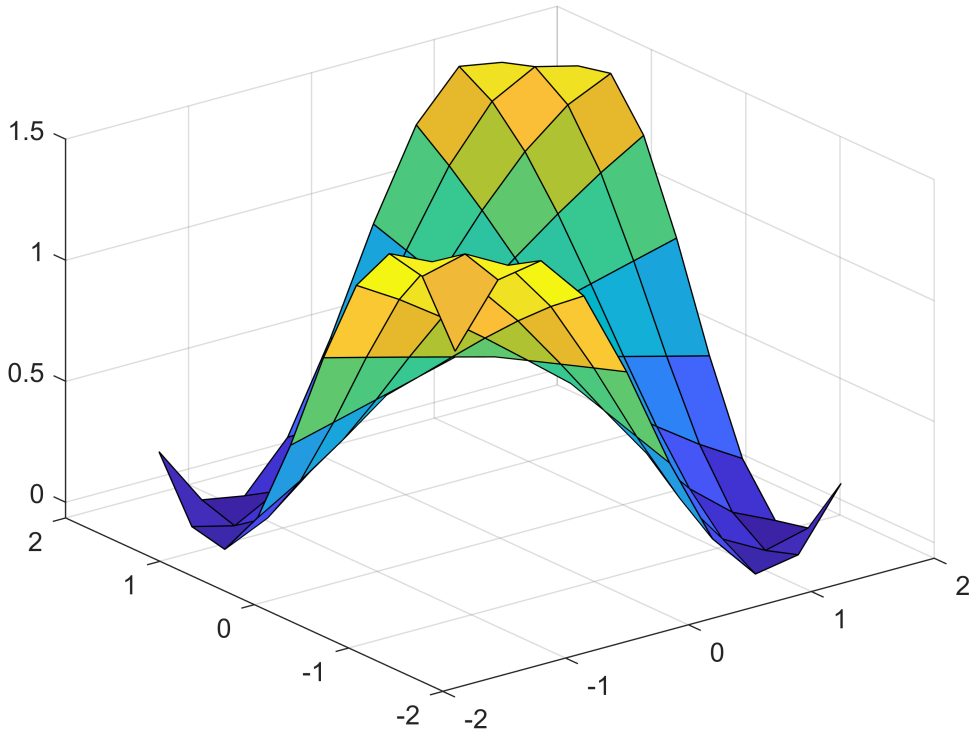
```
clear;
for i = 1:3
    for j = 1:3
        for k = 1:5
            A(i,j,k) = i + 2*j;
        end
    end
end

A
```

```
A =
A(:,:,1) =

     3     5     7
     4     6     8
     5     7     9


A(:,:,2) =

     3     5     7
     4     6     8
     5     7     9


A(:,:,3) =

     3     5     7
     4     6     8
     5     7     9


A(:,:,4) =

     3     5     7
     4     6     8
     5     7     9


A(:,:,5) =

     3     5     7
     4     6     8
     5     7     9
```

```
B = reshape(A,[],5)
```

```
B = 9×5
     3     3     3     3     3
     4     4     4     4     4
     5     5     5     5     5
     5     5     5     5     5
     6     6     6     6     6
     7     7     7     7     7
     7     7     7     7     7
     8     8     8     8     8
     9     9     9     9     9
```

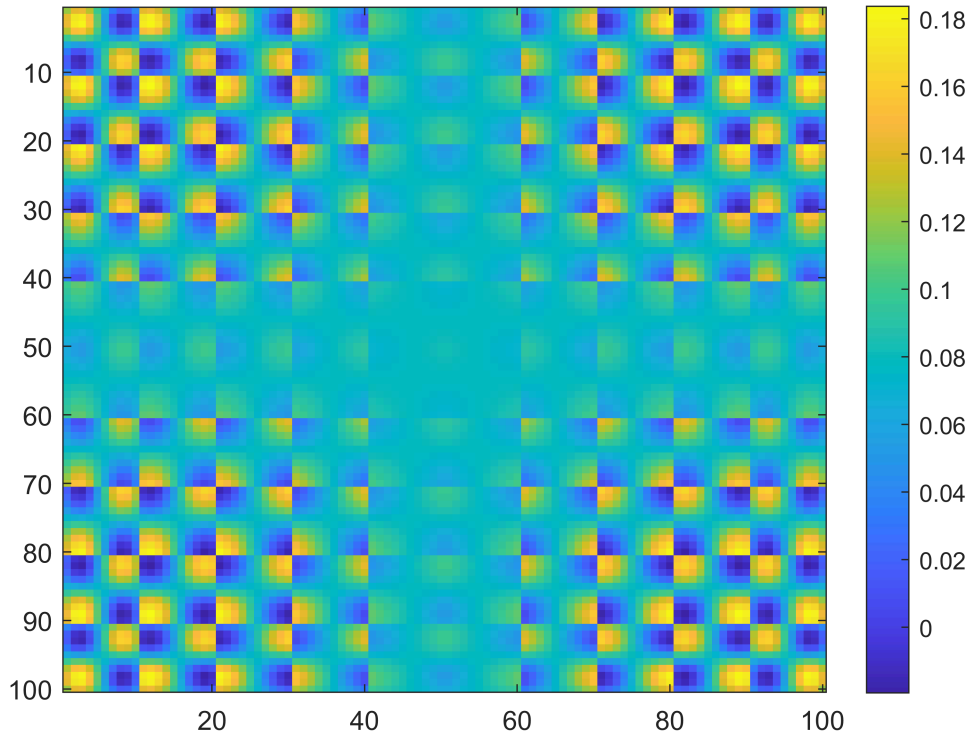
```
clear;
N = 10;
orig_dom = linspace(-1,1,N);
[X,Y] = ndgrid(orig_dom,orig_dom);

for i = 1:88
    m = rand;
    b = rand;
    A(:,:,i) = m*sin(X.*Y) + b;
end
surf(X,Y,A(:,:,5))
```




```
s = size(A);

B = reshape(A,[],s(end))
```

```
B = 100×88
    1.2508    1.4291    0.7703    0.5950    1.2045    0.8905    1.4089    0.7493 ···
    1.4720    1.7026    0.8431    0.6720    1.4516    0.9678    1.6955    1.0560
    1.5001    1.7374    0.8523    0.6818    1.4830    0.9776    1.7319    1.0950
    1.3269    1.5232    0.7954    0.6214    1.2895    0.9171    1.5075    0.8548
    1.0031    1.1228    0.6889    0.5087    0.9278    0.8041    1.0880    0.4059
