

编写一个 matlab 图形用户界面程序

功能：

1. 打开并显示用户自己选择的图像；
2. 处理前和处理后图像的信息显示功能：图像均值和方差，图像最大值最小值，显示原图像和处理后图像。
3. 图像增强功能：彩色变灰度，直方图均衡，图像对数变换。
4. 图像滤波功能：用户输入一个 3×3 的模板，对图像进行滤波（使用 conv2 或 filter2）。
5. 选做功能：显示原图像和处理后图像直方图。

要求：

1. 界面友好，交互简单易懂；
2. 使用向量化的编程思想；
3. 源代码有详细注释。

参考和学习资料：

1. 学习：

Matlab help->Image Processing Toolbox->Enhancement->Contrast Enhancement Techniques.

The screenshot shows the Matlab documentation interface. At the top, there's a toolbar with icons for search, refresh, and other functions. Below it is a navigation bar with links for 'Search Documentation' and 'Image Processing Toolbox'. The main content area is titled 'Image Processing Toolbox Examples'. On the left, there's a sidebar with a 'On this page...' link and a list of topics: Deblurring, Enhancement, Image Registration, Image Segmentation, Spatial Transformation, Measuring Image Features, Transforms, and Working with Large Data. The 'Enhancement' section is expanded, showing three examples with small thumbnail images and titles: 'Contrast Enhancement Techniques', 'Correcting Nonuniform Illumination', and 'Enhancing Multispectral Color Composite Images'. Each example has a blue link below its title.

2. 参考 imageProc 实例代码。