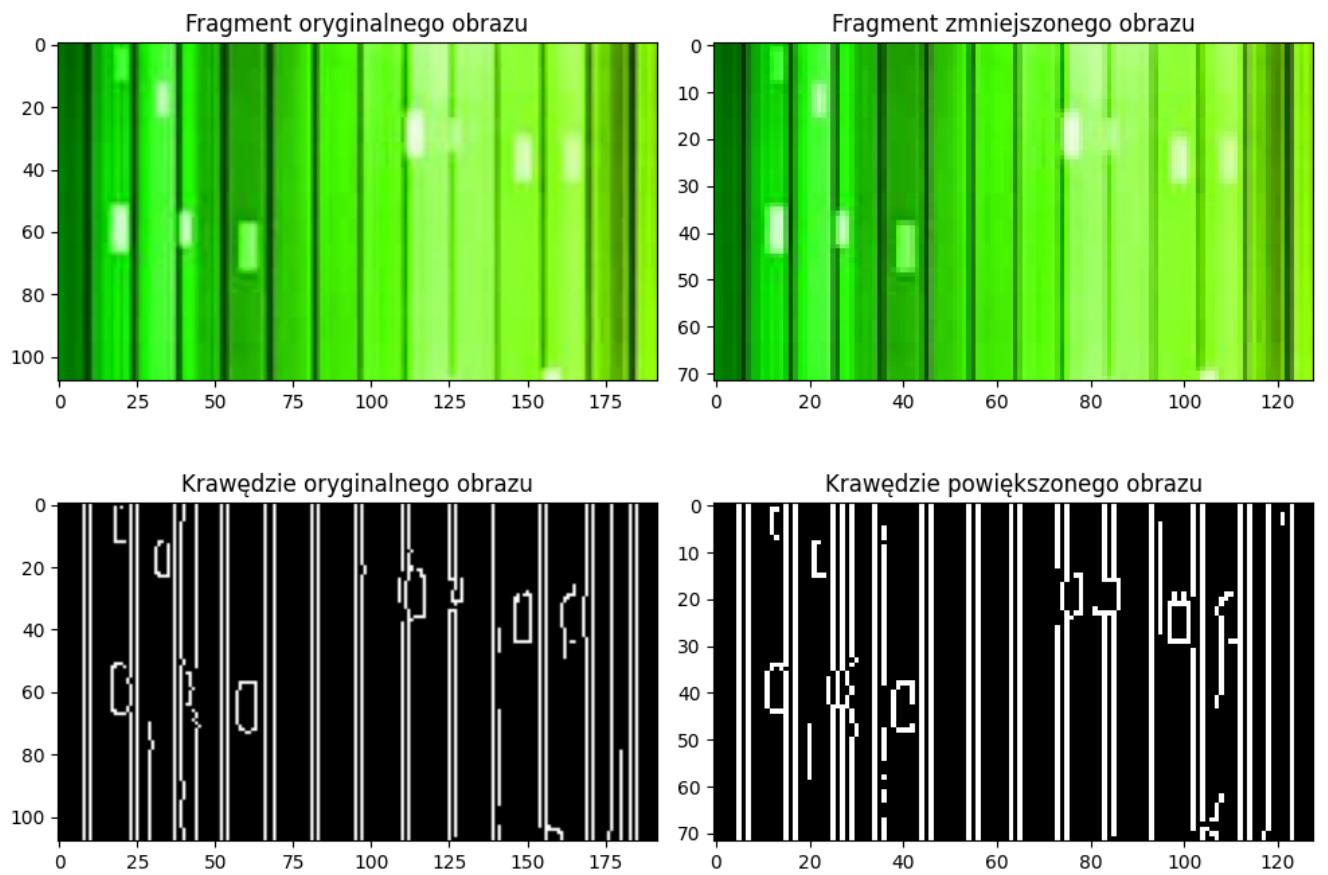


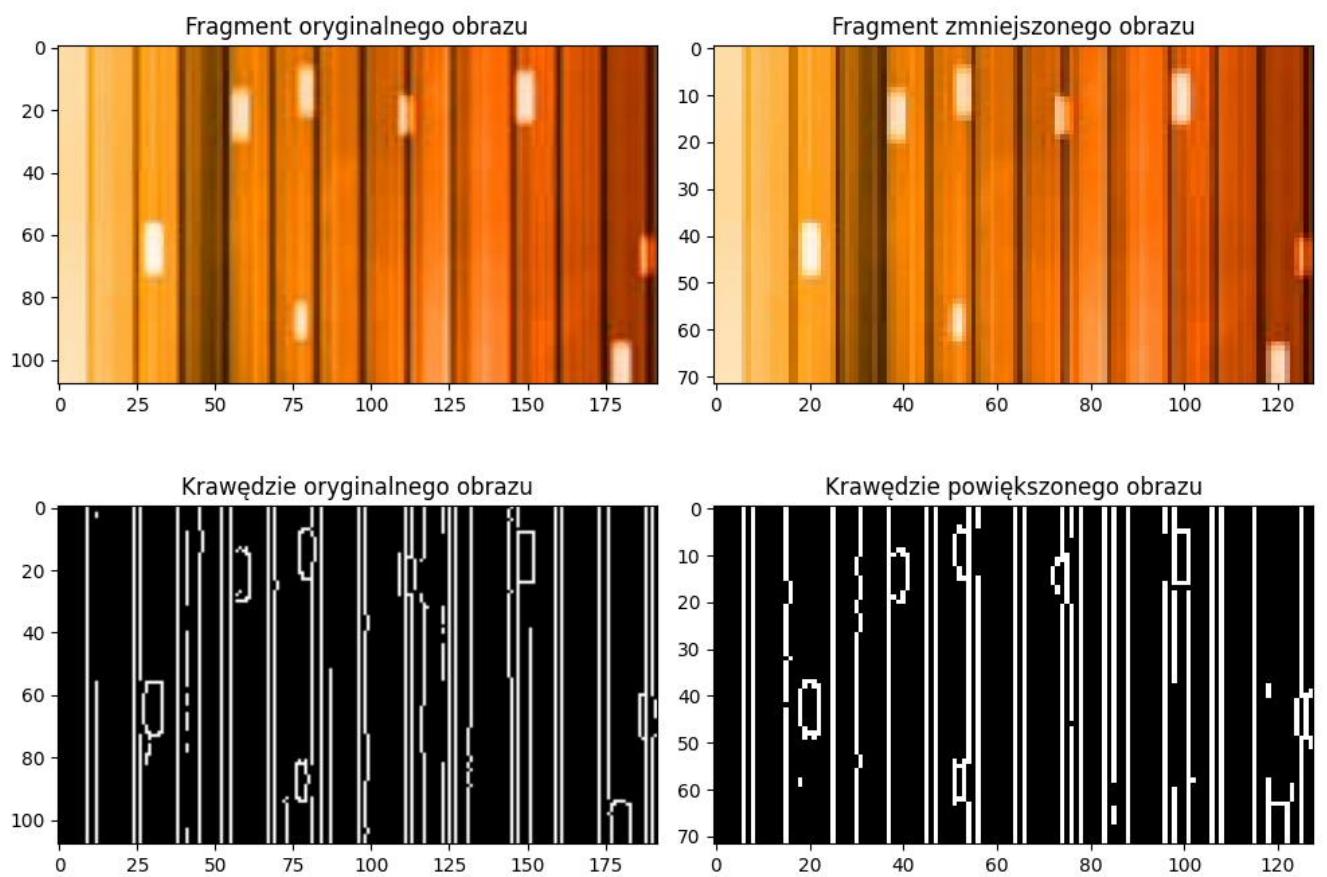
Zdjęcie - IMG_BIG/BIG_0004.png

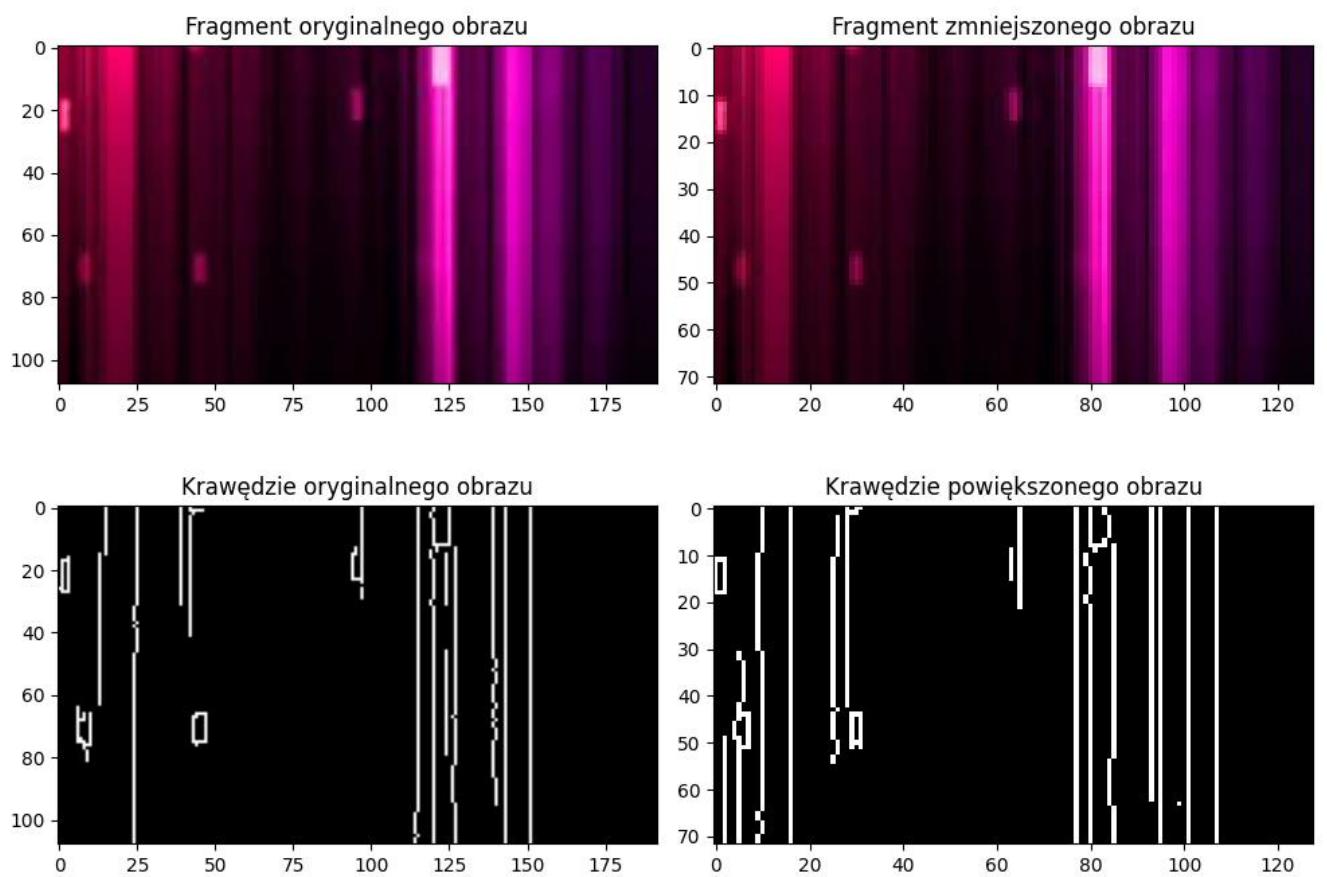


