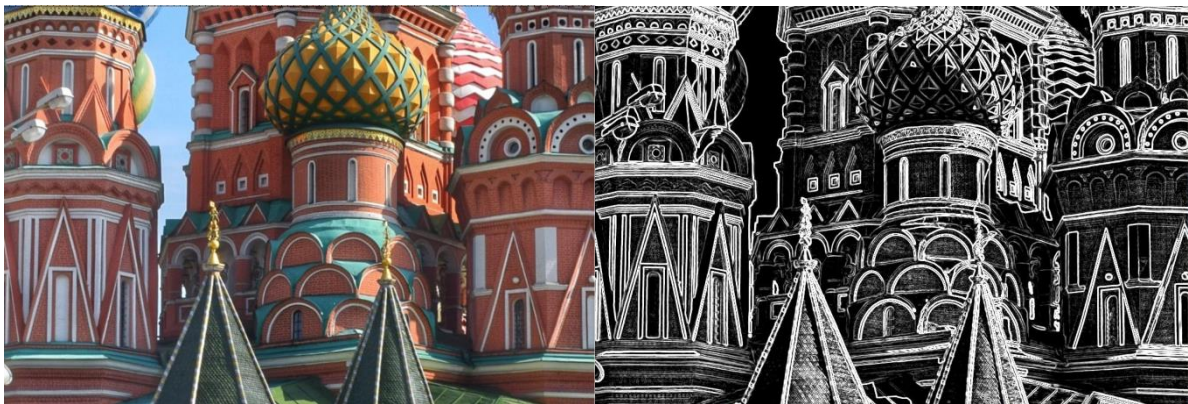

Detecção de bordas da imagem (Detecting edges)



(Detalhe - Antes)

(Detalhe - Depois)

Introdução:

Detecção de borda é uma técnica de processamento de imagem (manipulação de imagem, por computador, onde a entrada e saída do processo são imagens) e visão computacional (processo de modelagem e replicação da visão humana usando software e hardware) para determinar pontos de uma imagem digital em que a intensidade luminosa muda repentinamente.

Objetivo:

Implementar a técnica e Detecting Edges como ferramenta complementar da Documentação Científica por Imagem com finalidade de processar imagens diagnósticas, de modo a auxiliar o profissional de conservação/restauração no estudo do objeto, por meio de visualização e análise das linhas construtivas da imagem.

Objetivos específicos:

É preciso entender a característica da imagem para implementar a ferramenta de detecção de borda e utilizar, assim, diferentes softwares e/ou algoritmos, referenciado neste tutorial como “Metodologias”, para o processamento adequado da imagem. Este estudo preza pelo entendimento da imagem e visa fornecer um método eficiente como ferramenta de visualização e análise.

Mudanças repentinas em imagens, geralmente, refletem eventos importantes na cena, mudança das propriedades do material ou variações na iluminação da cena. Sendo, assim, imprescindível para que o restaurador entenda as linhas construtivas e reconhecimento de padrões da imagem.

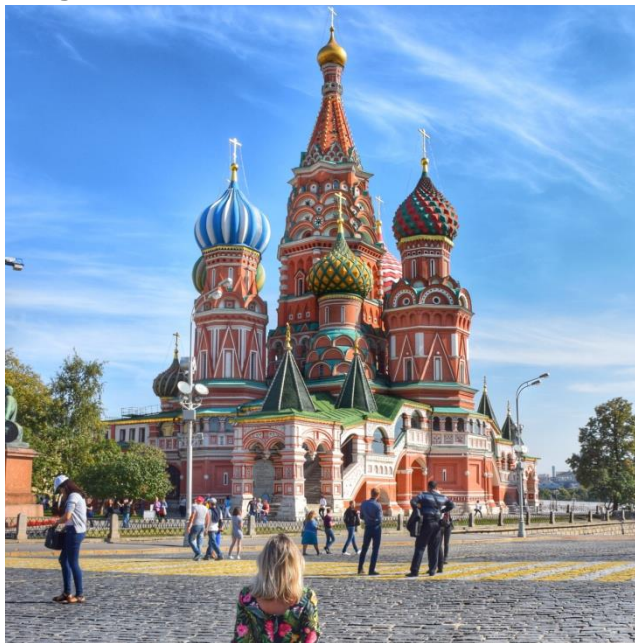
Há a possibilidade de se utilizar a linguagem C, programa matemático (MATLAB ou SciLab).

Metodologia:

Programa utilizado:

Adobe Photoshop CS5

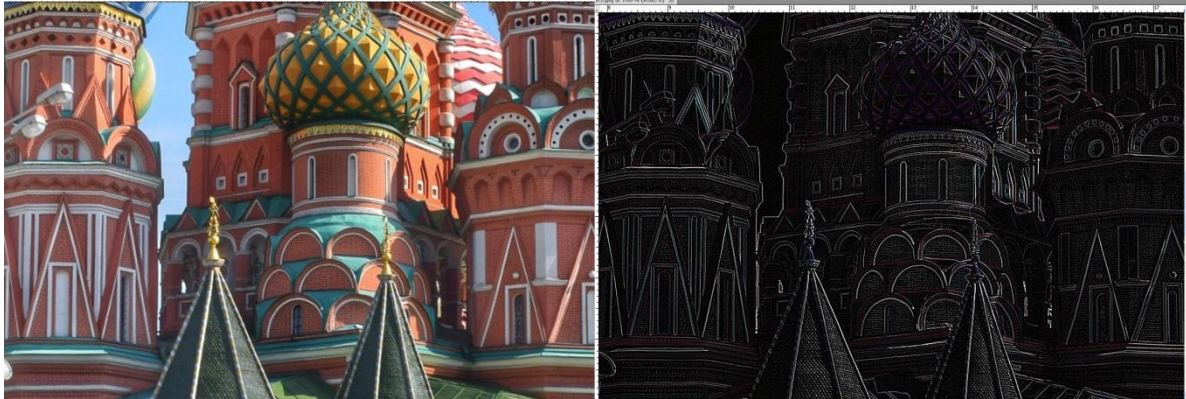
Imagem utilizada:



(Imagem: <http://lalarebelo.com/moscou/>)

METODOLOGIA 1

Algoritmo da Matriz:

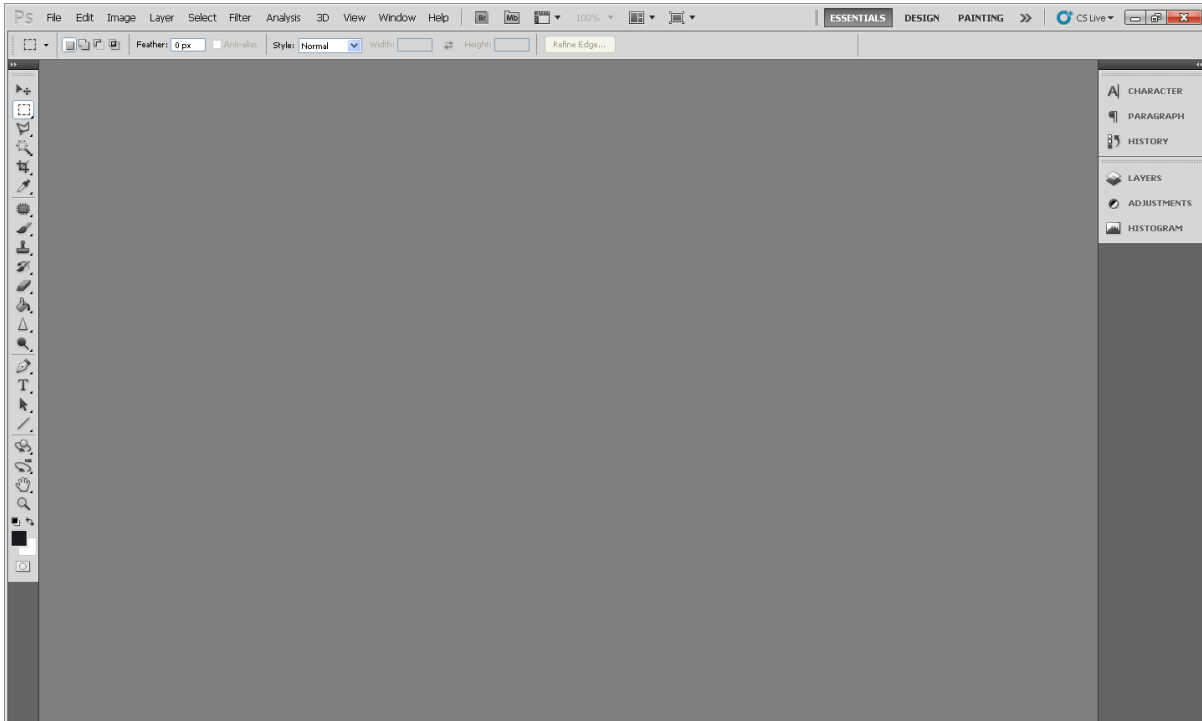


(Detalhe - Antes)

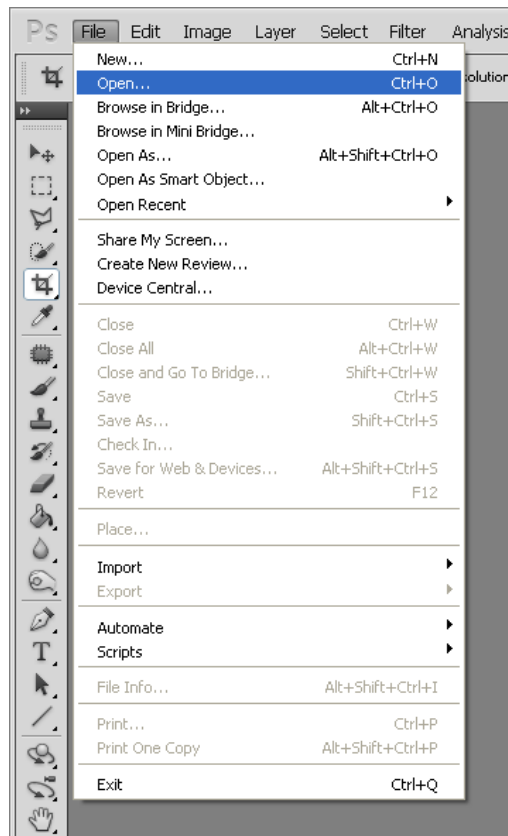
(Detalhe - Depois)

Passos:

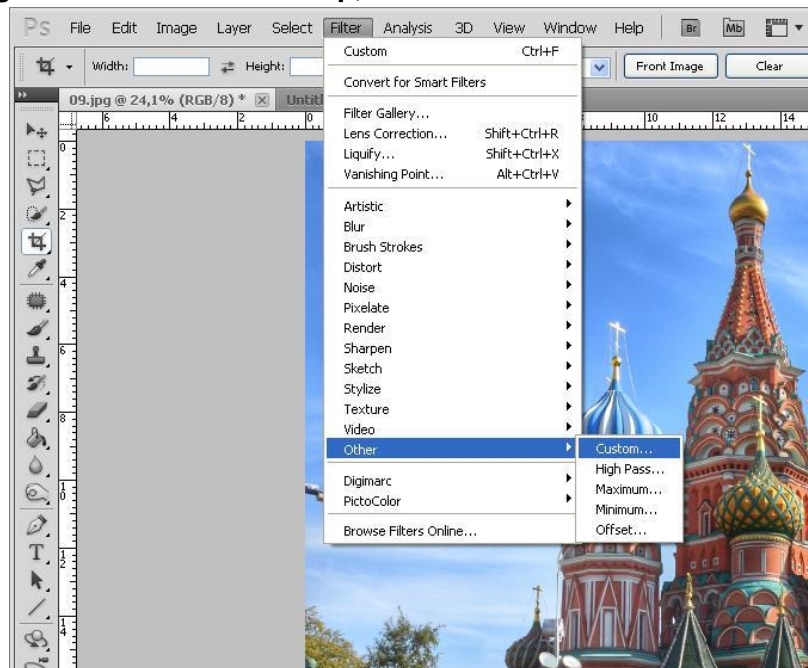
1- Abrir o Adobe Photoshop:



2- Abrir o arquivo de imagem desejado no photoshop (formato pode ser JPEG, TIFF, ou outro):



