MPEI – Mini teste Prático 2017

(1)

> Perdido com 2 ou mais erros

> Transferido com 1 erro ou 0

$$T = \begin{matrix} \\ 1 \\ 2 \\ 3 \end{matrix} \begin{matrix} \begin{matrix} 1 & 2 & 3 \end{matrix} \\ \begin{bmatrix} 0,9 & 0,5 & 0,5 \\ 0,09 & 0,4 & 0,4 \\ 0,01 & 0,1 & 0,1 \end{bmatrix} \end{matrix}$$

(8)

Sum(T) = [1 1 1] % É estocástica

1.a)

```
T = [0.9   0.5  0.5;
     0.09  0.4  0.4;
     0.01  0.1  0.1];

v = [0 0 1]';
```

4b) % para a quarta iteração

V4 = (T ∧ 4) * V;

% Sem erros

V4 (1)

% Com 1

V4 (2)

% Com 2 ou mais

V4 (3)

Sem	1	2 ou +
0,8376	0,1384	0,0240

10) % depois

Está no ficheiro Teste2017am incompleto

2)

	C	D	E	F	G
C	0	1/2	1/3	1/4	0
D	1/2	0	0	1/4	1/2
E	1/2	1/2	1/3	1/4	0
F	0	0	0	0	1/2
G	0	0	1/3	1/4	0

1 jan 2017

2 a)

```
H = [0   1/2   1/3   1/4   0;
     1/2   0     0     1/4   1/2;
     1/2   1/2   1/3   1/4   0;
     0     0     0     0     1/2;
     0     0     1/3   1/4   0];

M = ones(5) * 1/5;

A = 0,8*H + (1-0,8)*M;
```

2b)

```
V0 = [1/5  1/5  1/5  1/5  1/5]';

V10 = A^10 * V0;

% C
V10(1)
% D
V10(2)
% E
V10(3)
% F
V10(4)
% G
V10(5)
```

C 0,2284 D 0,2089

E 0,3198 F 0,0979

G 0,1449

3a)

	% a	b	c	d	?	
T = a	0.7	0.2	0	0	0	0;
b	0.2	0	0.3	0	0	0;
c	0	0.6	0.3	0	0	0;
d	0.1	0.2	0.3	0.1	0	0;
.	0	0	0.1	0.5	1	0;
?	0	0	0	0.4	0	1;

a	1
b	2
c	3
d	4
?	6
.	5

3b)

V0 = [1 0 0 0 0 0]';

P[C] = 0,0397

P[D] = 0,0118

V10=T^10 * V0;

V10(3)

V15 = T^15 * V0;

V15(4)

3c)

Q = T(1:4, 1:4);

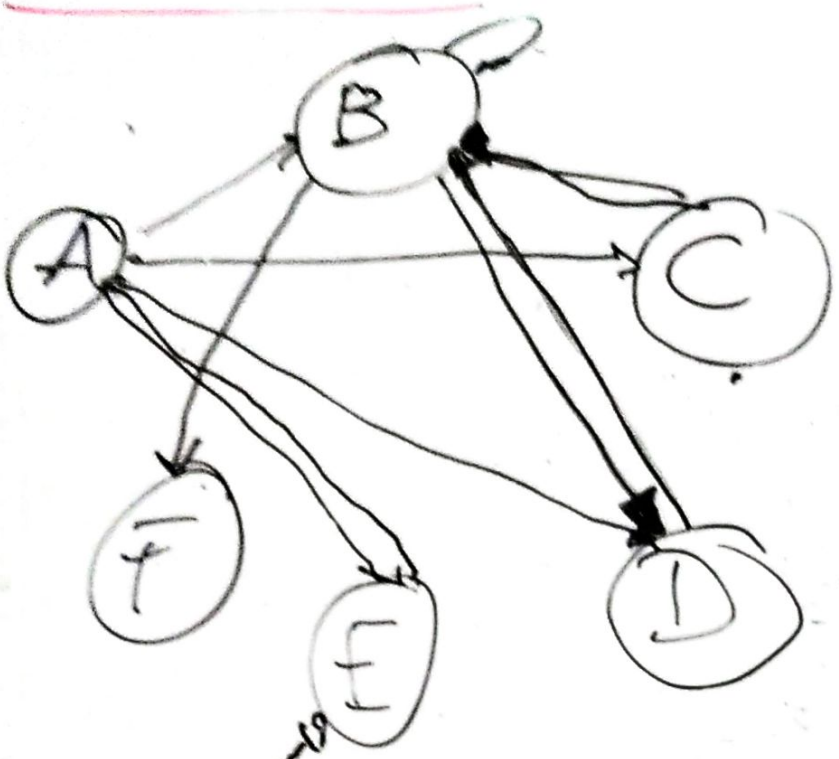
T=inv(eye(4) - Q);

S= Sum(T); S(3);