Pomniejszenie o x1.5

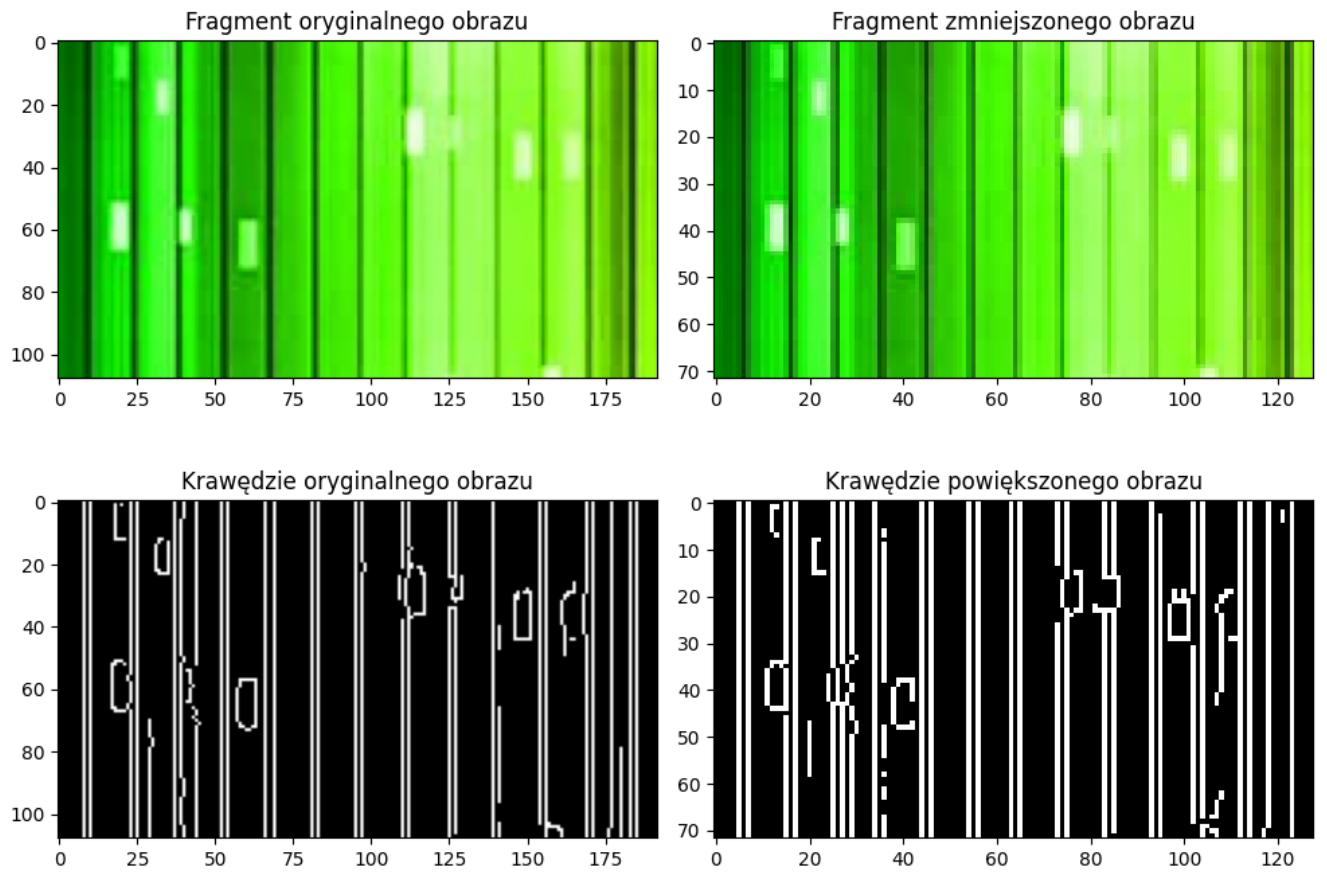
Metoda mean

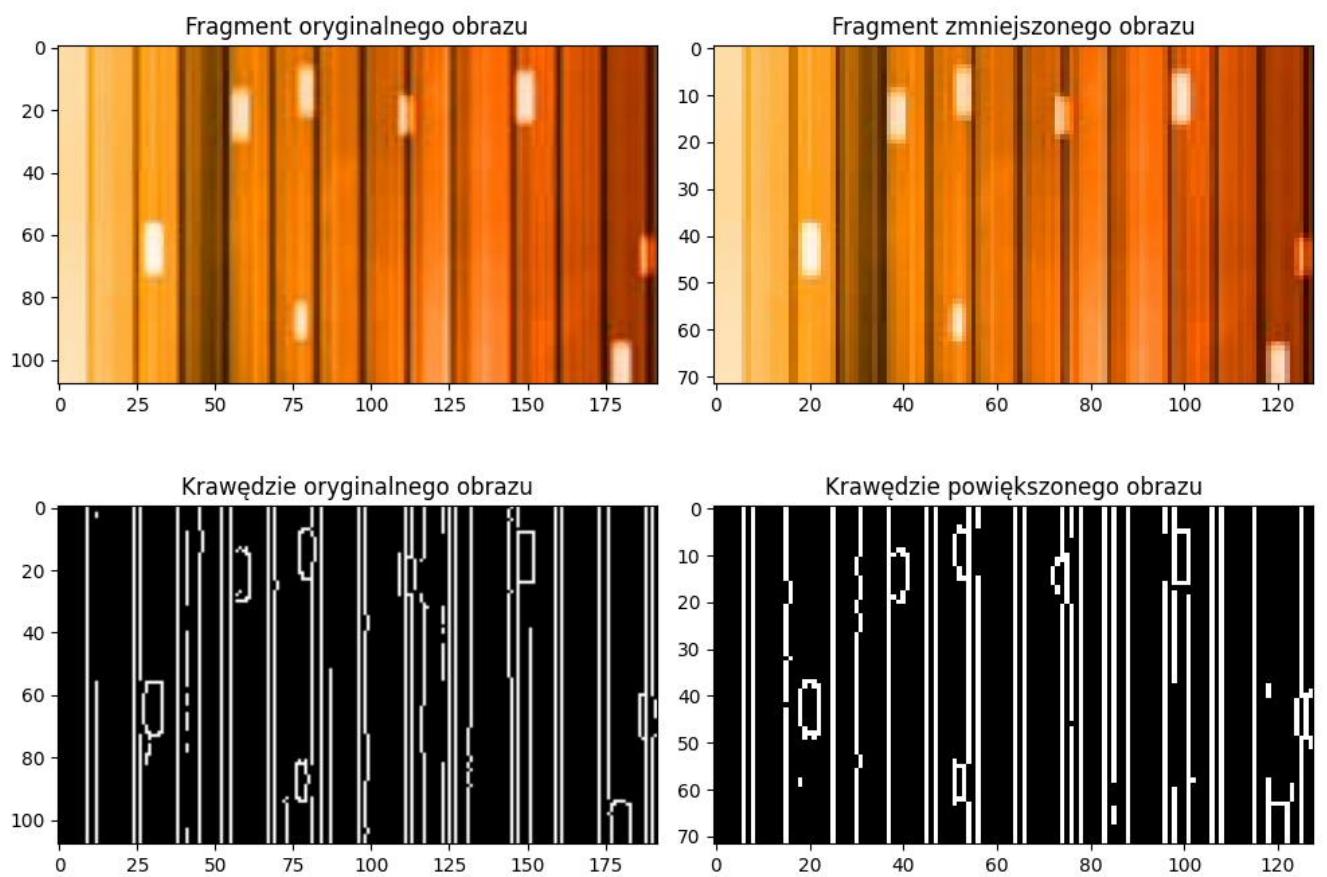


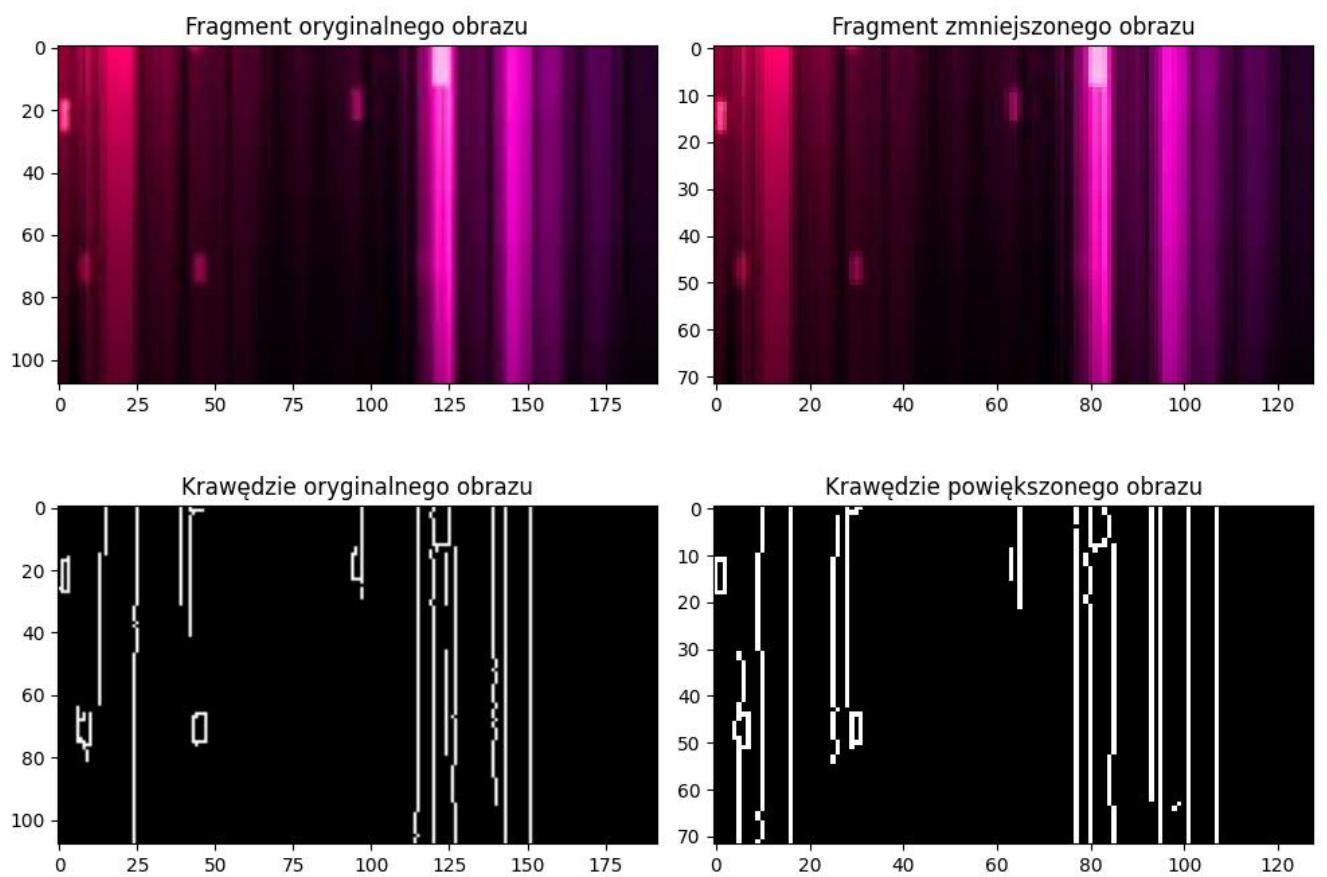