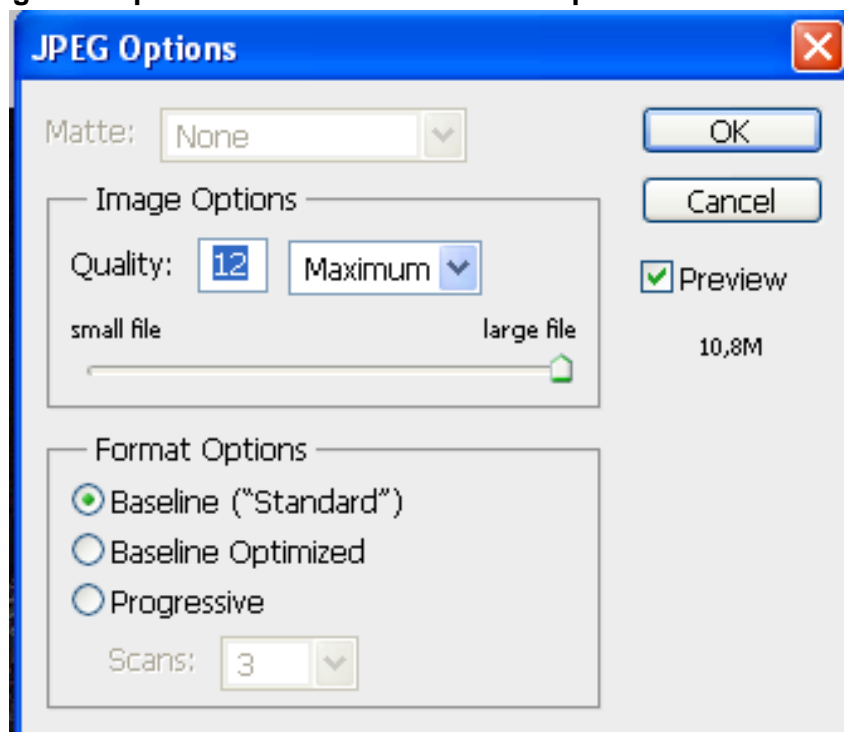
3- Com a imagem aberta no Photoshop, Selecione: Menu -> Filter -> Other -> Custom



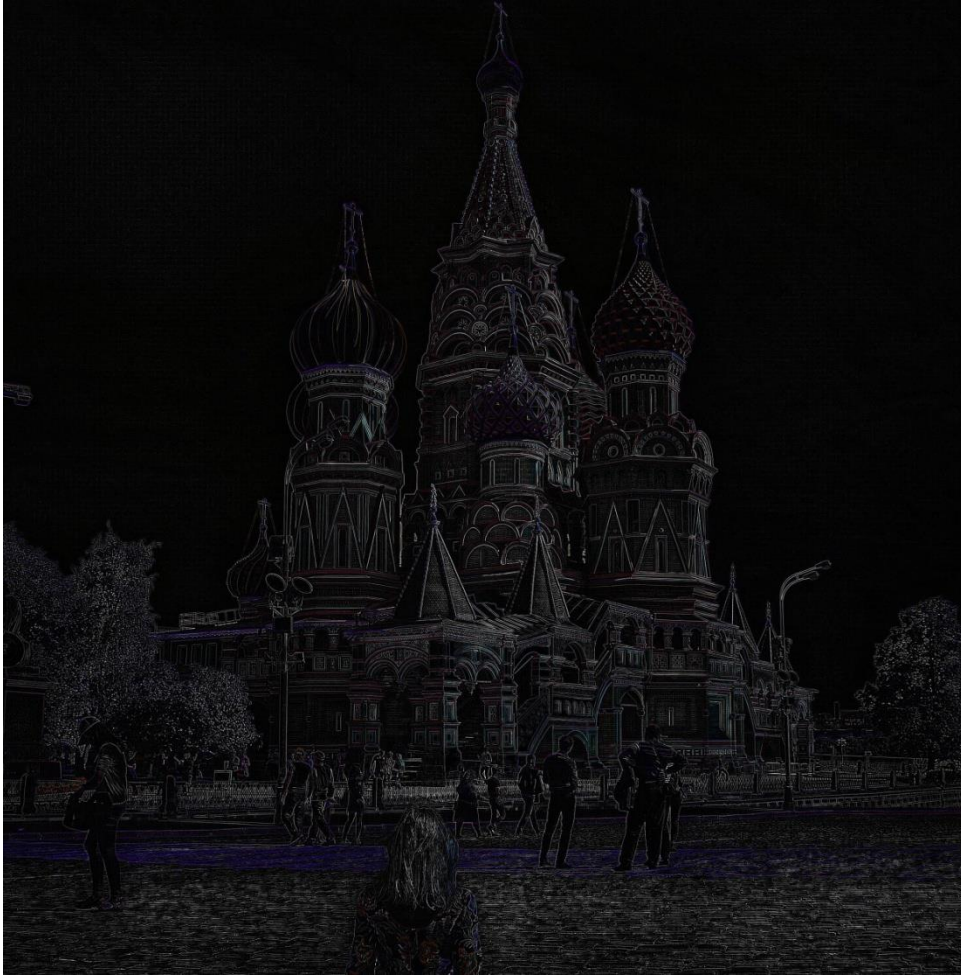
4- Na janela Custom devem ser inseridos os números -1 (nas bordas) e 8 na parte central da matriz de números, isso gera a detecção de arestas da imagem:



5- Salvar imagem: Arquivo -> Salvar como -> JPEG Options:

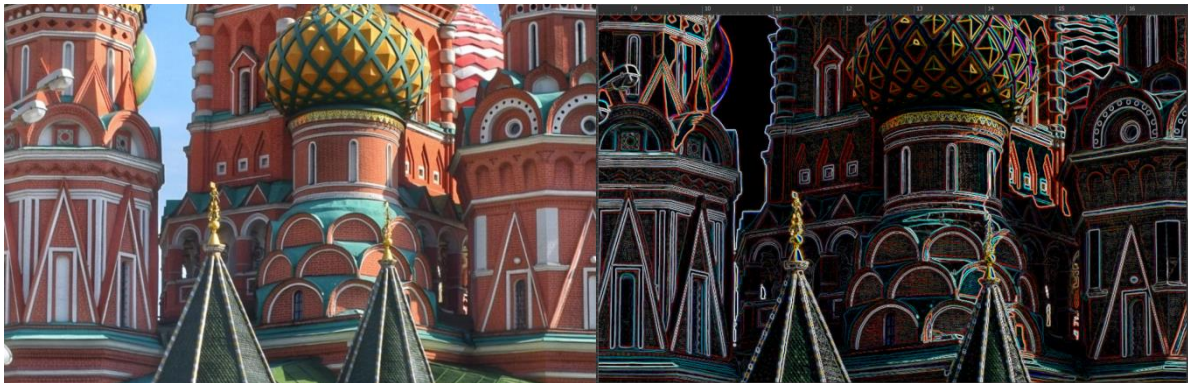


5- Imagem final:



METODOLOGIA 2

Algoritmo das linhas coloridas (método um):

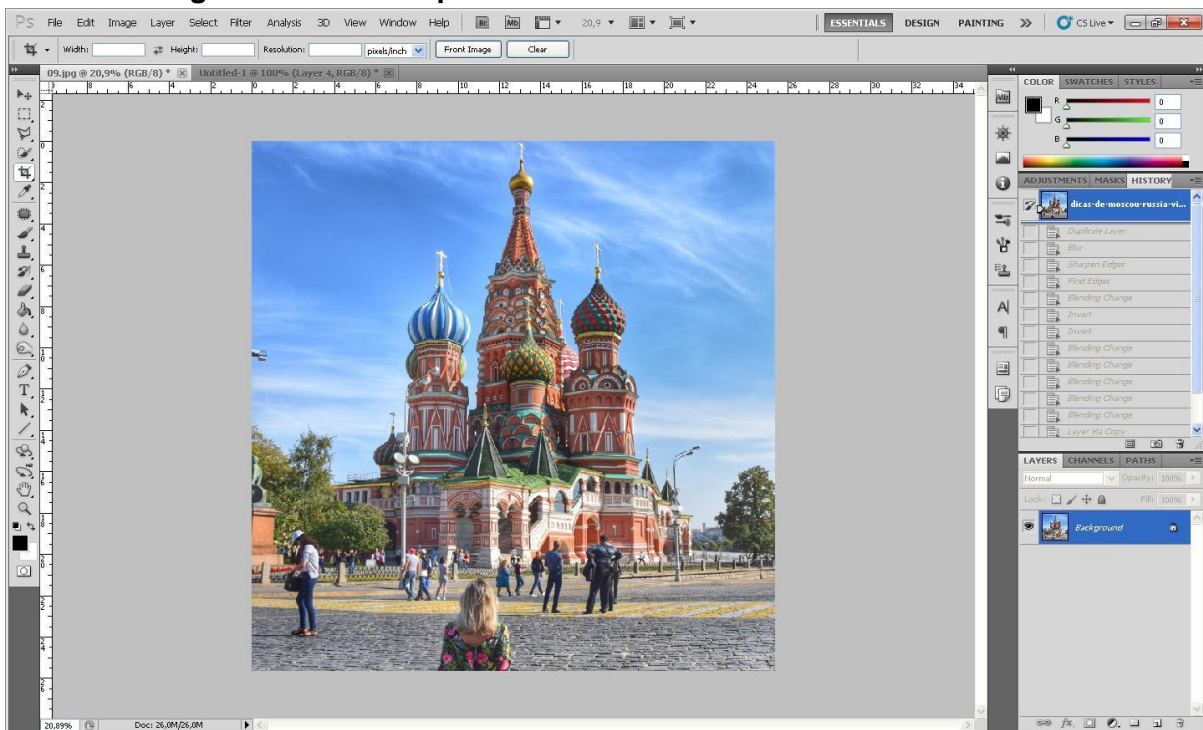


(Detalhe - Antes)

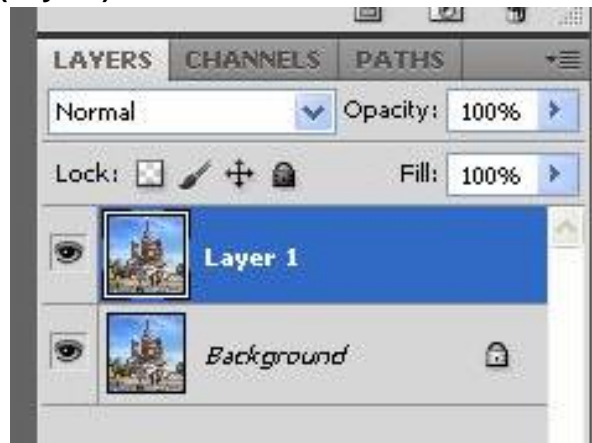
(Detalhe - Depois)

Passos:

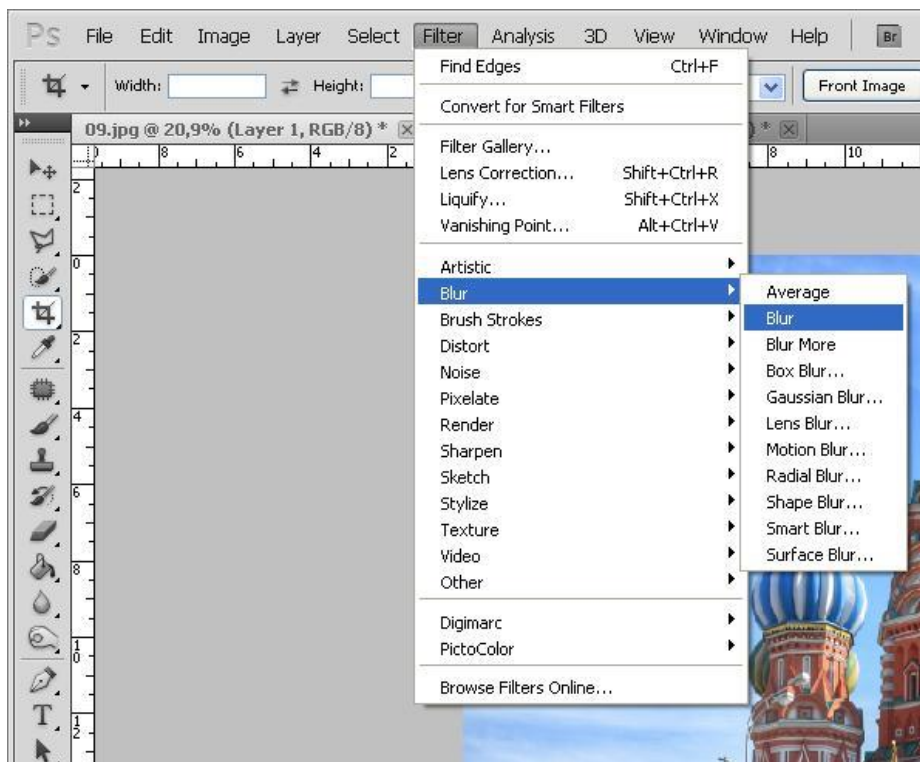
1- Abra a imagem no Photoshop:



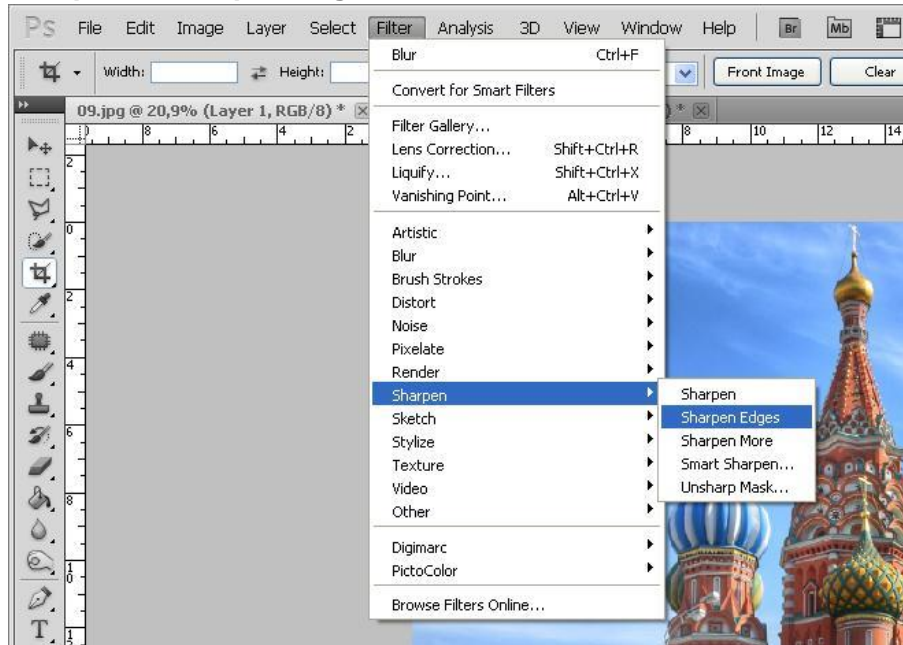
2- Duplicar a camada(Layers):



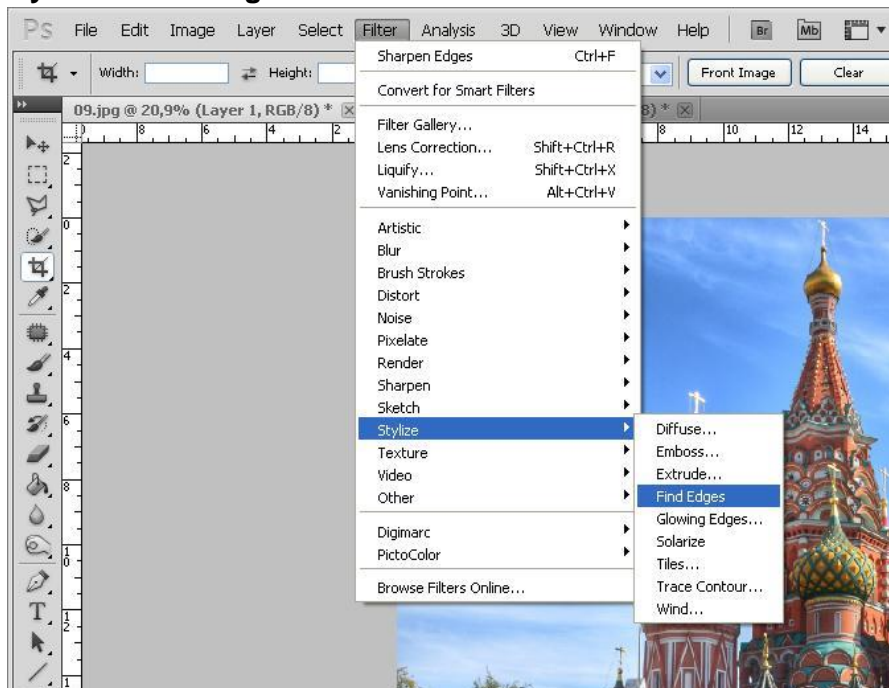
3- Filter -> Blur -> Blur:



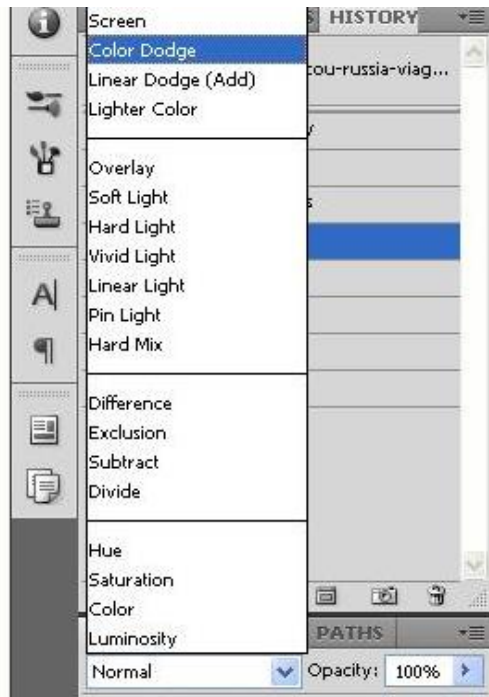
4- Filter -> Sharpen -> Sharpen Edges:



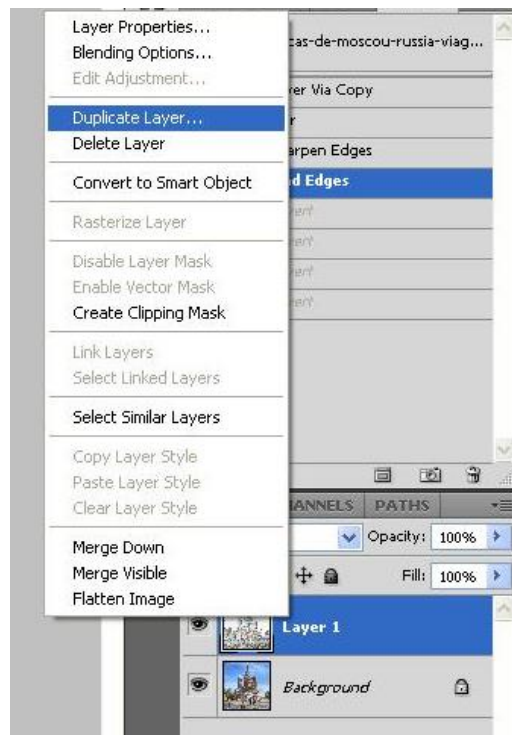
5- Filter -> Stylize -> Find Edges:



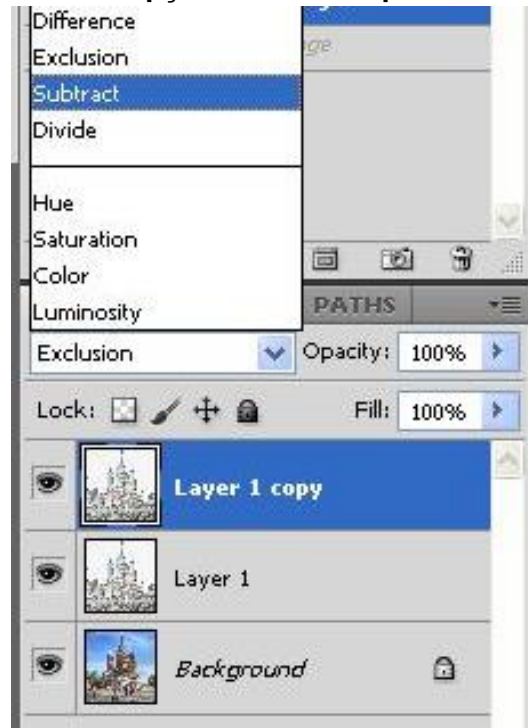
6- Na opção de camada (Layers), selecionar a opção Color Dodge:



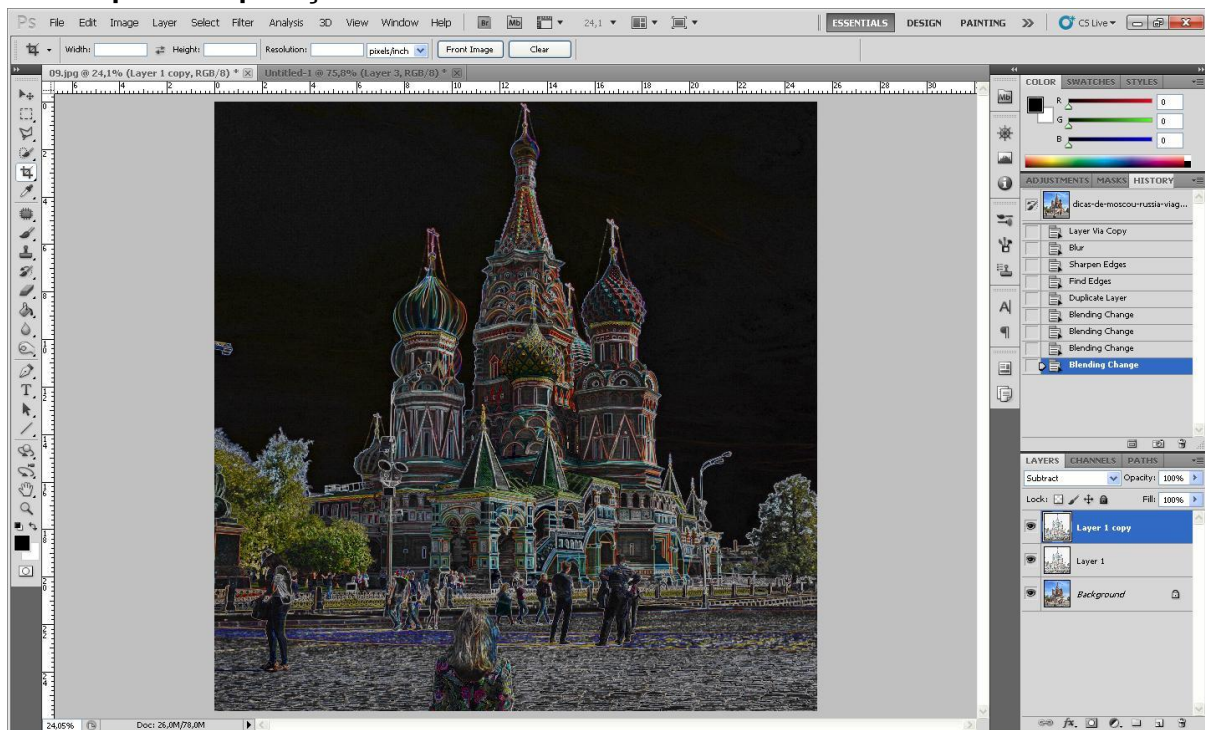
7- Duplicar Camada, novamente:



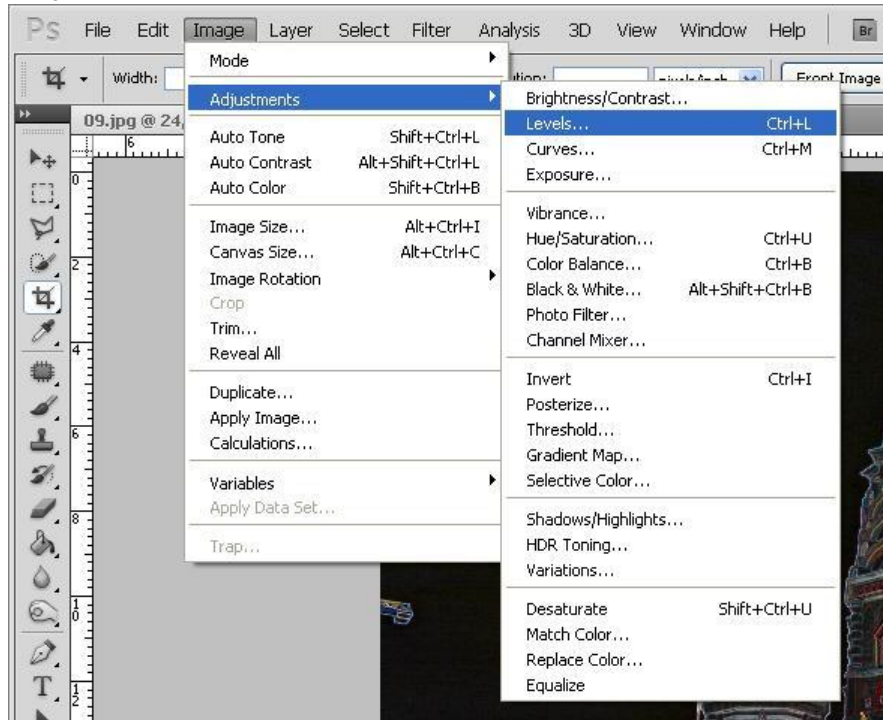
8- Na camada duplicada mude a opção de camada para Subtract:



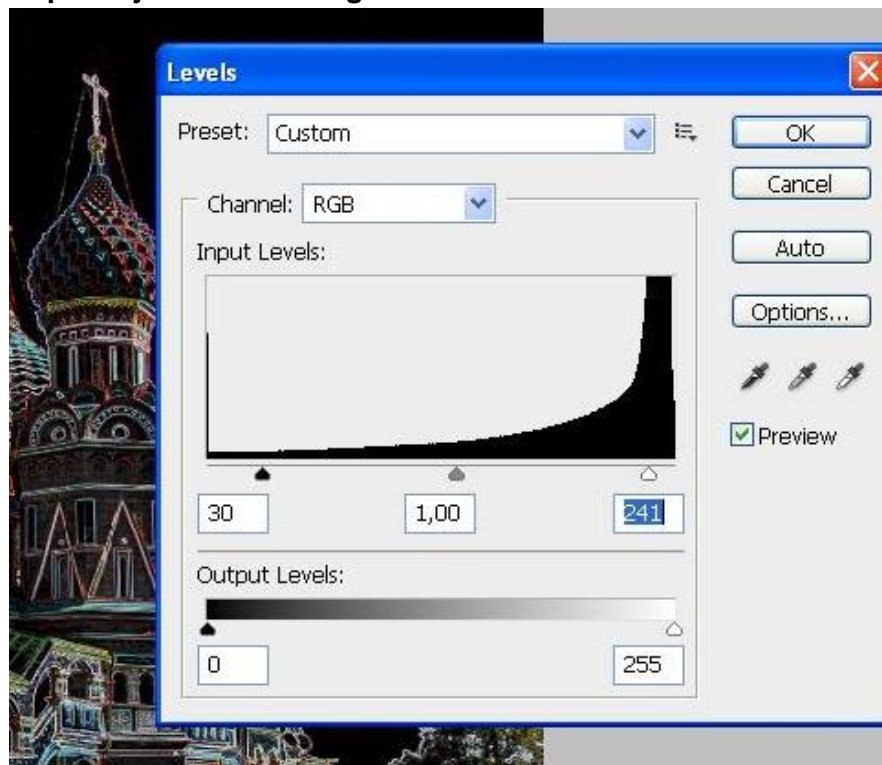
8.1 - Depois da aplicação:



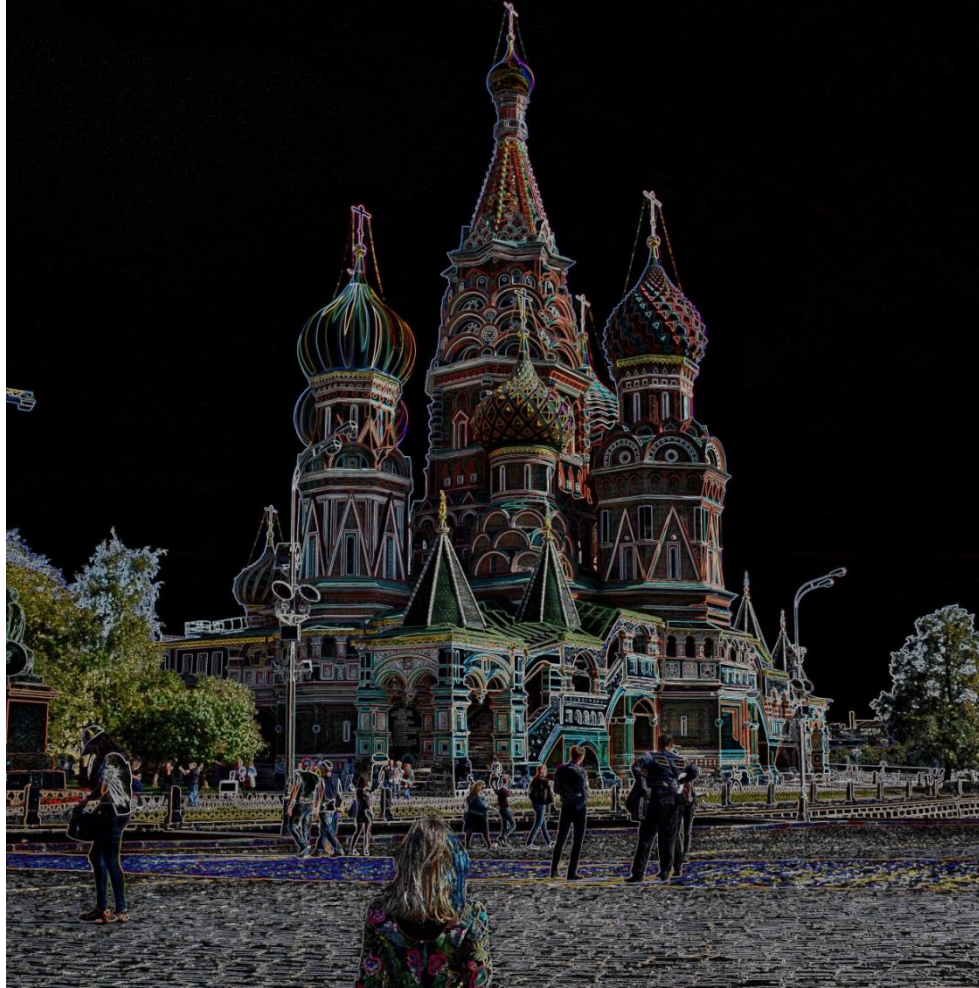
9- Image -> Adjustments -> Levels:



10- Números para ajuste desta imagem no Levels:

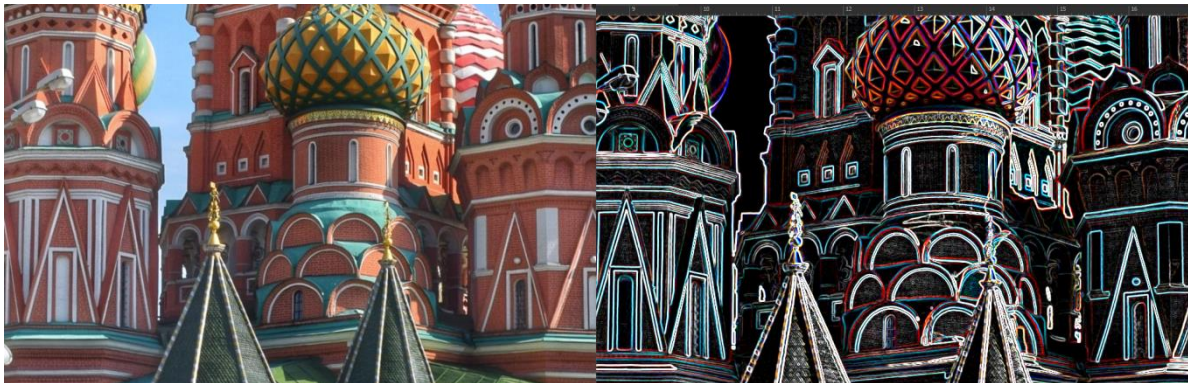


11- Resultado:



METODOLOGIA 3

Algoritmo das linhas coloridas (método dois):

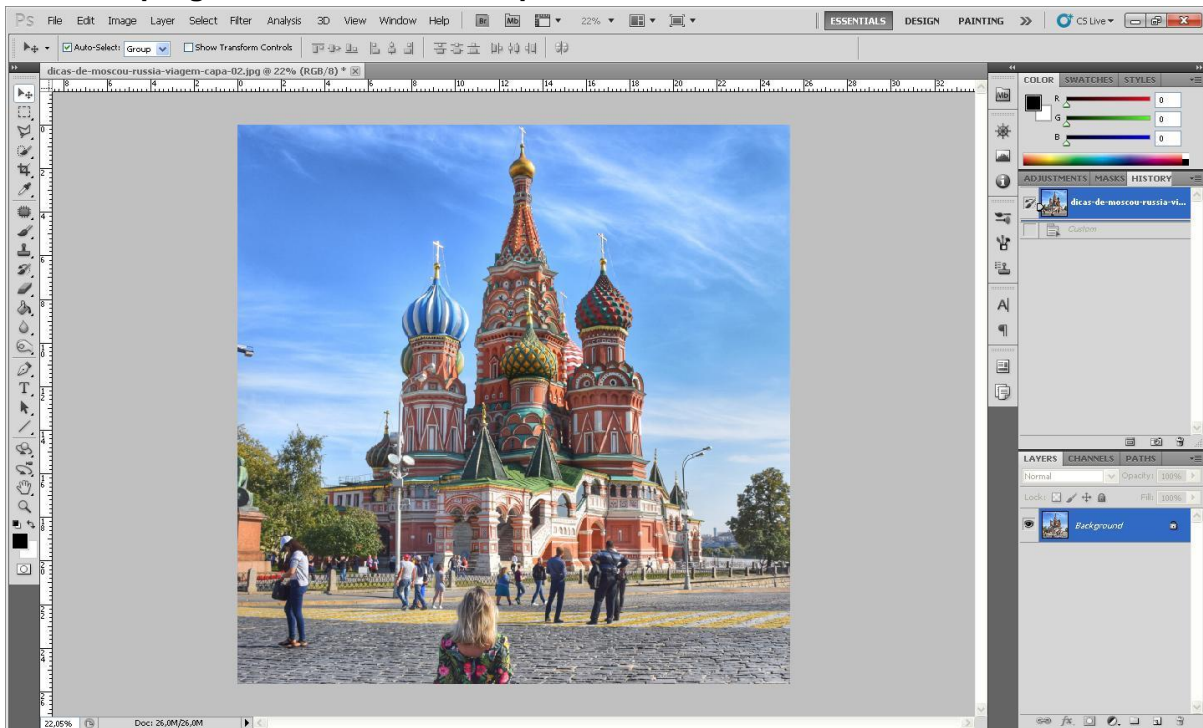


(Detalhe - Antes)

