Sample 1-4

画像データの表現

配列の生成

画像処理特論

村松 正吾

動作確認: MATLAB R2020a

Digital image representation

Creation of arrays

Advanced Topics in Image Processing

Shogo MURAMATSU

Verified: MATLAB R2020a

ワークスペースのクリア

(Clear workspace)

```
clear
```

全ての要素が零の配列の生成

(Create array of all zeros)

```
X = zeros(2,3) % zeros array of size 2x3
```

```
X = 2×3
     0     0     0
     0     0     0
```

全ての要素が 1 の配列の生成

(Create array of all ones)

```
Y = ones(3,4) % ones array of size 3x4
```

```
Y = 3×4
     1     1     1     1
     1     1     1     1
     1     1     1     1
```

ランダム配列の生成

(Create array of random numbers)

```
Z = rand(2,3,4) % random array of size 2x3x4
```

```
Z =
```

```
Z(:,:,1) =

    0.3816    0.7952    0.4898
    0.7655    0.1869    0.4456


Z(:,:,2) =

    0.6463    0.7547    0.6797
    0.7094    0.2760    0.6551


Z(:,:,3) =

    0.1626    0.4984    0.3404
    0.1190    0.9597    0.5853


Z(:,:,4) =

    0.2238    0.2551    0.6991
    0.7513    0.5060    0.8909
```

配列のサイズ
(Array size)

```
disp('Size of X')
```

```
Size of X
```

```
size(X)
```

```
ans = 1×2
     2     3
```

```
disp('Size of Y')
```

```
Size of Y
```

```
size(Y)
```

```
ans = 1×2
     3     4
```

```
disp('Size of Z')
```

```
Size of Z
```

```
size(Z)
```

```
ans = 1×3
     2     3     4
```

```
% 配列のタイプ
% (Array type)

disp('Type of X')
```

```
Type of X
```

```
class(X)
```

```
ans =
'double'
```

```
L = zeros(2,3,'logical');
disp('Type of L')
```

```
Type of L
```

```
class(L)
```

```
ans =
'logical'
```

```
U = zeros(2,3,'uint8');
disp('Type of U')
```

```
Type of U
```

```
class(U)
```

```
ans =
'uint8'
```

```
I = zeros(2,3,'int16');
disp('Type of I')
```

```
Type of I
```

```
class(I)
```

```
ans =
'int16'
```

```
S = zeros(2,3,'single');
disp('Type of S')
```

```
Type of S
```

```
class(S)
```

```
ans =
'single'
```

ワークスペース内の変数のリスト
(List variables in workspace)

```
whos
```

```
  Name      Size             Bytes  Class     Attributes
```

```
I         2x3                12  int16
L         2x3                 6  logical
S         2x3                24  single
U         2x3                 6  uint8
X         2x3                48  double
Y         3x4                96  double
Z         2x3x4             192  double
ans       1x6                12  char
```