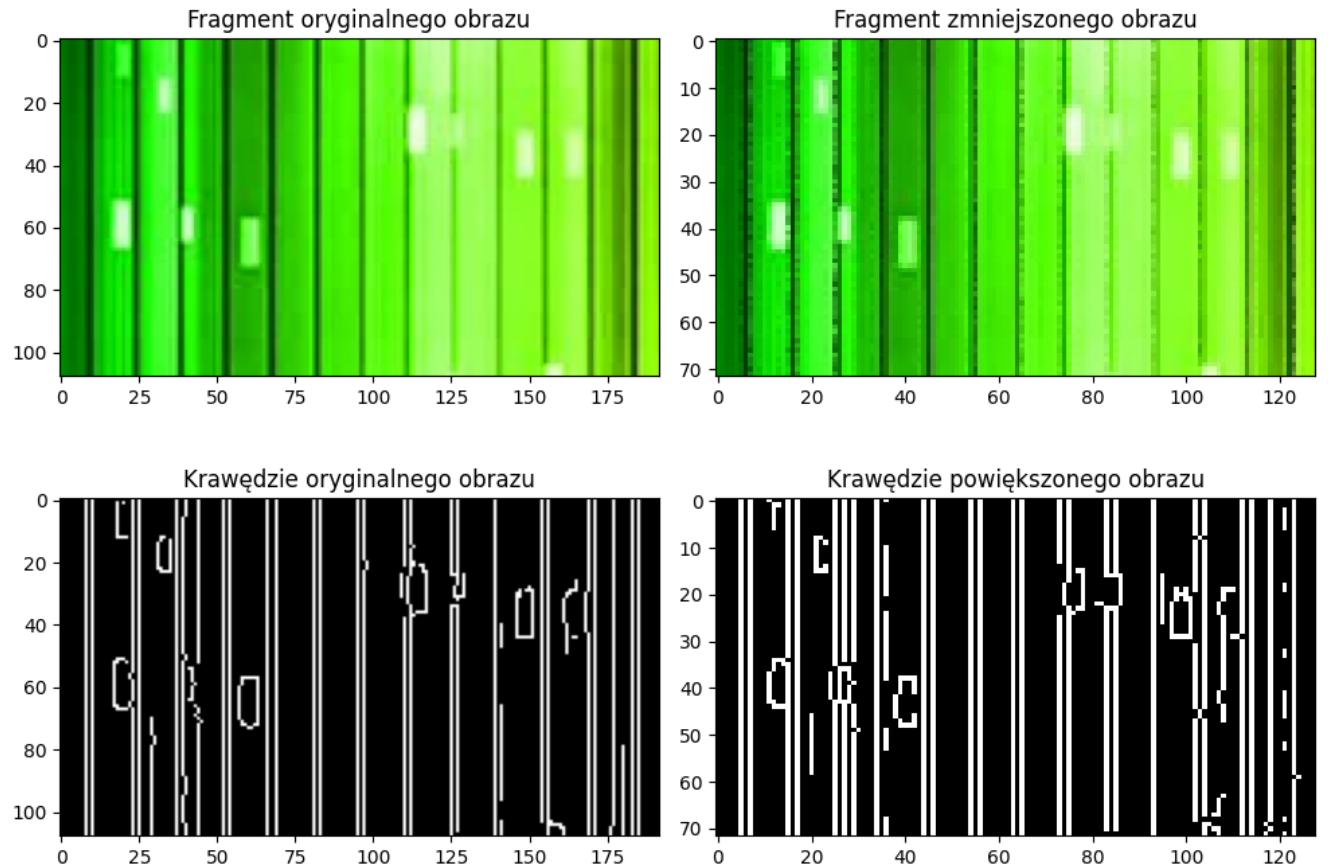
Metoda median

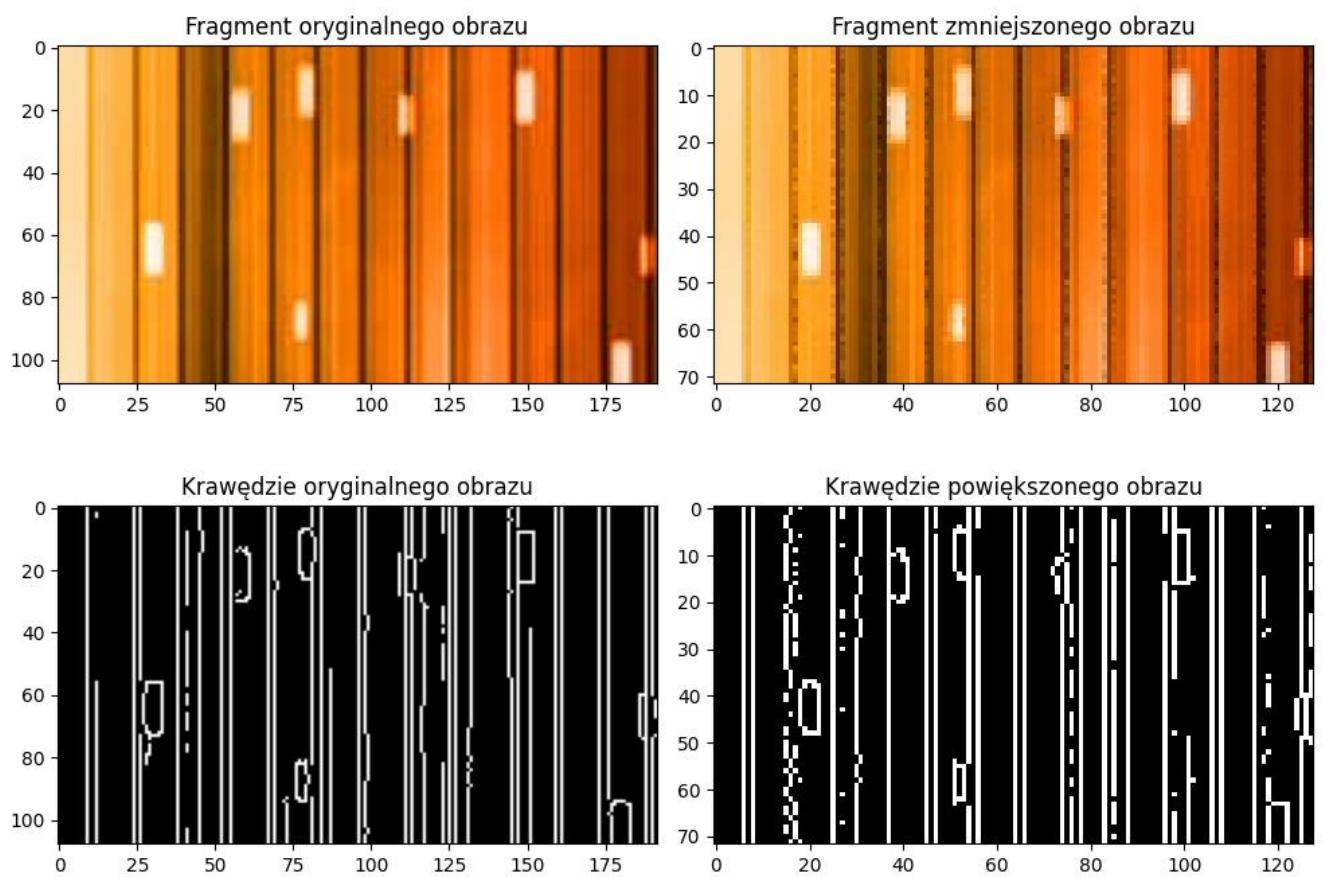


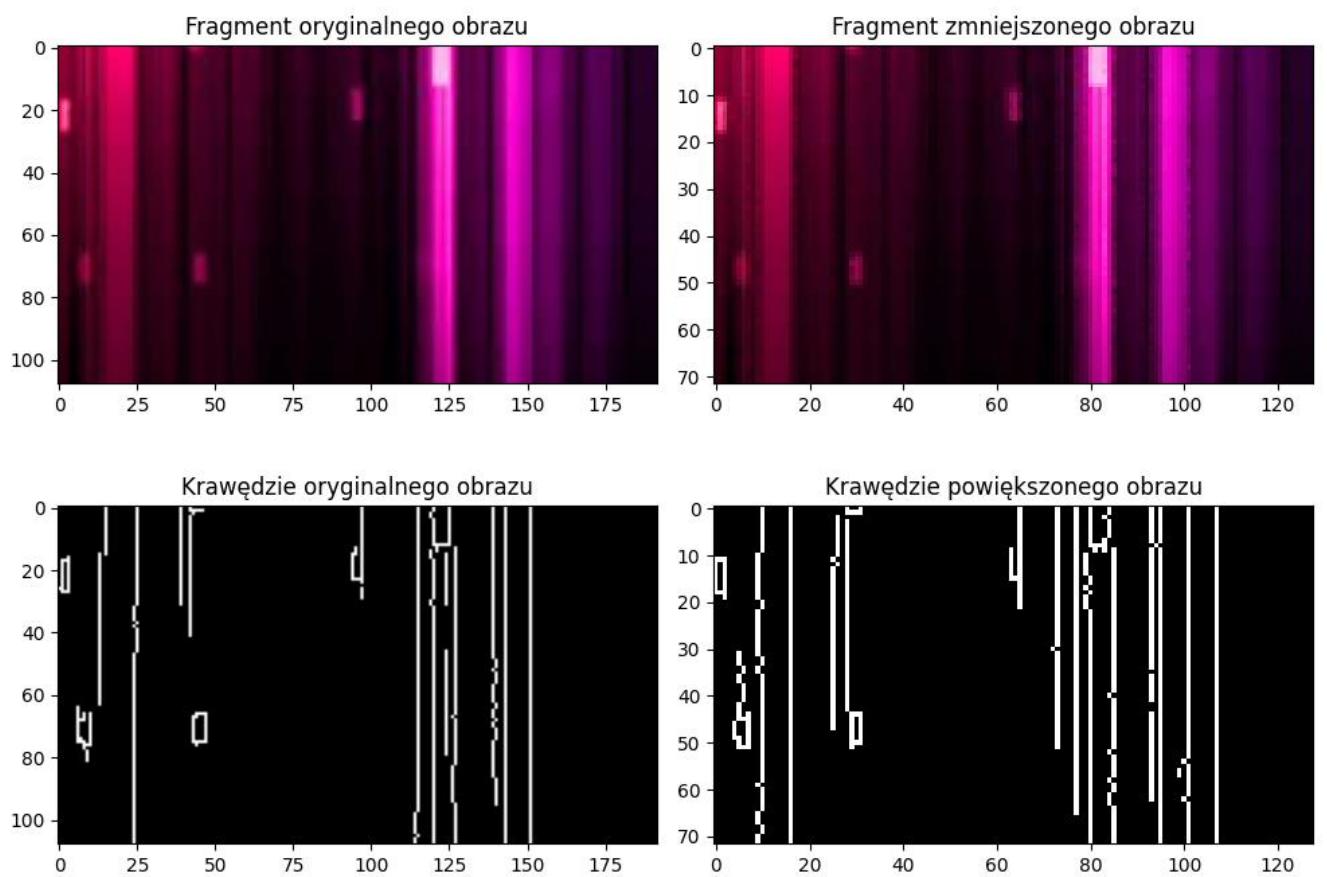




Metoda weighted_average

