Function to Output Mathematics Function Image

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Matlab code   listing :

```matlab
1  %return figure
2  %references : width and height of the figure
3  function figure = generateFigure(imgW,imgH)
4      x = 0:pi/100:2*pi;   %domain
5      y1= sin(x);
6      y2= cos(x);
7      y3 = x.^2;
8
9      set(gcf,'Position',[300 50 imgW imgH]);
10     %set position and size of figure
11
12     plot(x,y1,'r-',x,y2,'g.',x,y3,'b-');
13     axis([0,2*pi,-1,20]);
14     %set range of independent and
15     %dependent variables to print
16
17     title('sin ,cos and x^2 curves');
18     xlabel('X');
19     ylabel('Y');
20     text(2.8,0.5,'sin(x)');
21     text(1.4,0.3,'cos(x)');
22     print(gcf,'-dpng','res.png');
23      %print the figure to res.png
24
25     figure = imread('res.png');
26      %read the img and set the return value
```
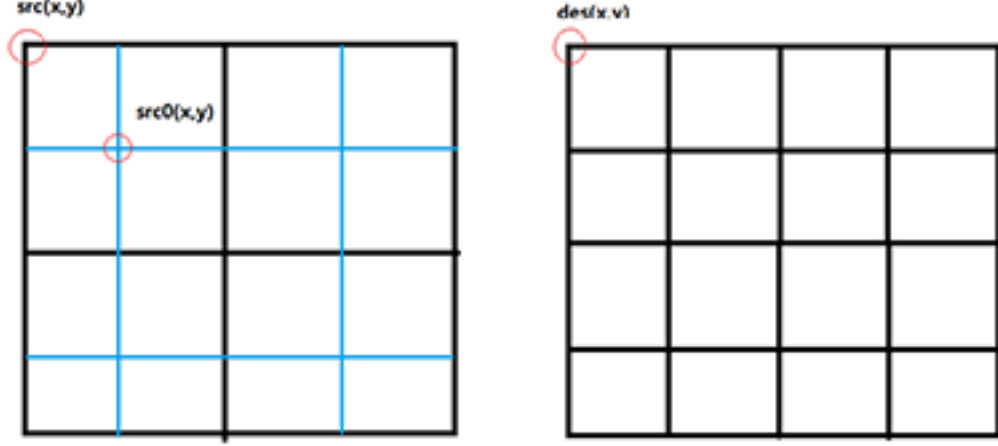
Command   window:
img = generateFigure(500,500);
imshow(img);

Image as follows:
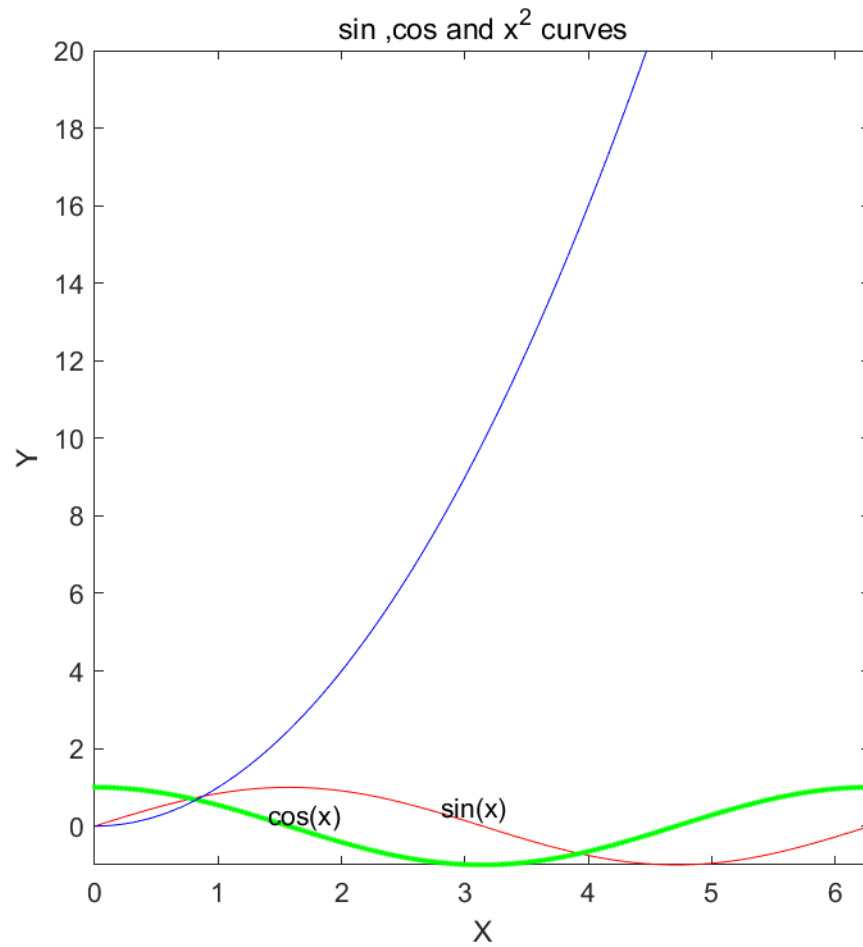
Bilinear interpolation Algorithm:
src(x,y) represent the value of the old image;des(x,y) represents the value of the
new image; src1(x,y)represents the Pixel of the new image mapping to the old
image;

src(x,y)   des(x,y)

srcO(x,y)

Bilinear interpolation: the new image mapping to the old image, src0(x+u,y+v).then
use the old four Pixel neighbor with the (x+u,y+v): src(x,y),src(x+1,y),src(x,y+1),src(x+1,y+1)
to calculate the Pixel of the position (x+u,y+v);
Before X,Y axis convert,we need mapping the new image position (xd,yd) to
the old position (xc,yc)(which is (x+u,y+v)):
We assume that the old image is M * N Pixels and the new image is W * H
Pixels;

$$
\begin{aligned}
xc &= xd * (M/W) \\
yc &= yd * (N/H)
\end{aligned}
\tag{1}
$$

In X axis:

$$
\begin{aligned}
src(x+u, y) &= (1-u) * src(x, y) + u * src(x+1, y) \\
src(x+u, y+1) &= (1-u) * src(x, y+1) + u * src(x+1, y+1)
\end{aligned}
\tag{2}
$$

In Y axis:

$$
src(x+u, y+v) = (1-v) * src(x+u, y) + v * src(x+u, y+1)
\tag{3}
$$

3