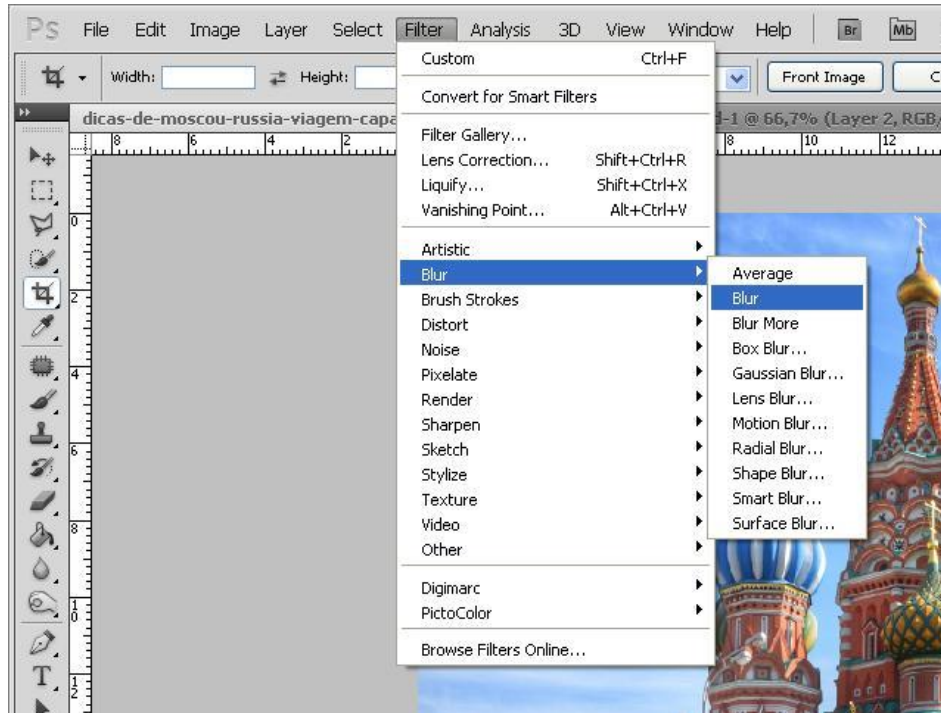
(Detalhe - Depois)

Passos:

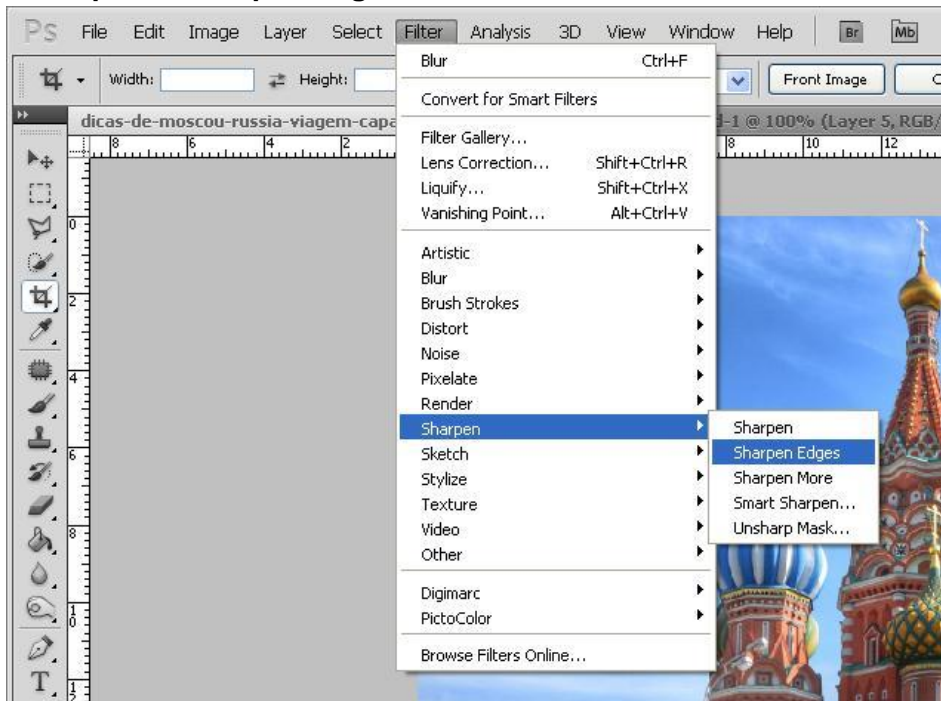
1- Abra o programa Adobe Photoshop



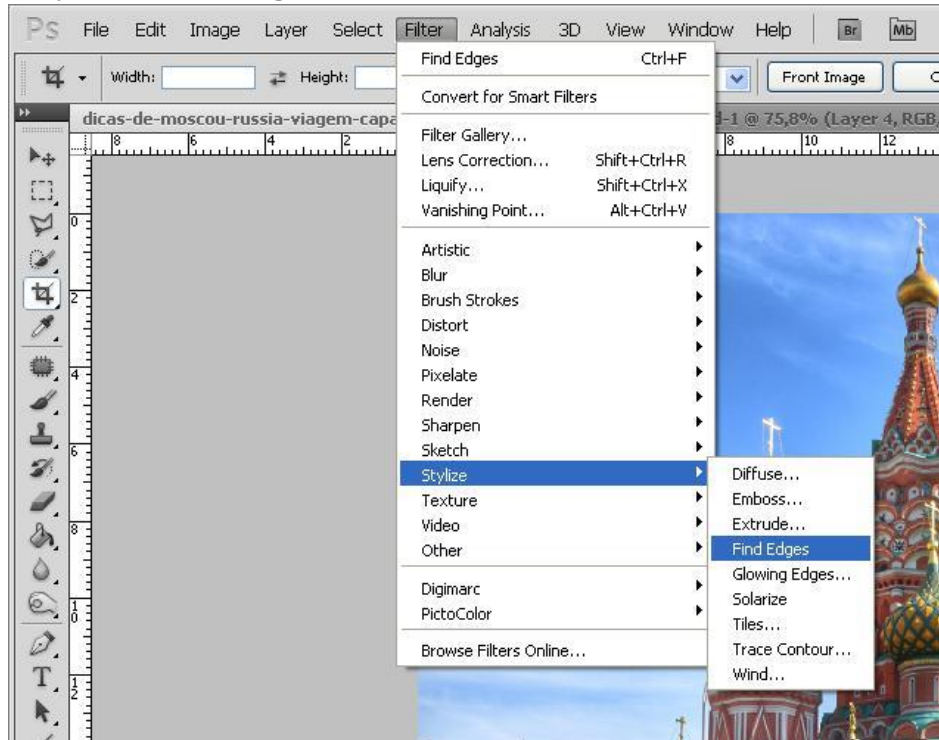
2- Filter -> Blur -> Blur



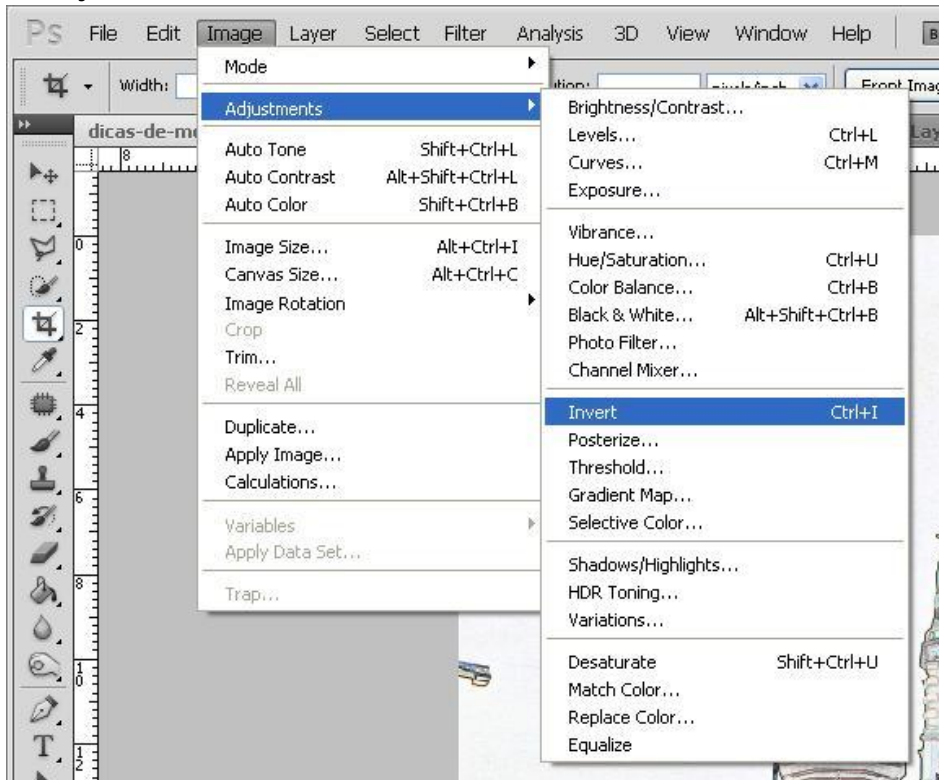
3- Filter -> Sharpen -> Sharpen Edges



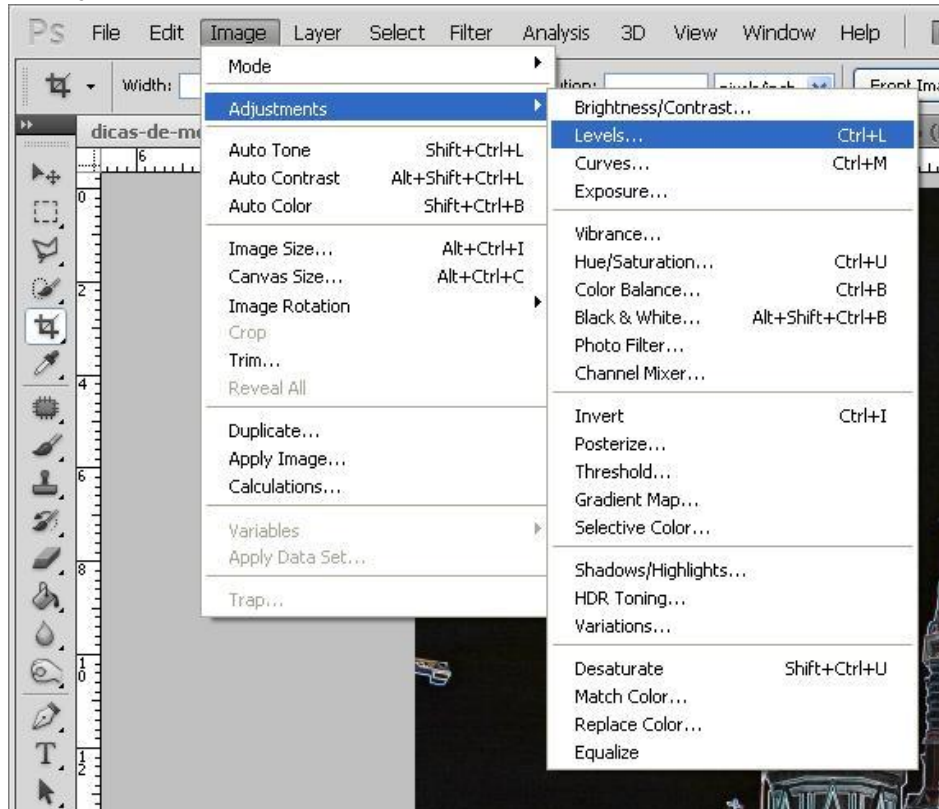
4- Filter -> Stylize -> Find Edges



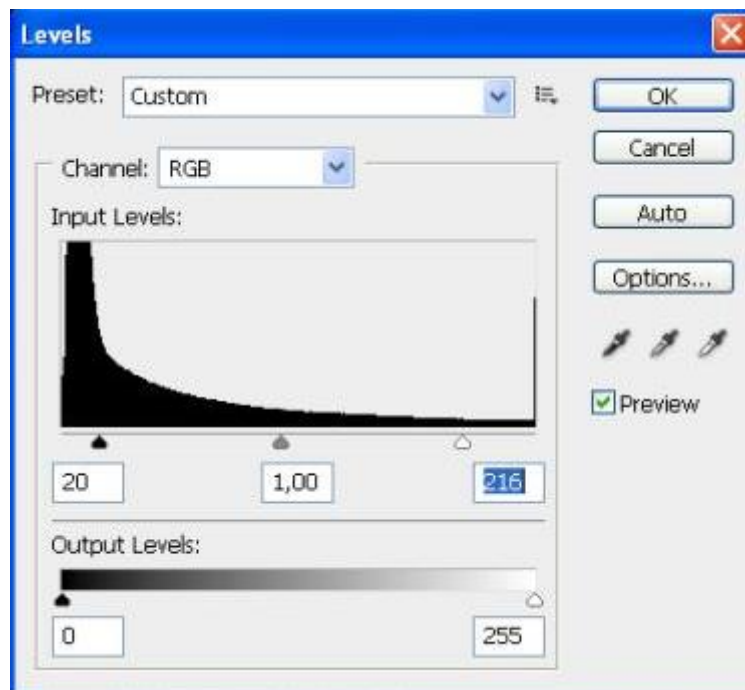
5- Image -> Adjustments -> Invert

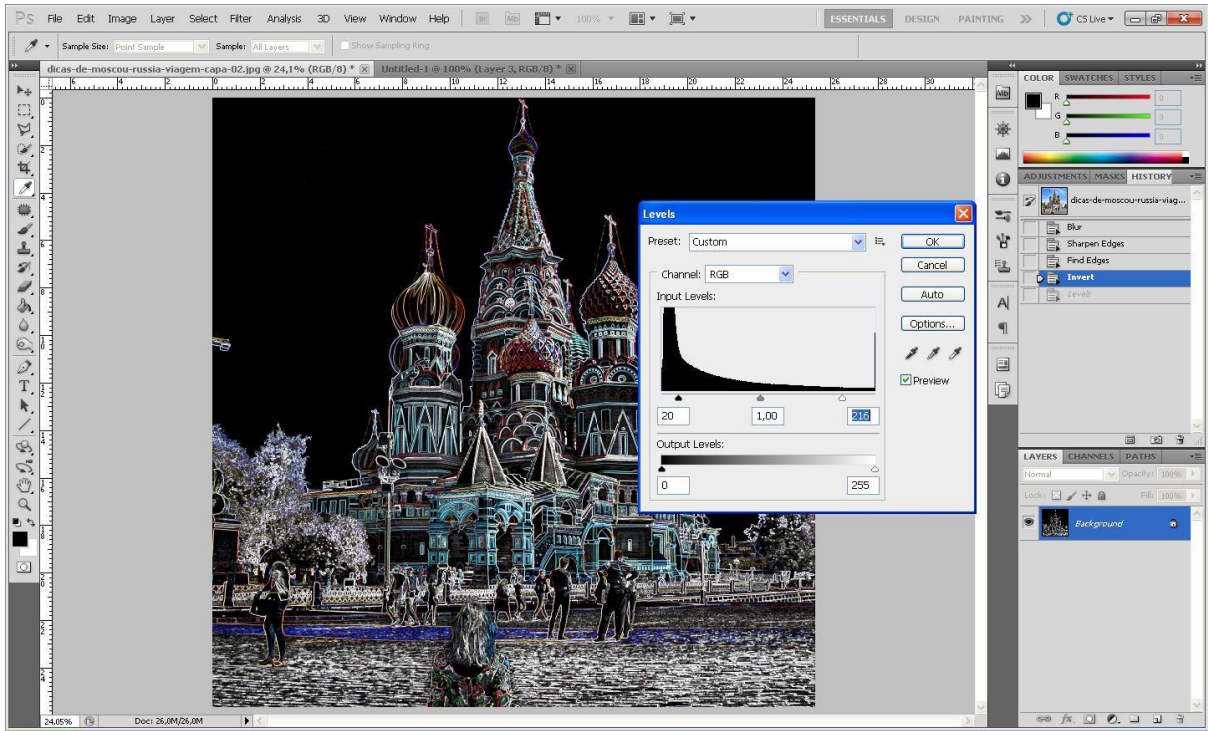


6- Image -> Adjustments -> Levels

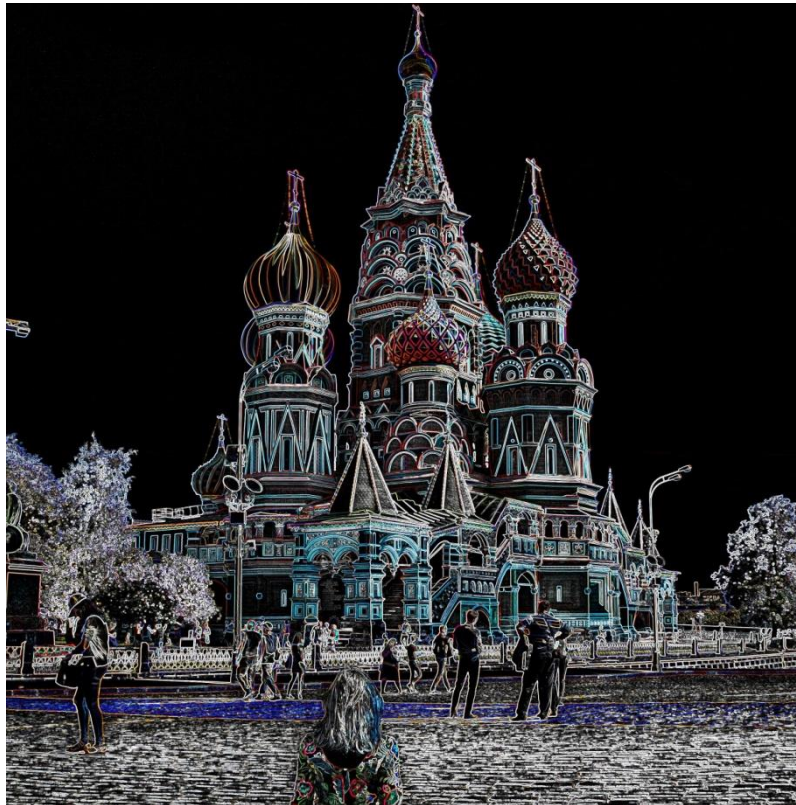


7- Ajuste de Levels



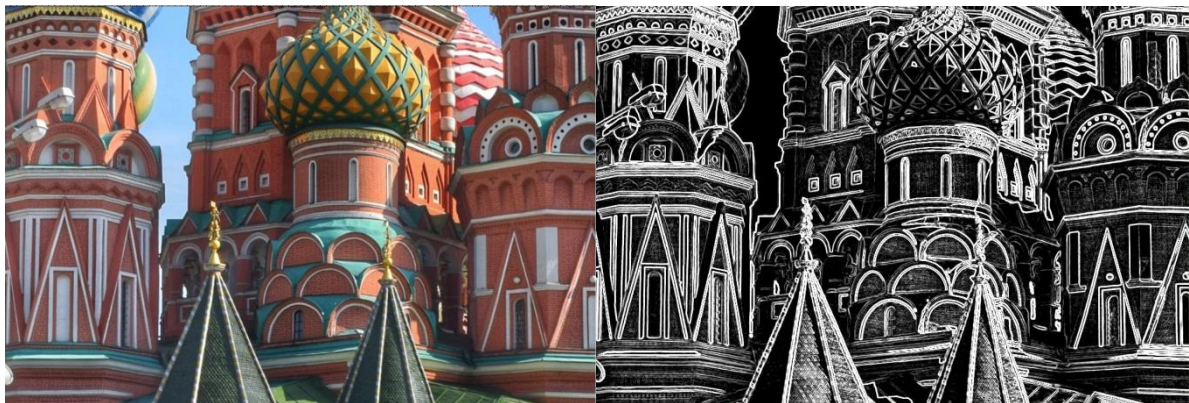


8- Resultado:



METODOLOGIA 4

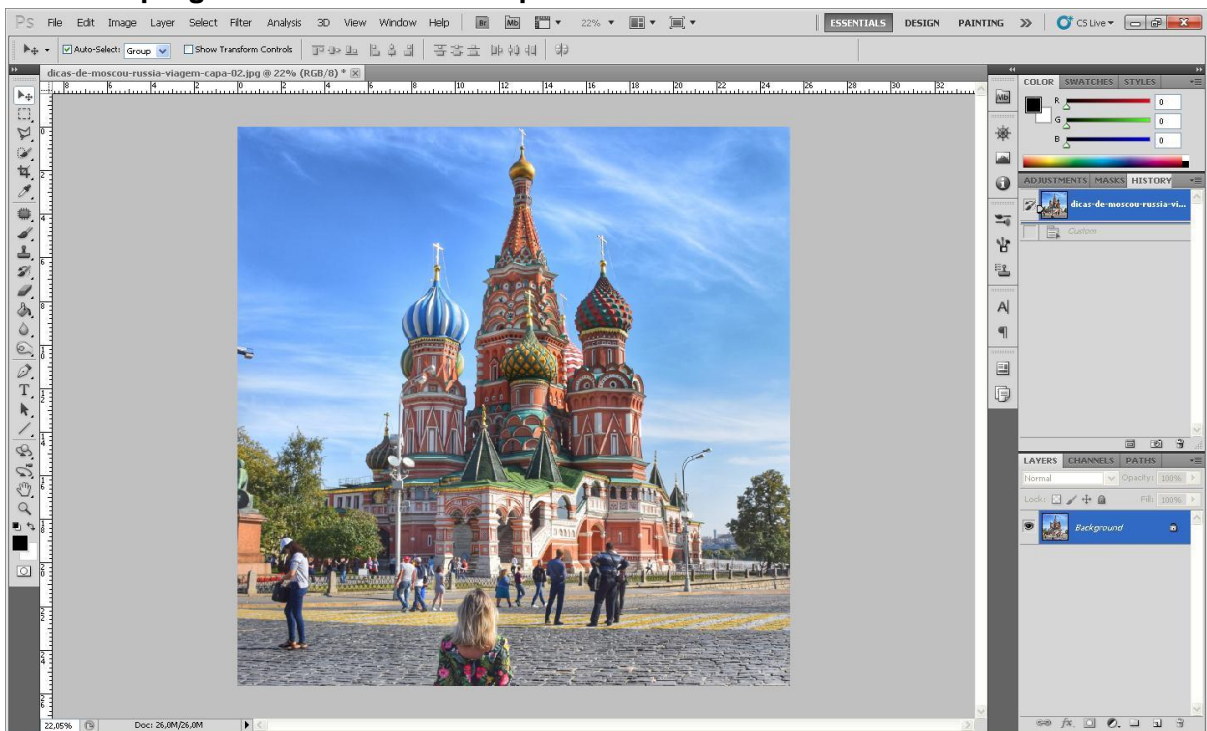
Algoritmo detecção de bordas alternativo



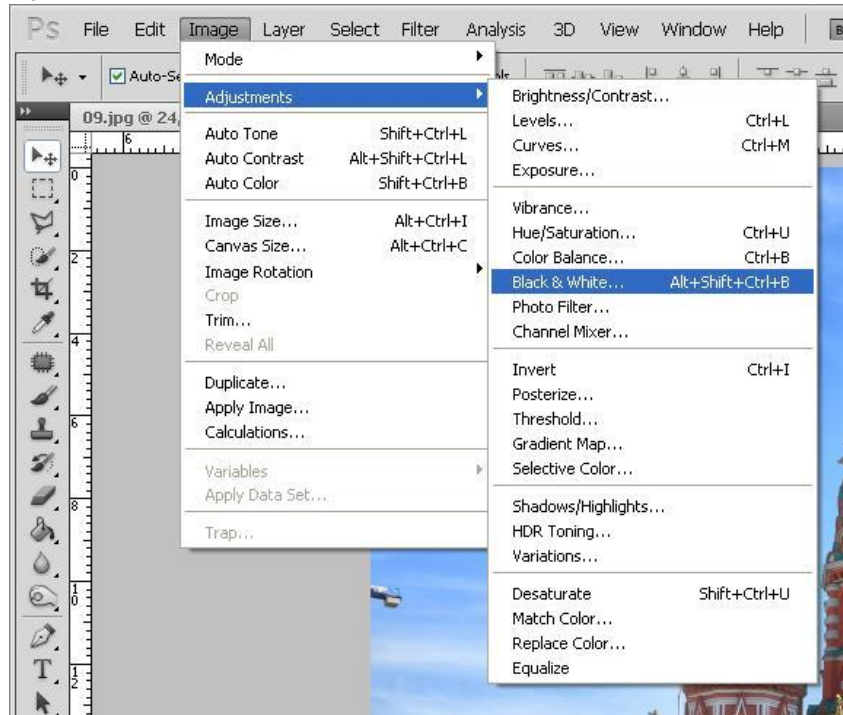
(Detalhe - Antes)

(Detalhe - Depois)