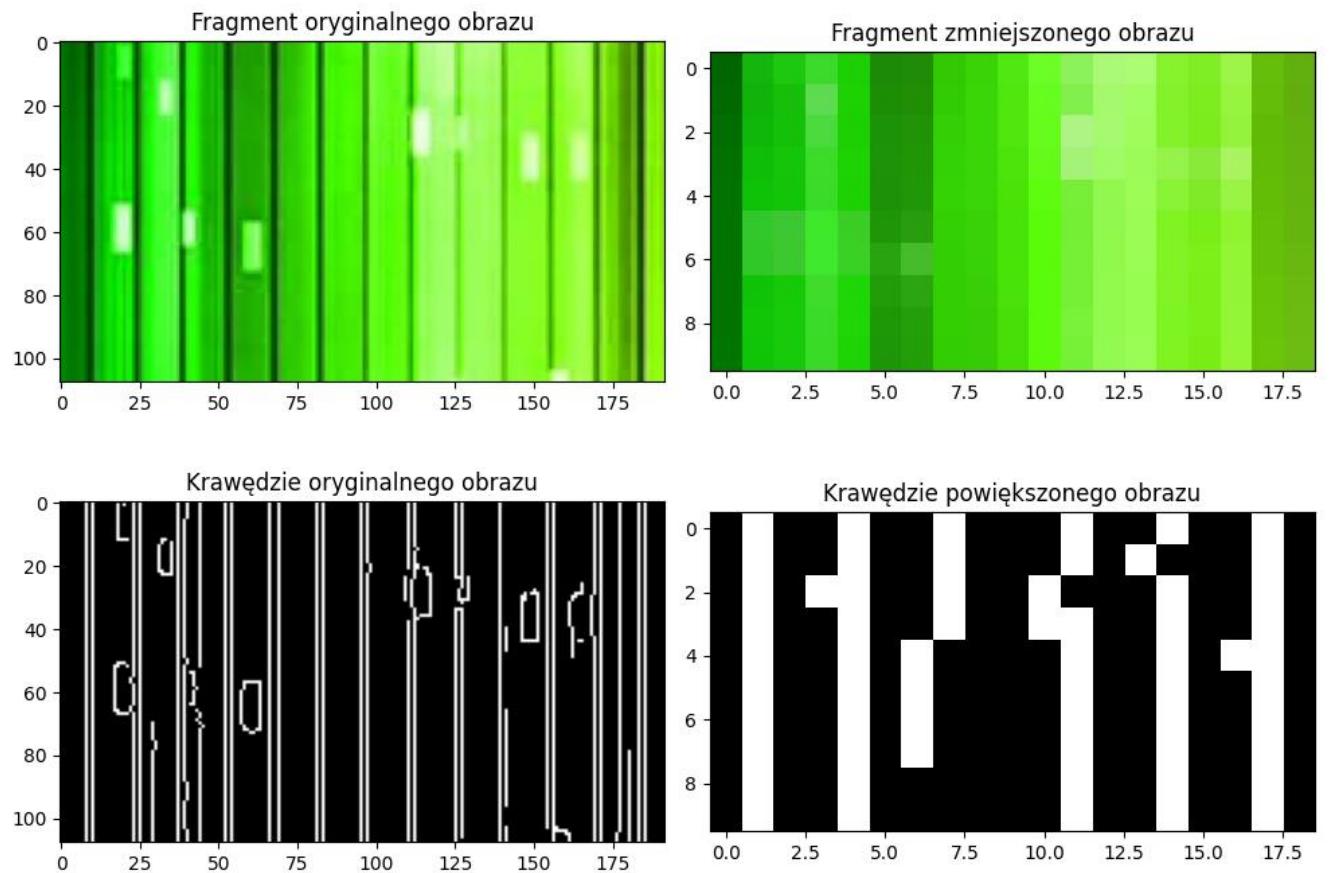


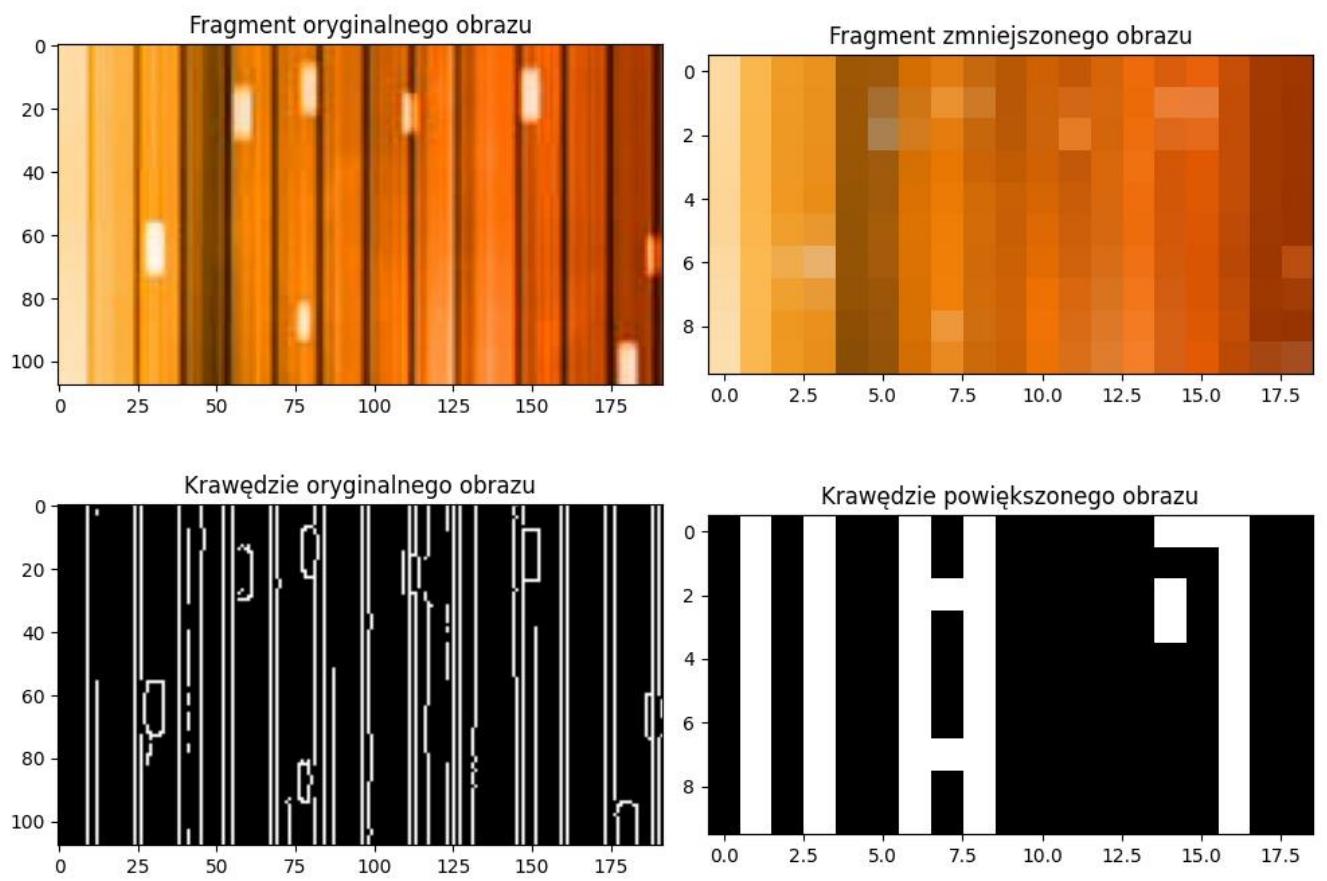


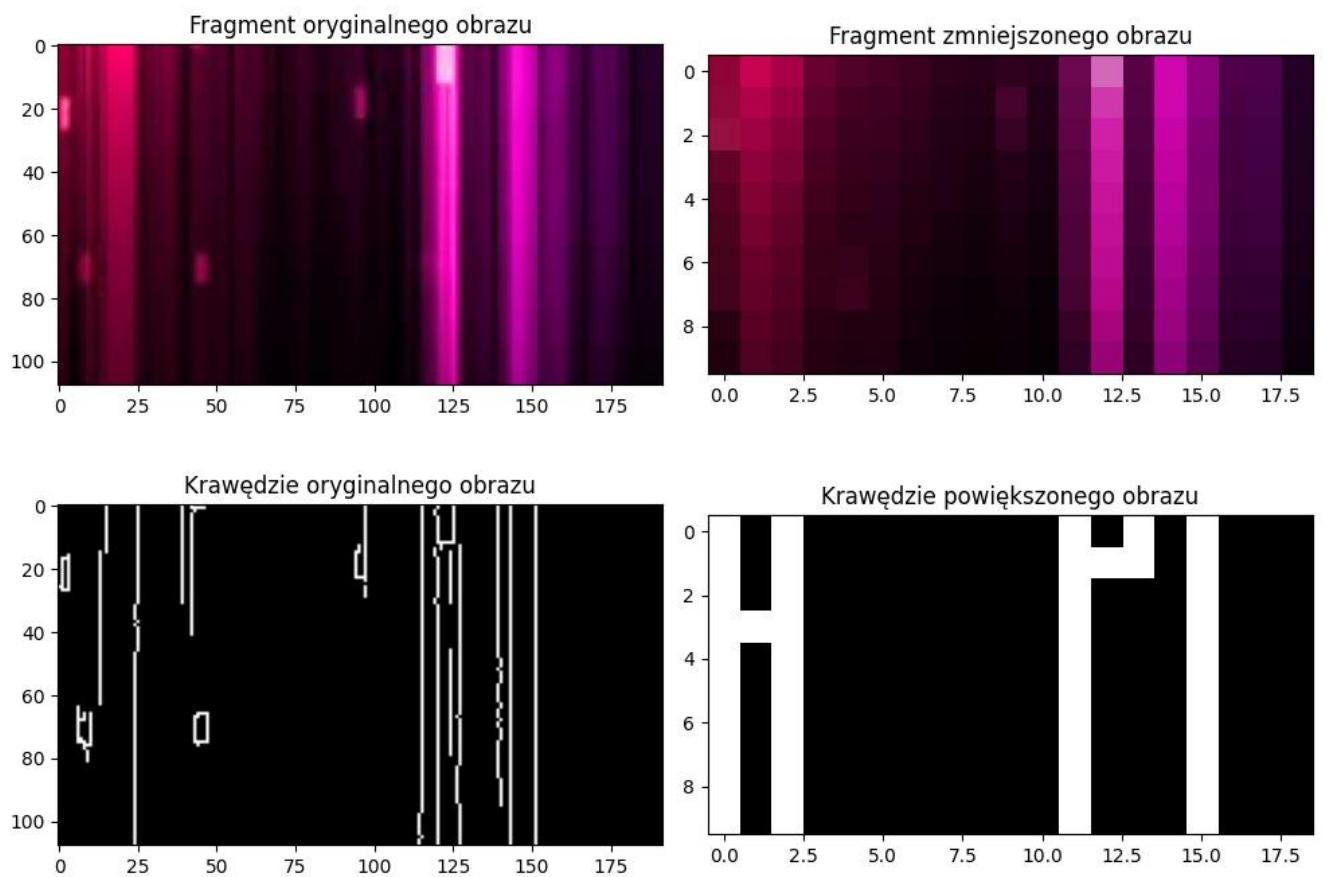


Pomniejszenie o x10

