Beamer snippets

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Introduction

TODO

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TODO

Snippets

Basic frame

Subtitle

. . .

Citations and references

cite, label and ref commands

Eq. (1) define the Bellman equation [Bel57]

$$V(x) = \max_{a \in \Gamma(x)} \{F(x,a) + \beta V(T(x,a))\} \quad (1)$$

Lists

itemize, enumerate and description commands

- item 1
- item 2
- ...

1. item 1
2. item 2
3. ...

First item 1
Second item 2
Last ...

Colors

color environment

small

footnotesize

scriptsize

tiny

Fonts color

color environment

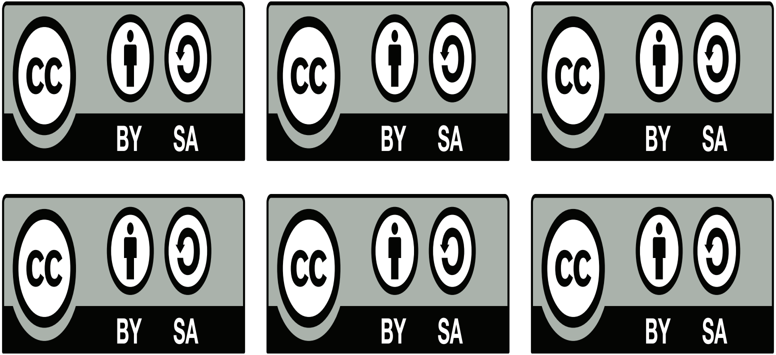
Red Green Blue

Centered image

includegraphics command

Subfigures

figure, subfigure and includegraphics commands



Blocks

block command

Block 1

Blablabla

Block 2

Blablabla

Equations

$$V(x) = \max_{a \in \Gamma(x)} \{F(x,a) + \beta V(T(x,a))\}$$

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$$V(x) = \max_{a \in \Gamma(x)} \{F(x,a) + \beta V(T(x,a))\} \tag{2}$$

Equation array

eqnarray command

$$\begin{aligned}
\text{Expectation of N} &= \sum_{i=1}^{n} \mathbb{E}(Z_i) \\
&= \sum_{i=1}^{n} \frac{\gamma}{d^{\beta/2}} \frac{c(d)^{\beta}}{i^{\alpha\beta}} \\
&= \frac{\gamma}{d^{\beta/2}} c(d)^{\beta} \sum_{i=1}^{n} \frac{1}{i^{\alpha\beta}} \\
&= z
\end{aligned}$$

$$\begin{aligned}
\text{Variance of N} &= \sum_{i=1}^{n} V(Z_i) && (3) \\
&\leq \sum_{i=1}^{n} \mathbb{E}(Z_i) \qquad (\text{as } V(Z_i) \leq \mathbb{E}(Z_i)) && (4) \\
&\leq z
\end{aligned}$$

Matrices

$$A_{m,n} = \begin{pmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,n} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m,1} & a_{m,2} & \cdots & a_{m,n} \end{pmatrix}$$

$$M = \begin{bmatrix} \frac{5}{6} & \frac{1}{6} & 0 \\ \frac{5}{6} & 0 & \frac{1}{6} \\ 0 & \frac{5}{6} & \frac{1}{6} \end{bmatrix}$$

$$M = \bordermatrix{ & x & y \cr A & 1 & 0 \cr B & 0 & 1 }$$

Systems of equation array

$$f(n) = \begin{cases} n/2 & \text{if } n \text{ is even} \\ -(n+1)/2 & \text{if } n \text{ is odd} \end{cases}$$

Mathematical programming

with align

$$\begin{aligned} \max \quad & z = 4x_1 + 7x_2 \\ \text{s.t.} \quad & 3x_1 + 5x_2 \leq 6 \qquad (5) \\ & x_1 + 2x_2 \leq 8 \qquad (6) \\ & x_1, x_2 \geq 0 \end{aligned}$$

Mathematical programming

with alignat

$$\begin{alignedat}{5}
\text{Max}\quad & z = x_1 + 12x_2 \\
\text{s.t.}\quad & 13x_1 + x_2 + 12x_3 &&\leq{}&& 5 \\
& \quad x_1 \qquad + \quad x_3 &&\leq{}&& 16 \\
& 15x_1 + x_2 &&={}&& 14 \\
& x_j \geq 0,\ j = 1,2,3.
\end{alignedat}$$

$$\begin{alignedat}{5}
\text{Max}\quad & z = x_1 + 12x_2 \\
\text{s.t.}\quad & 13x_1 + x_2 + 12x_3 &&\leq{}&& 5 \qquad (7) \\
& \quad x_1 \qquad + \quad x_3 &&\leq{}&& 16 \qquad (8) \\
& 15x_1 + x_2 &&={}&& 14 \qquad (9) \\
& x_j \geq 0,\ j = 1,2,3.
\end{alignedat}$$

Animations

Slide 1

- ...
- ...

Animations

Slide 2

- ...
- ...

Animations

Slide 3

- ...
- ...

Algorithms

algorithmic command

Require:
$\langle \mathcal{S}, \mathcal{A}, T, R \rangle$, an MDP
γ, the discount factor
ϵ, the maximum error allowed in the utility of any state in an iteration
Local variables:
U, U', vector of utilities for states in $\mathcal{S}$, initially zero
δ, the maximum change in the utility of any state in an iteration

repeat
  $U \leftarrow U'$
  $\delta \leftarrow 0$
  for all $s \in \mathcal{S}$ **do**
    $U'[s] \leftarrow R[s] + \gamma \max_a \sum_{s'} T(s, a, s') U[s']$
    if $|U'[s] - U[s]| > \delta$ **then**
      $\delta \leftarrow |U'[s] - U[s]|$
    end if
  end for
until $\delta < \epsilon(1 - \gamma)/\gamma$
return U

Verbatim

To insert a verbatim paragraph, the frame have to be declared "fragile". The title has to be written in frametitle command, not as argument of frame (I don't know why...).

```
    .--.
   |o_o |
   |:_/ |
  //   \ \
 (|     | )
/'\_   _/`\
\___)=(___/

# gcc -o hello hello.c
```

Listings I

```
#!/usr/bin/env python
# -*- coding: utf-8 -*-

# Author: Jérémie Decock

def main():
    """Main function"""

    print "Hello world!"

if __name__ == '__main__':
    main()
```

listings/test.py

Table

tabular command

	$\gamma = 1$ (small noise)	$\gamma < 1$ (large noise)
Proved rate for R-EDA	$\frac{1}{\beta} \leq \alpha$	$\frac{1}{2\beta} \leq \alpha$
Former lower bounds	$\alpha \leq 1$	$\alpha \leq 1$
R-EDA experimental rates	$\alpha = \frac{1}{\beta}$	$\alpha = \frac{1}{2\beta}$
Rate by active learning	$\alpha = \frac{1}{2}$	$\alpha = \frac{1}{2}$

Multi-columns

columns and column commands

Blablabla

URL

`http://www.jdhp.org/`

JDHP

Conclusion

TODO

TODO

TODO

References I

Richard Ernest Bellman, *Dynamic programming*, Princeton University Press, Princeton, New Jersey, USA, 1957.