    0.6238    0.6536    0.5641    0.3766    0.5039    0.6716    0.5965   -0.1201
    0.3001    0.2533    0.4576    0.2639    0.1422    0.5586    0.1770   -0.5691
    0.1269    0.0391    0.4006    0.2036   -0.0513    0.4981   -0.0475   -0.8092
    0.1550    0.0738    0.4099    0.2134   -0.0200    0.5079   -0.0111   -0.7703
    0.3761    0.3473    0.4826    0.2904    0.2272    0.5851    0.2755   -0.4636
     ⋮
```

```
B = B';

C_B = cov(B);
imagesc(C_B)
colorbar
```




```
% 'If I reshape this^ image correctly, I should get a 4D array that varies smoothly on each of
disp(['If I reshape this^ image correctly,' newline 'I should get a 4D array that ' newline 'va
```

```
If I reshape this^ image correctly,
I should get a 4D array that
varies smoothly on each of its 4 axes.
```

```
disp(['A good way to check if I''m reshaping it' newline 'properly or not would be to' newline
```

```
A good way to check if I'm reshaping it
properly or not would be to
reshape, interpolate, reshape, and plot.
```

```
C = reshape(C_B,N,N,N,N);
disp('size of C')
```

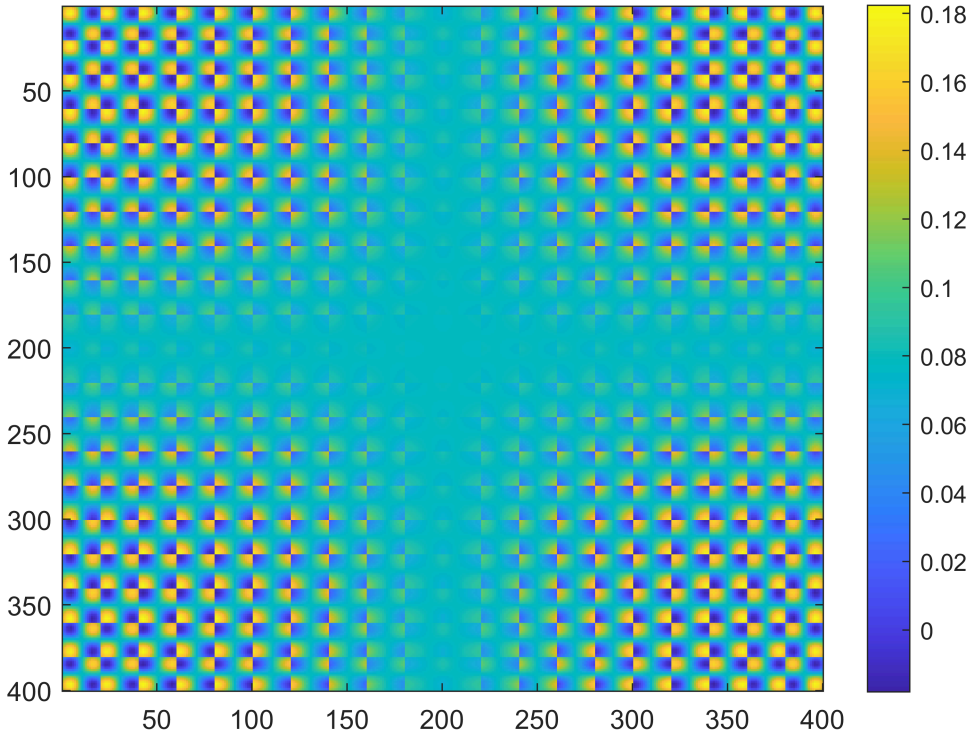
```
size of C
```

```
size(C)
```

```
ans = 1×4
```

```
    10    10    10    10
```

```
N_h = 2*N;
new_dom = linspace(-pi/2,pi/2,N_h);

[X1_h,Y1_h,X2_h,Y2_h] = ndgrid(new_dom,new_dom,new_dom,new_dom);
C_high_def = interpn(orig_dom,orig_dom,orig_dom,orig_dom,C,X1_h,Y1_h,X2_h,Y2_h);
C_B_high_def = reshape(C_high_def,N_h^2,N_h^2);



imagesc(C_B_high_def)
colorbar
```




```
disp('This is awesome and meta.')
```

```
This is awesome and meta.
```