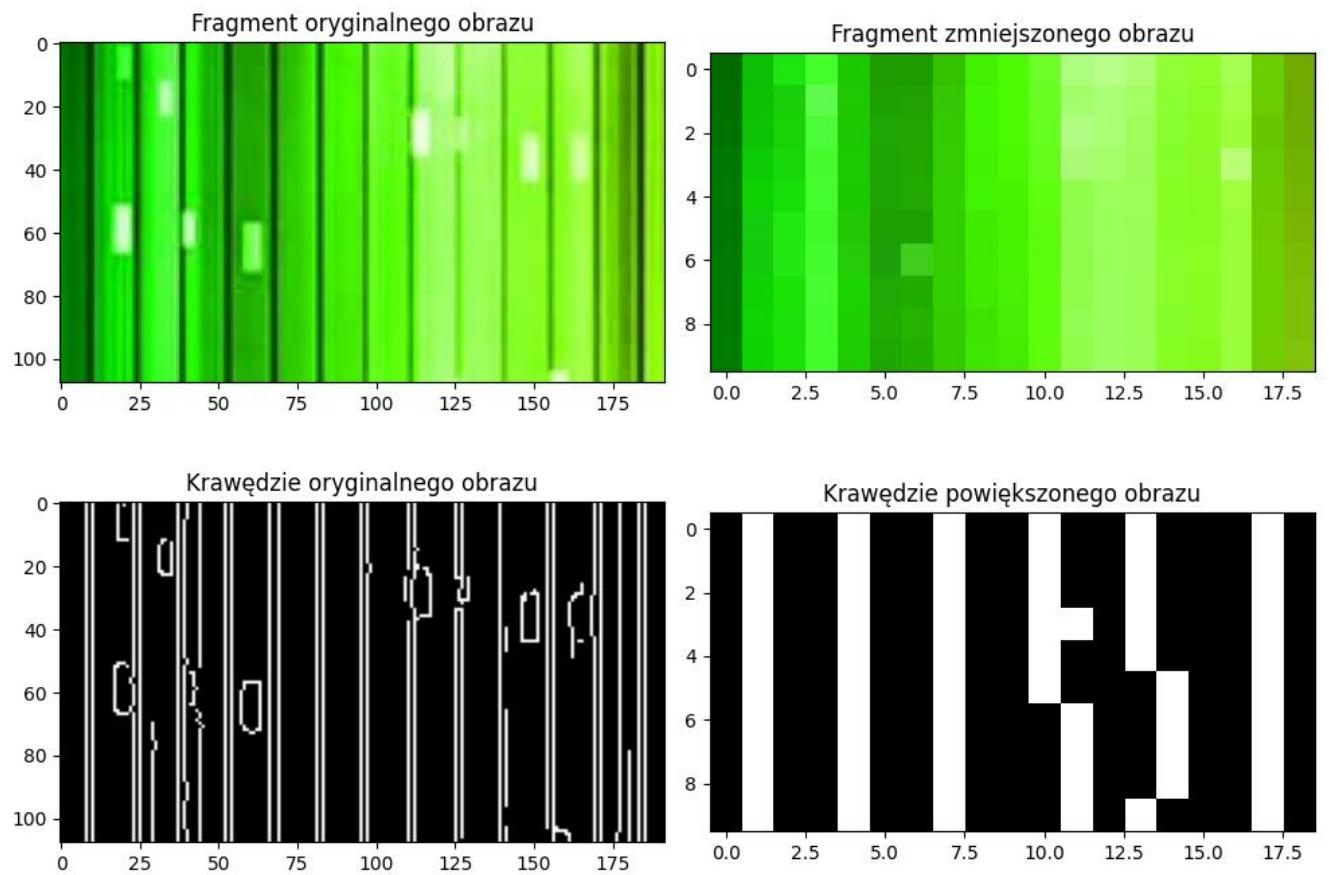
Metoda mean

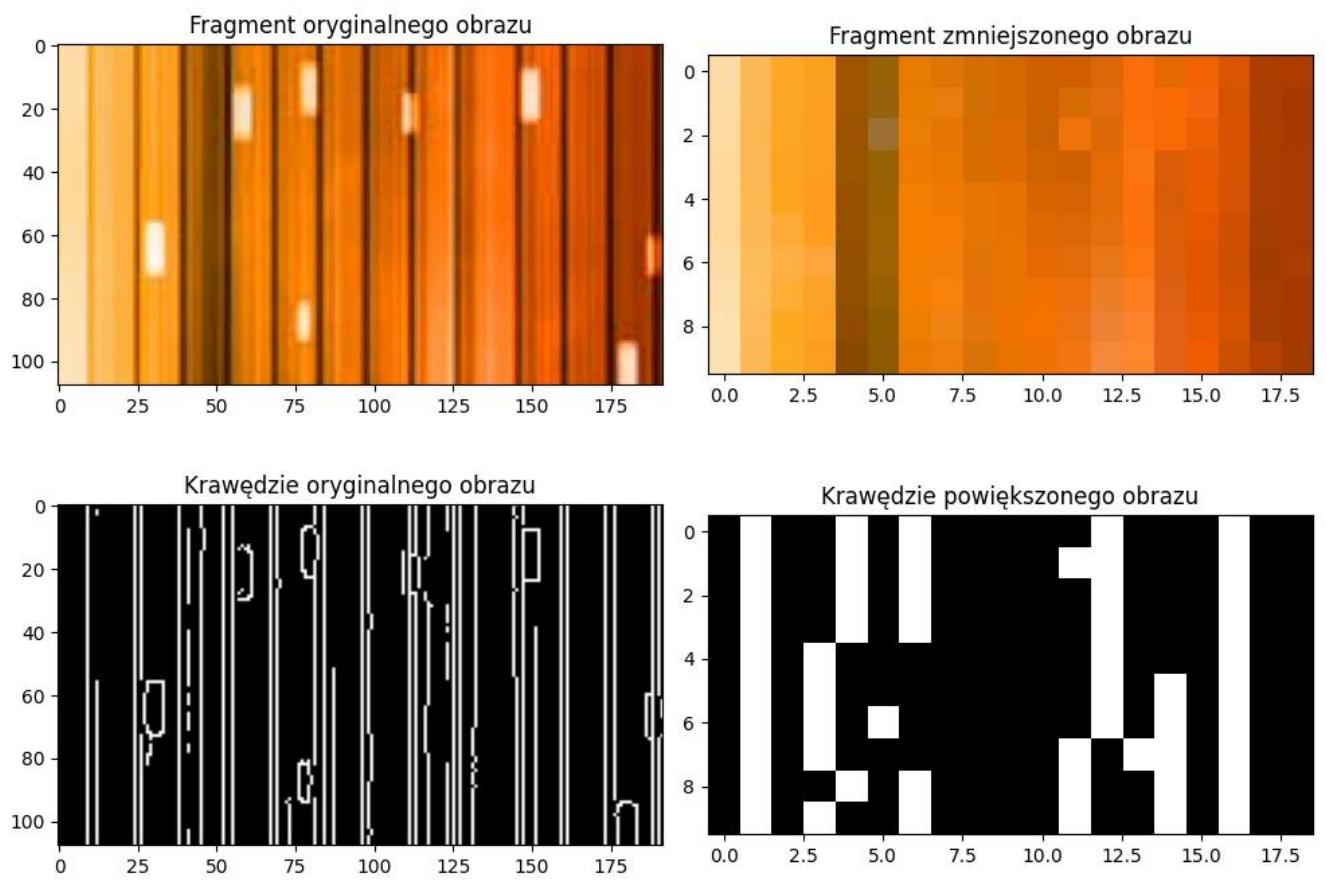


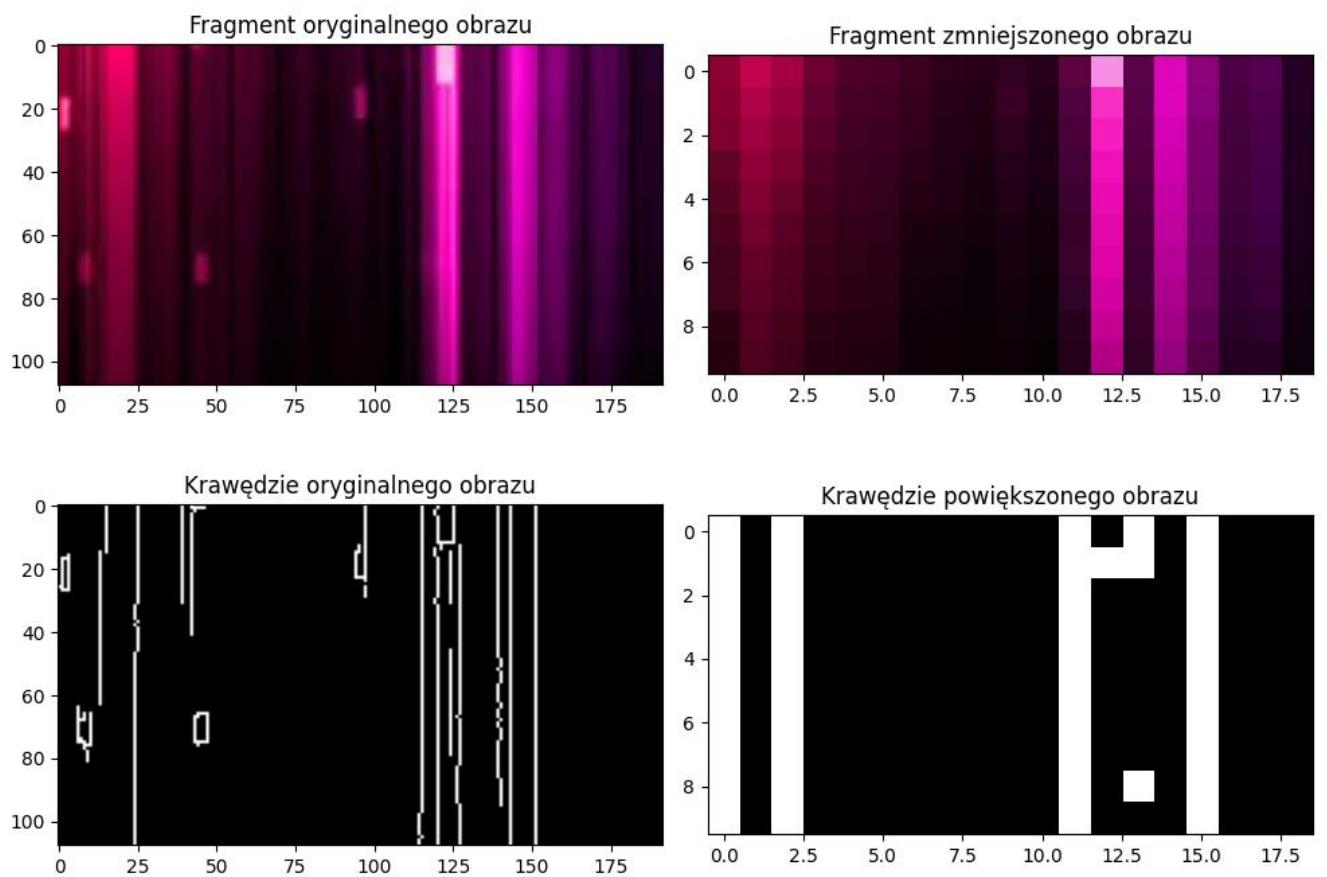




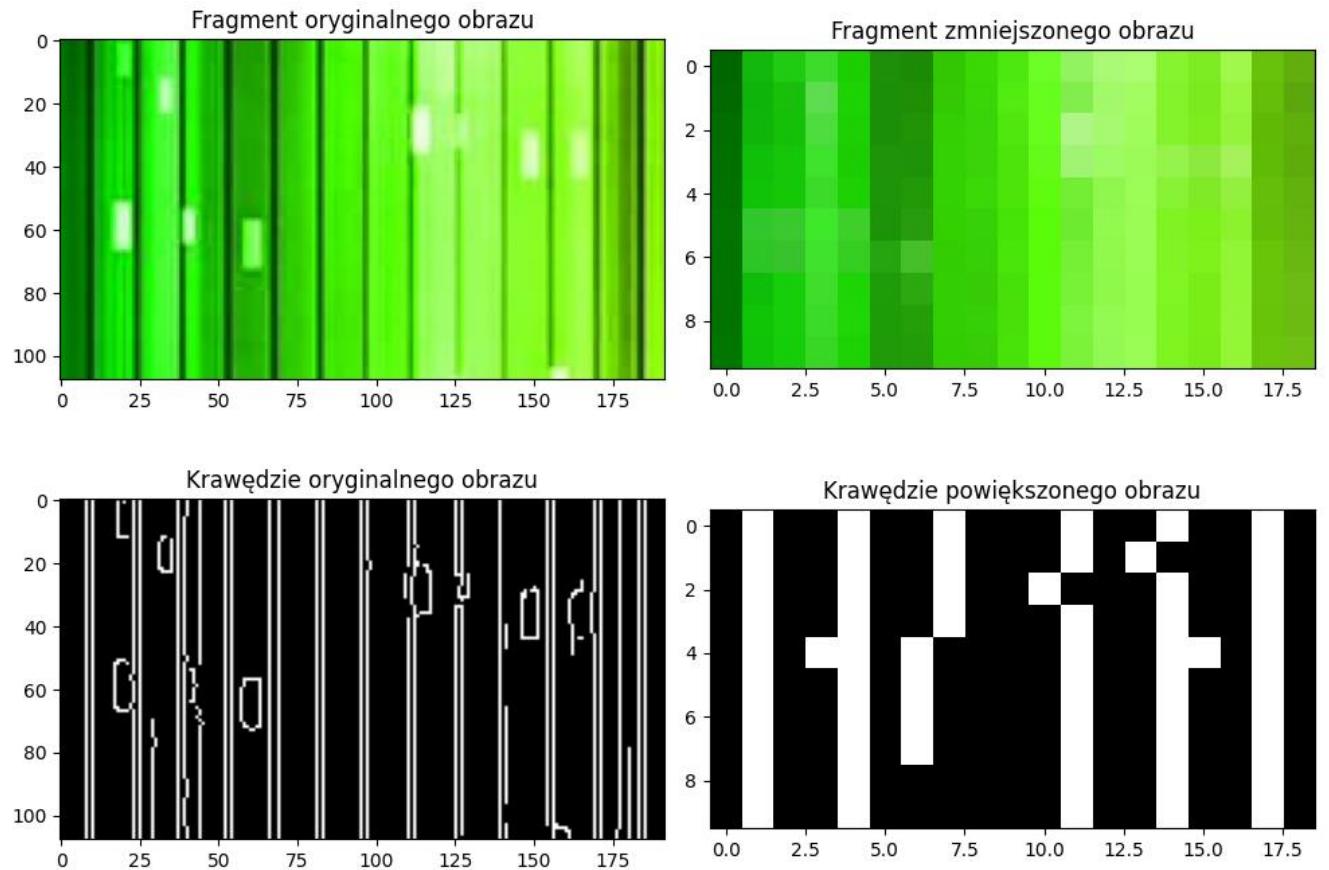
