Sample 1-4

画像データの表現

配列の生成

画像処理特論

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動作確認: MATLAB R2023a

Digital image representation

Creation of arrays

Advanced Topics in Image Processing

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Verified: MATLAB R2023a

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) =

    0.8147    0.1270    0.6324
    0.9058    0.9134    0.0975


Z(:,:,2) =

    0.2785    0.9575    0.1576
    0.5469    0.9649    0.9706


Z(:,:,3) =

    0.9572    0.8003    0.4218
    0.4854    0.1419    0.9157


Z(:,:,4) =

    0.7922    0.6557    0.8491
    0.9595    0.0357    0.9340
```

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
```