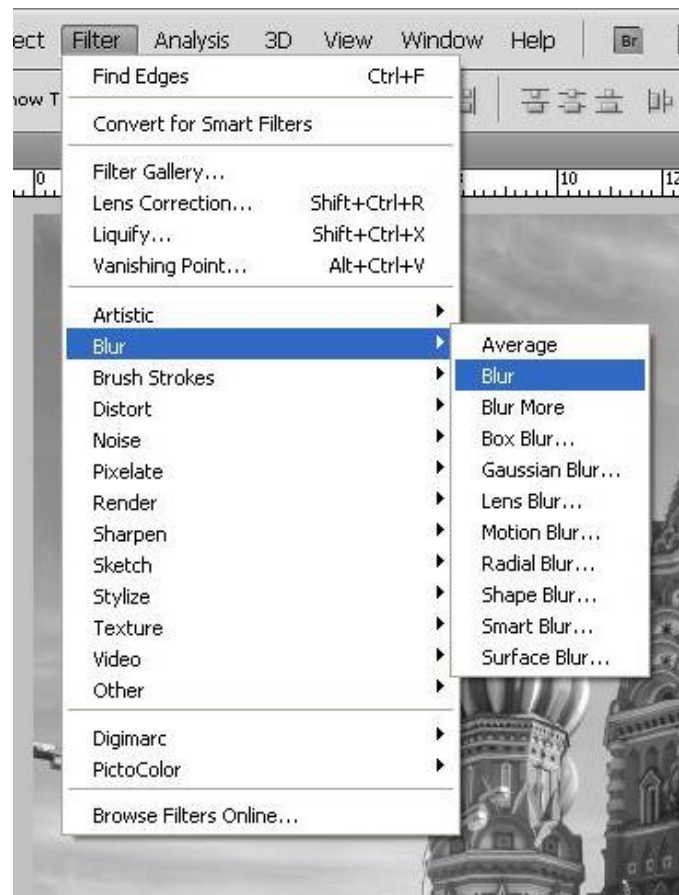
1- Abra o programa Adobe Photoshop



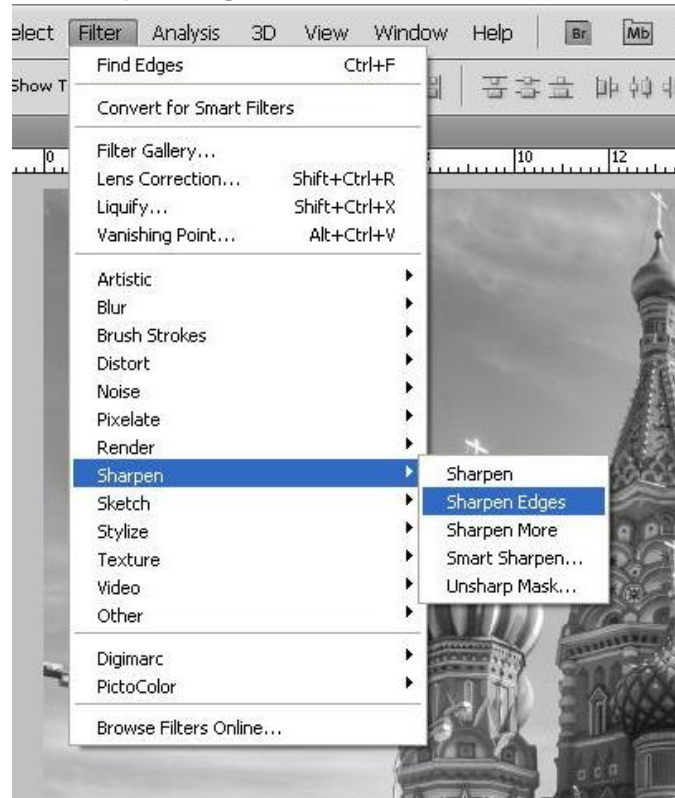
2- Image -> Adjustments -> Black & White



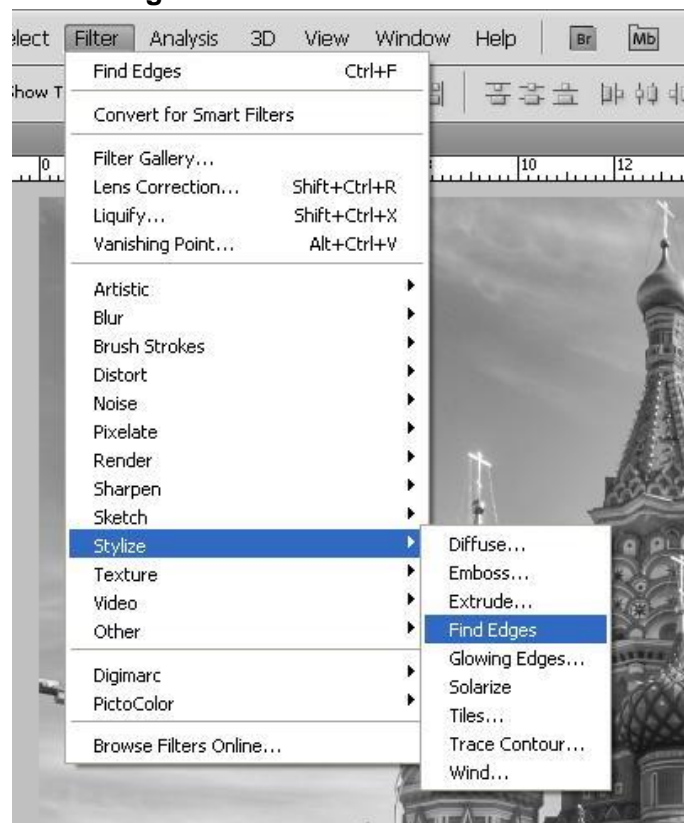
3- Filter -> Blur -> Blur



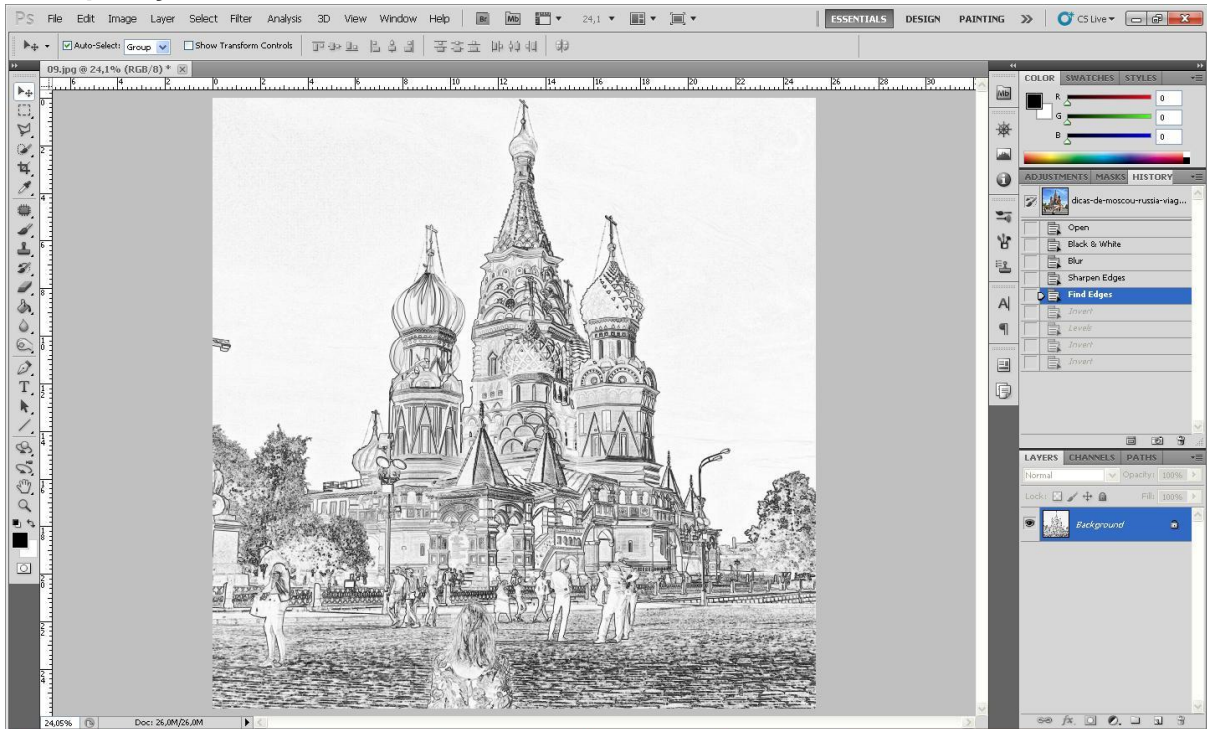
4- Filter -> Sharpen -> Sharpen Edges



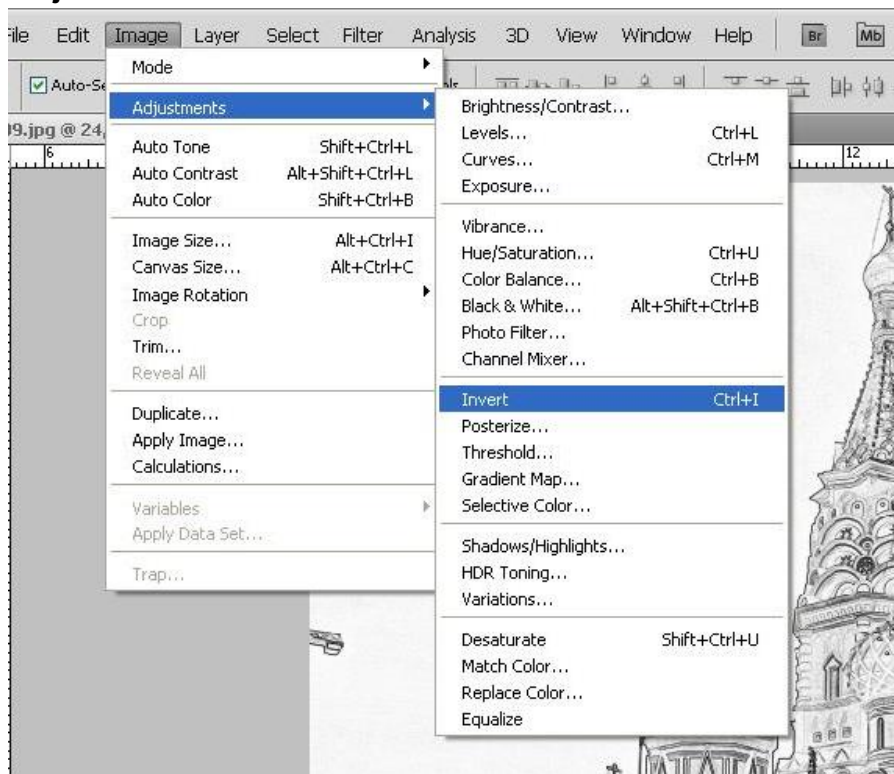
5- Filter -> Stylize -> Find Edges



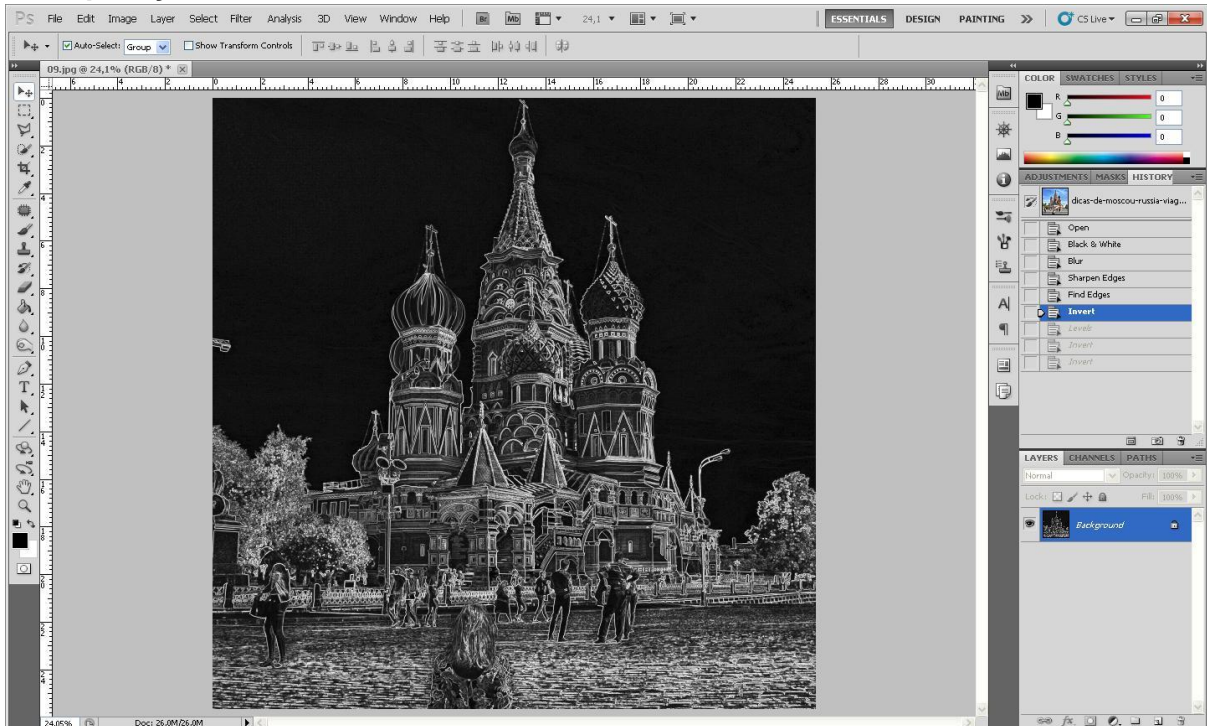
5.1- Aplicação:



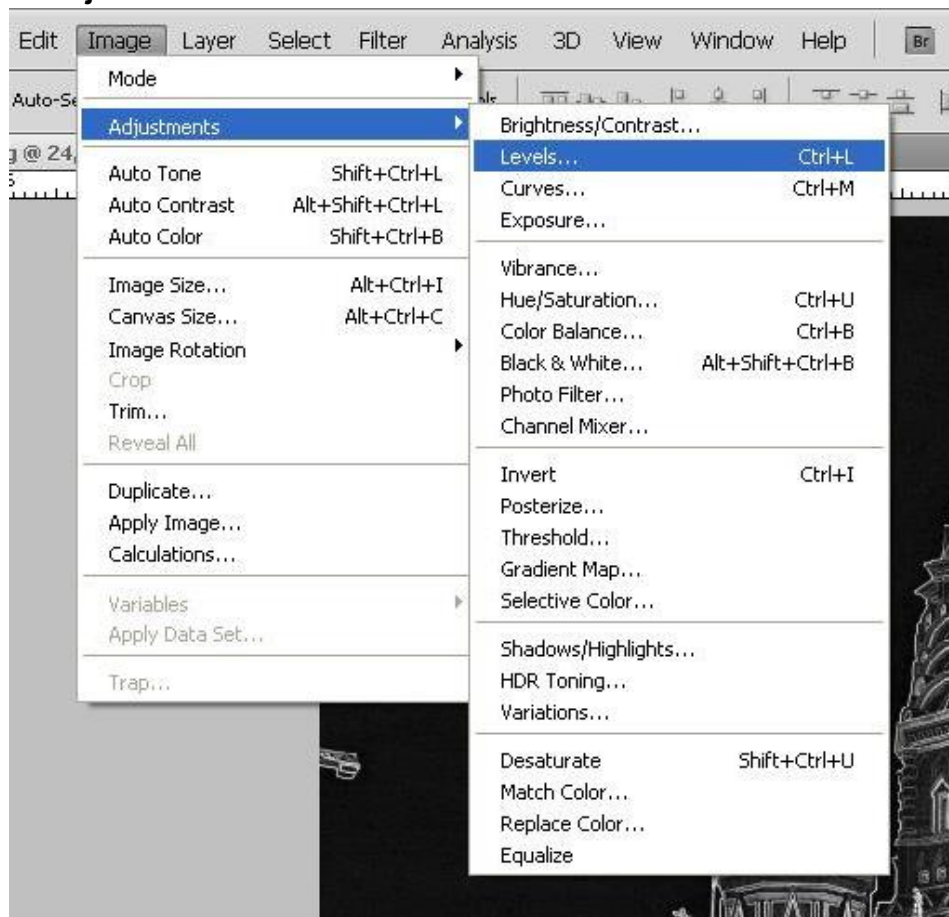
6- Image -> adjustment -> Invert



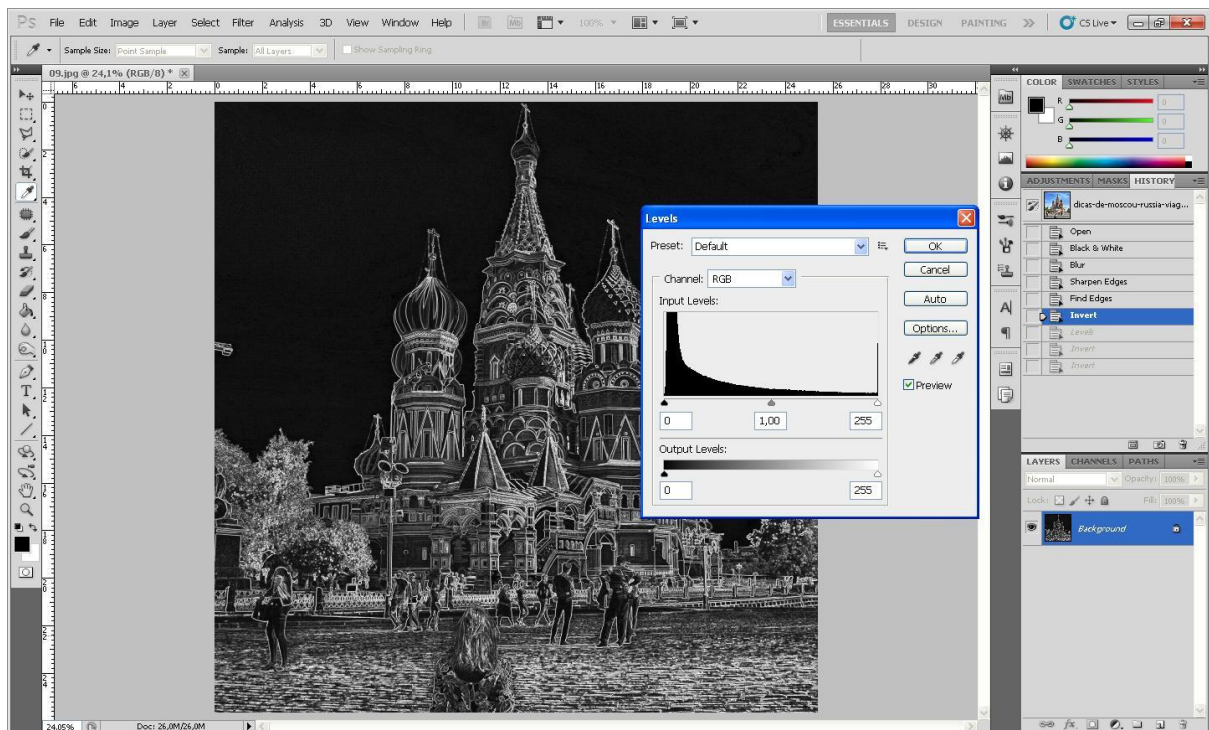
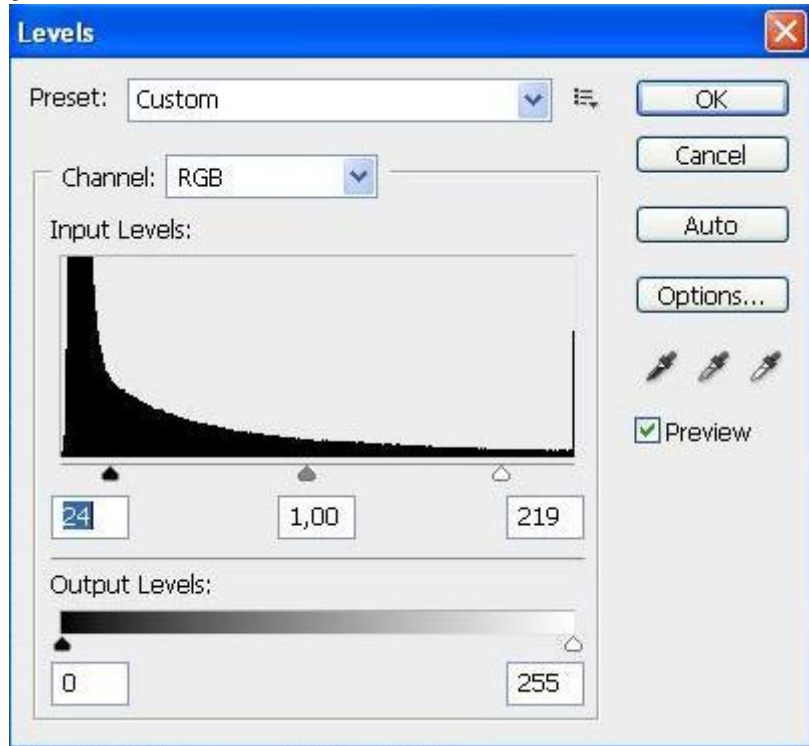
6.1- Aplicação



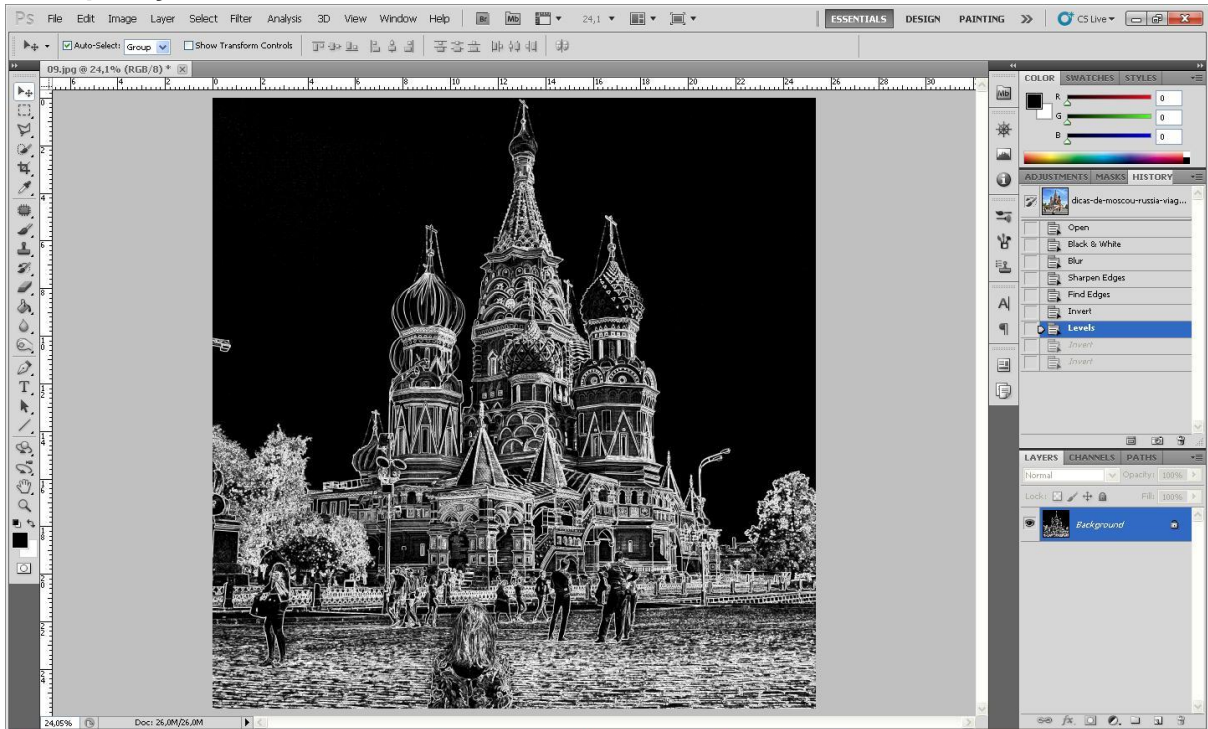
7- Image -> Adjustments -> Levels



7.1- Configuração de Levels



7.3- Aplicação:



8- Resultado:



Referências Bibliográficas:

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