Metoda median

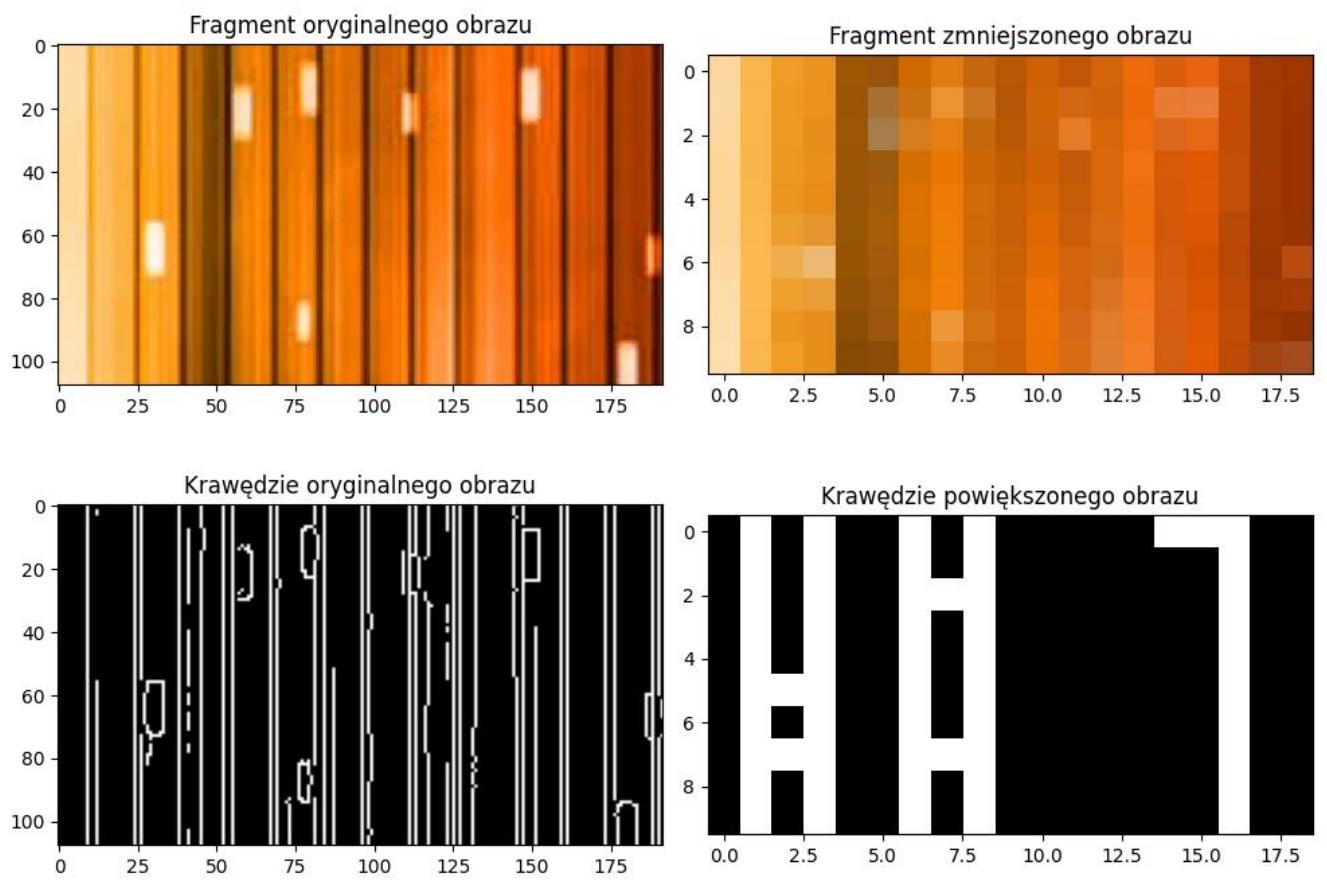


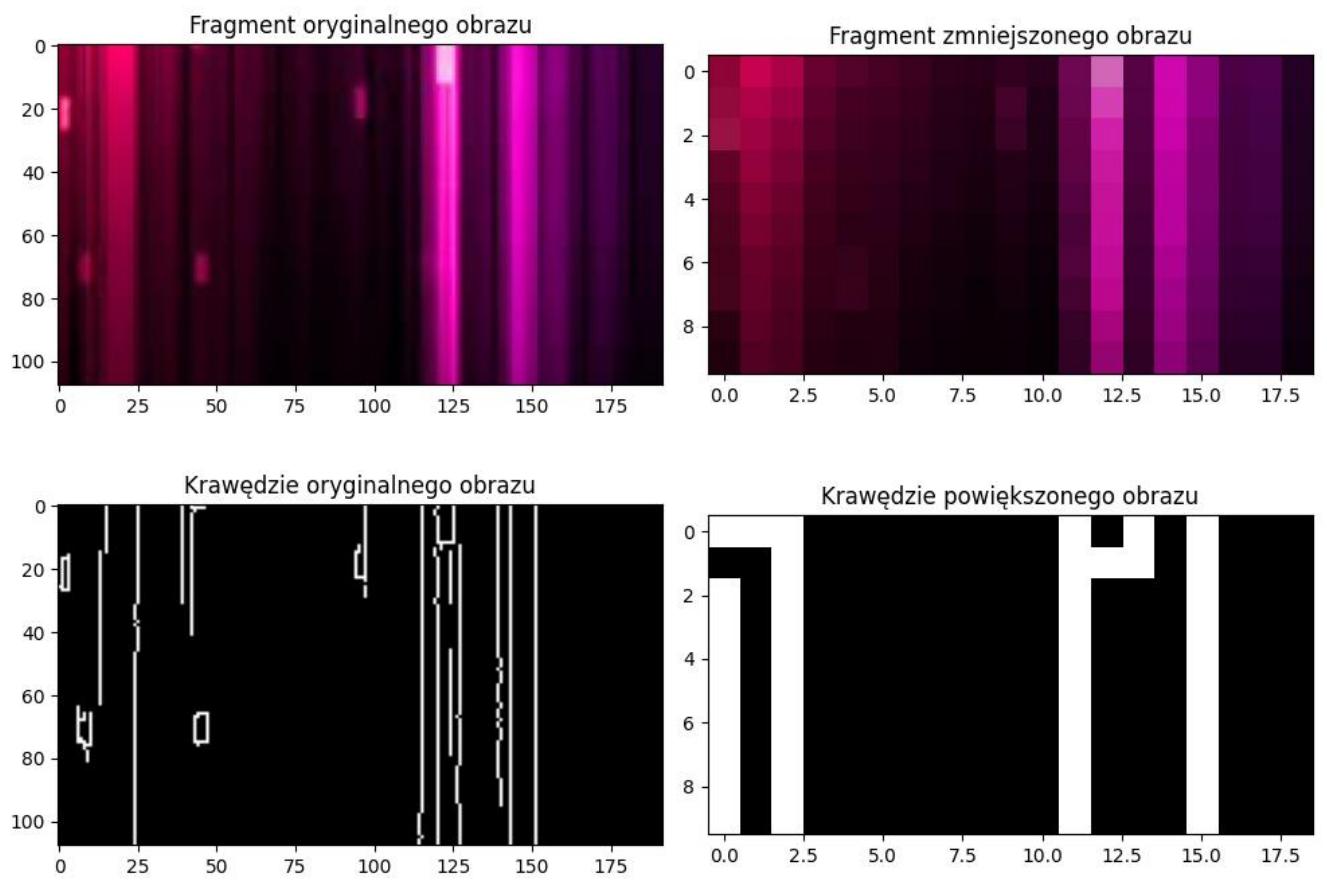




Metoda weighted_average