Q	0
R	I

R: 4,0685

Exercicium slides → aula



q_1

	A	B	C	D	E	f
A	0	0	1/2	0	1/2	1/5
B	1/4	1/3	1/2	1/2	1/2	1/5
C	1/4	0	0	0	0	1/5
D	1/4	1/3	0	0	0	1/5
E	1/4	0	0	1/2	0	1/5
F	0	1/3	0	0	0	1/5

$u_0 = \begin{bmatrix} 1/6 \\ 1/6 \\ 1/6 \\ \vdots \end{bmatrix}$ ×6

H.

x_0

```
x_actual = x0
N=100;
resultado = zeros(length(H),N);
for k = 1:N
    x_actual = H* x_actual
    Resultado(:,k) = x_actual;
end
figure; stem(1:N, resultado)
```

$$
\begin{array}{c}
\begin{array}{cccc|cc|c}
\text{Ireg} & \text{FR} & \text{Sui} & \text{Q} & \text{Ira} & \text{Isr} & \text{EVA}
\end{array} \\
\left[\begin{array}{cccc|cc}
0{,}7 & 0{,}1 & 0 & 0 & 0 & 0 \\
0{,}2 & 0 & 0{,}3 & 0 & 0 & 0 \\
0 & 0{,}6 & 0{,}1 & 0 & 0 & 0 \\
0{,}1 & 0{,}3 & 0{,}4 & 0{,}1 & 0 & 0 \\
\hline
0 & 0 & 0 & 0{,}3 & 1 & 0 \\
0 & 0 & 0{,}2 & 0{,}5 & 0 & 1
\end{array}\right]
\end{array}
\begin{array}{c}
\text{Ira} \\ \text{FE} \\ \text{Sui} \\ \text{Gr} \\ \text{I} \\ \text{EV}
\end{array}
\qquad
x_0 = \begin{pmatrix} 0 \\ 1/2 \\ 1/2 \\ 0 \\ 0 \\ 0 \end{pmatrix}
$$

$$
Q = \begin{bmatrix} 0{,}7 & 0{,}1 & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots \\ 0{,}1 & 0{,}3 & 0{,}4 & 0{,}1 \end{bmatrix}
\qquad
Q = F(1:4, 1:4);
$$

$F = \text{inv}(\text{eye}(q) = Q)$

$S = \text{Auto}(F)$ Resp: $S(q) \rightarrow$ 6 & mesmo invédia

Iraque → EUA 5 meses

$prob = T^{\wedge}5 \times [1\ 0\ 0\ 0\ 0]'$

Resp: Bob(61

Brasil → Iraque e vice

$prob2 = T^{\wedge}50 \times [0\ 0\ 0\ 1\ 0\ 0]'$

prob2(5')

X_m ⇒ Estado do stock na segunda-feira da semana m

D_m → procura na semana m

① ② ③

	X_m		
	1	2	3
1	$P(D_m=0)=e^{-1}$	$P(D_m=1)\ e^{-1}$	
2	e	$P(D_m=1)=e^{-1}$	
3	$P(D_m \geq 1)=1-e^{-1}$	$P(D_m>1)=1-2e^{-1}$	

Estudo MPGI - Slides Exercício

Feitos agora

1) a

$$T = \begin{array}{c|cccccc} & A & B & C & D & E & F \\ \hline A & 0 & 0 & 1/2 & 0 & 1/2 & 1/5 \\ B & 1/2 & 1/3 & 1/2 & 1/2 & 1/2 & 1/5 \\ C & 0 & 0 & 0 & 0 & 0 & 1/5 \\ D & 0 & 1/3 & 0 & 0 & 0 & 1/5 \\ E & 1/2 & 0 & 0 & 1/2 & 0 & 1/5 \\ F & 0 & 1/3 & 0 & 0 & 0 & 0 \end{array}$$

$$X_0 = \begin{array}{c} \begin{bmatrix} 1/6 \\ 1/6 \\ 1/6 \\ 1/6 \end{bmatrix} \end{array} \begin{array}{c} A \\ B \\ C \\ D \end{array}$$

3 iterações:

$$X_3 = T^3 \cdot X_0$$

$$X_3 = \begin{array}{c} A: \\ B: \\ C: \\ D: \\ E: \\ F: \end{array} \begin{bmatrix} 0,1115 \\ 0,3890 \\ 0,0281 \\ 0,1658 \\ 0,1680 \\ 0,1377 \end{bmatrix}$$

b)

```
m = (1:100)
for i = 1:1000
    Trans = T^i;
    pA = Trans(1);
    pB = Trans(2);
    pC = Trans(3);
    pD = Trans(4);
    pF = Trans(5);
```

```
    ~~F~~(i) = Trans(6);
end
hand on
plot(n, pA);
plot(n, pB);
    :
    :
plot(n, pF);
hold off
```

```
aux=
Sum(T);
max(aux);
%% ver maior
```

Exercício

I F S E Is B

[ ]