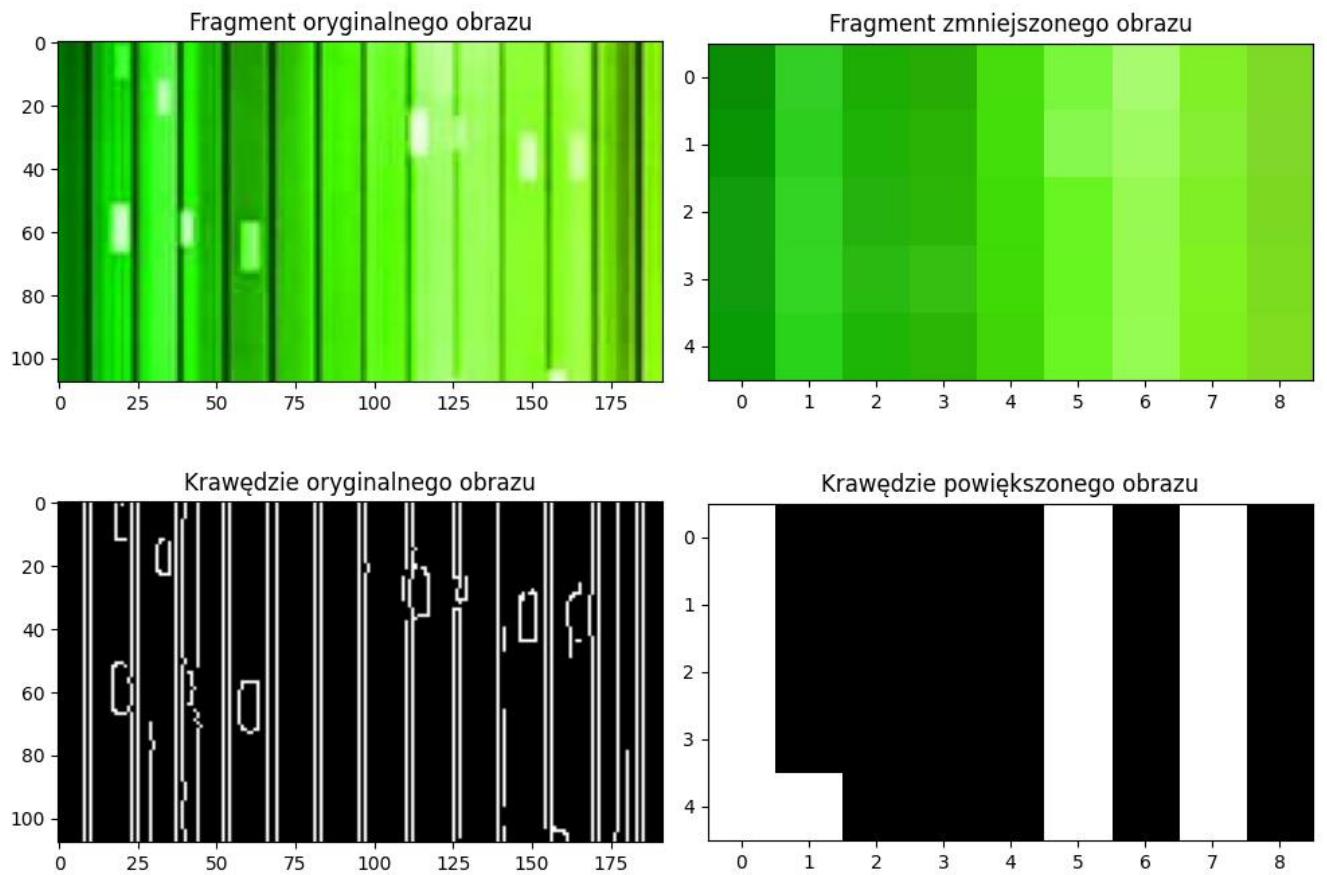


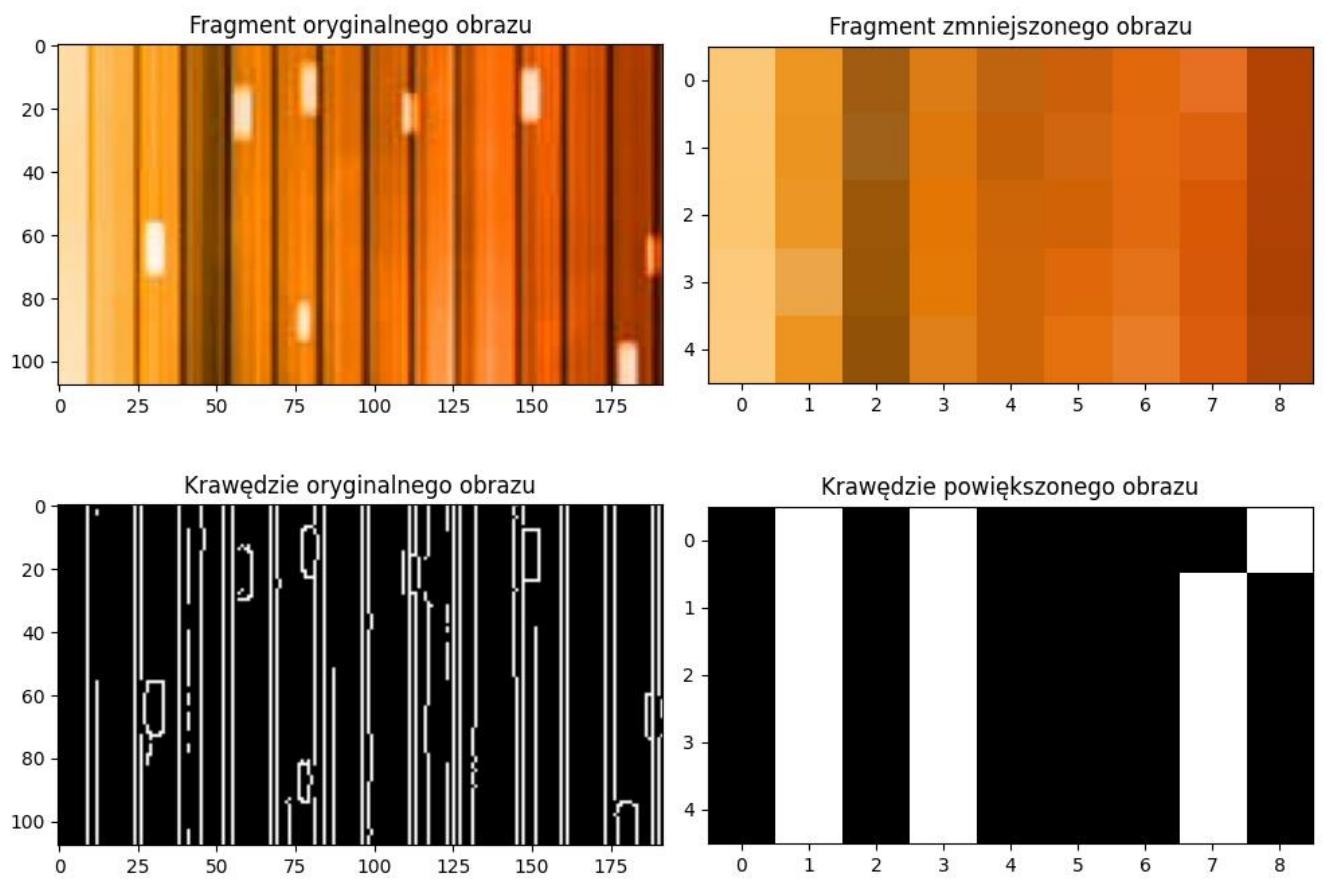


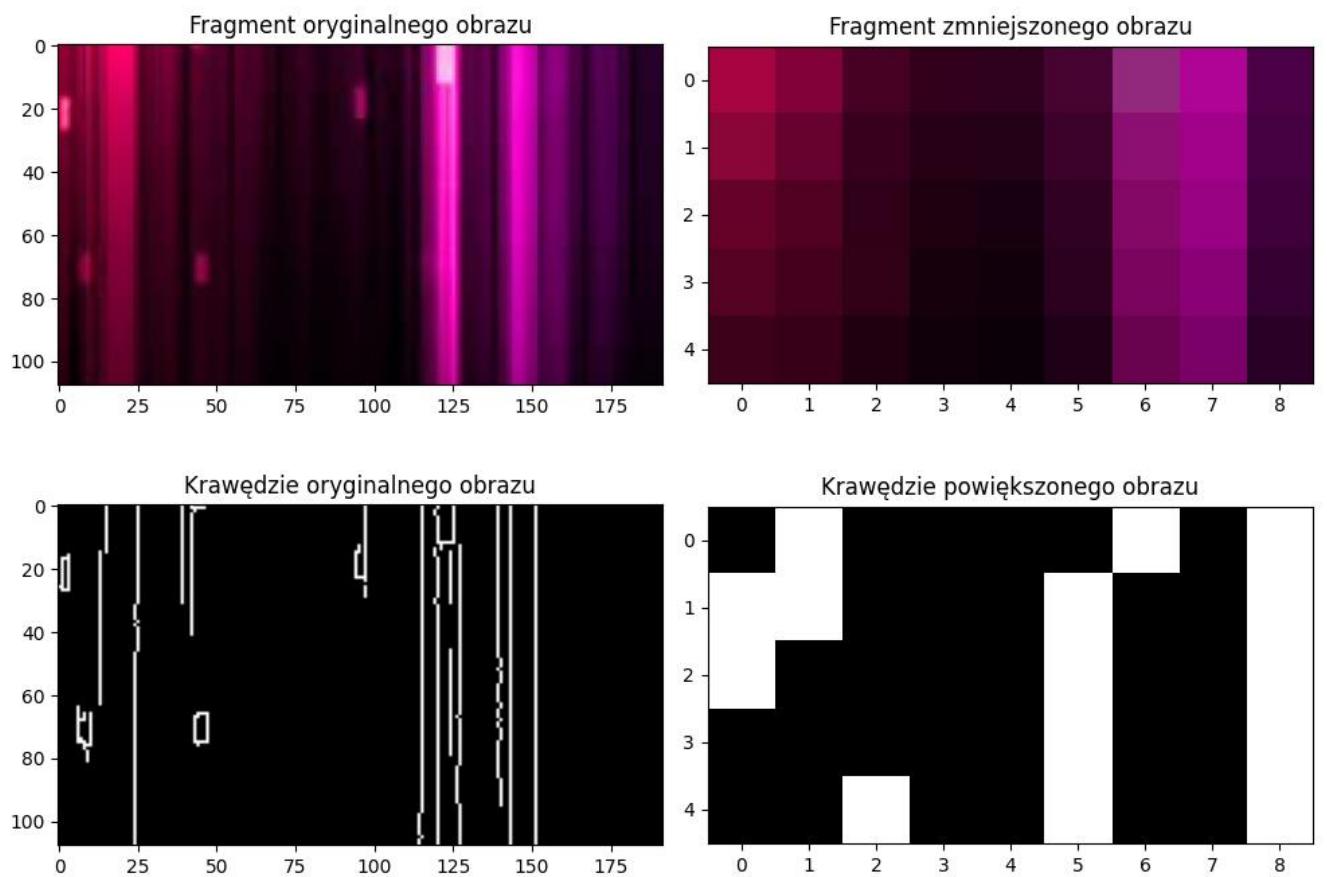


Pomniejszenie o x20

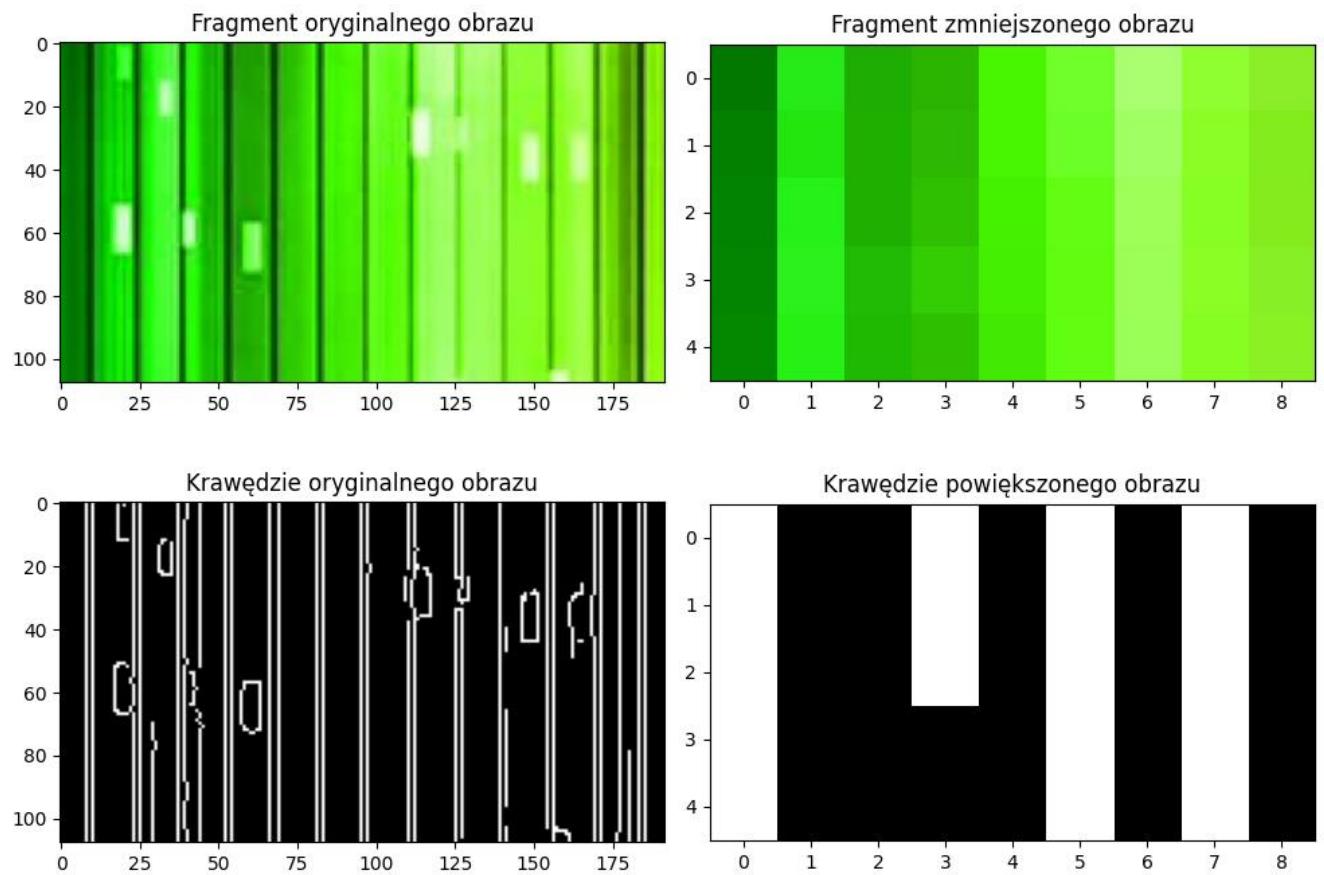
Metoda mean

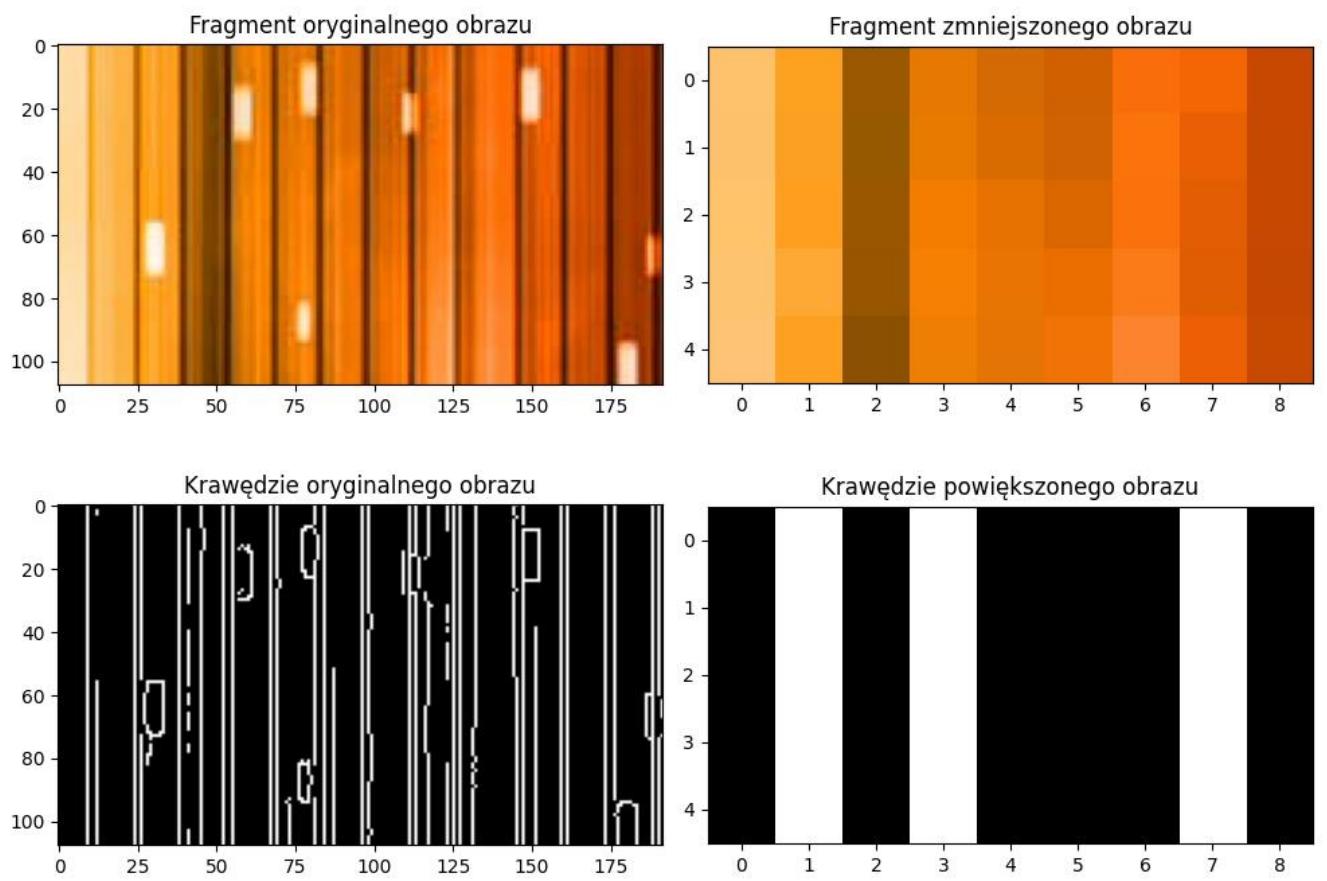


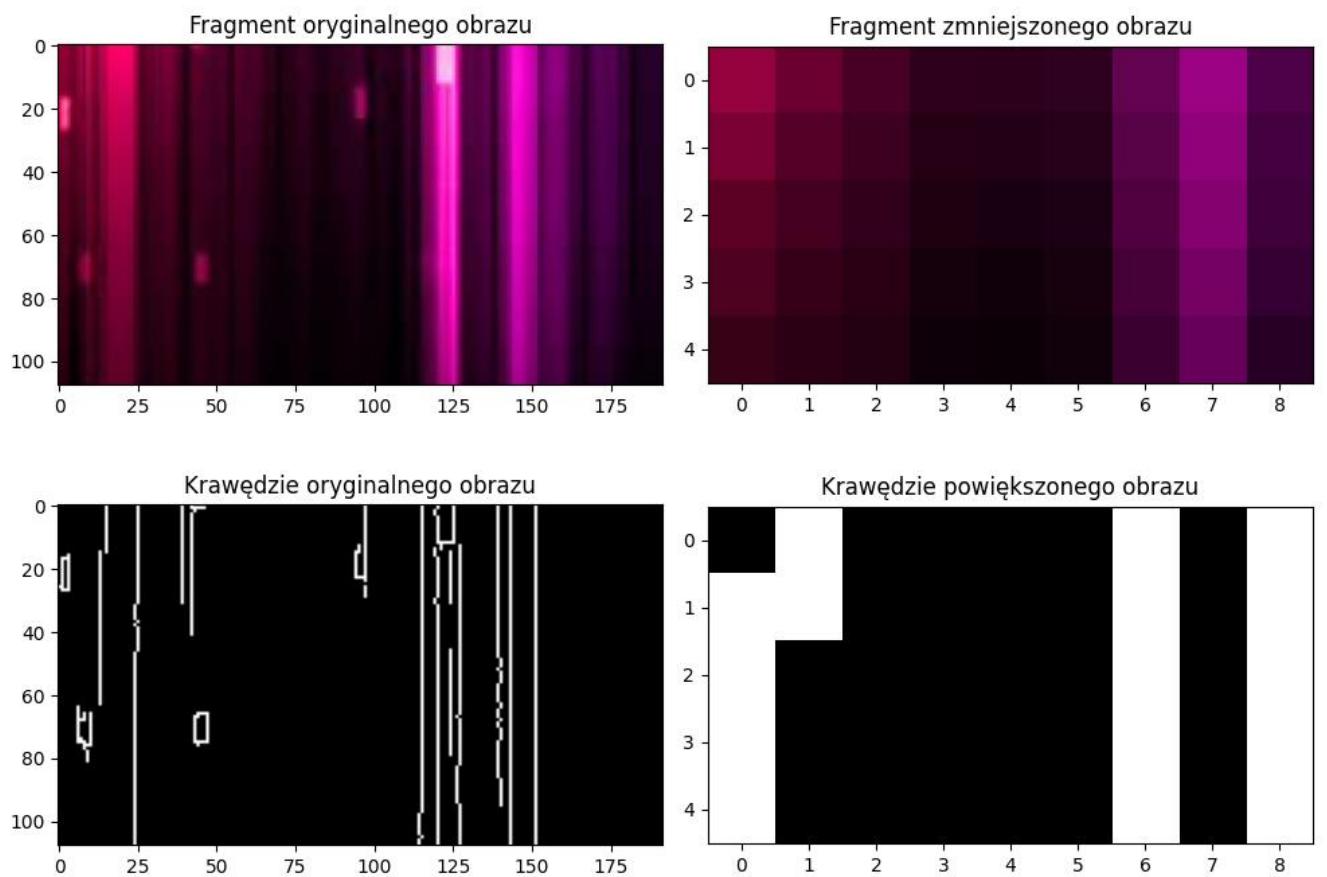




Metoda median







Metoda weighted_average

