LaTeX; How to use it

Mikkel Elle Lepperød

November 12, 2014

Abstract

This is a basic example of how to use LaTeX. Feel free to contribute or comment.

Contents

1 Figures

Here is an example of how to include figures and refer to them.

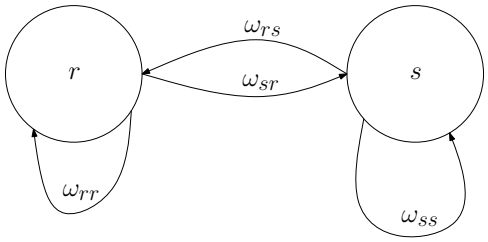

Figure 1: Oh figure you so nice.

If we use floatbarrier the figures cant move. However, you probably want them to.

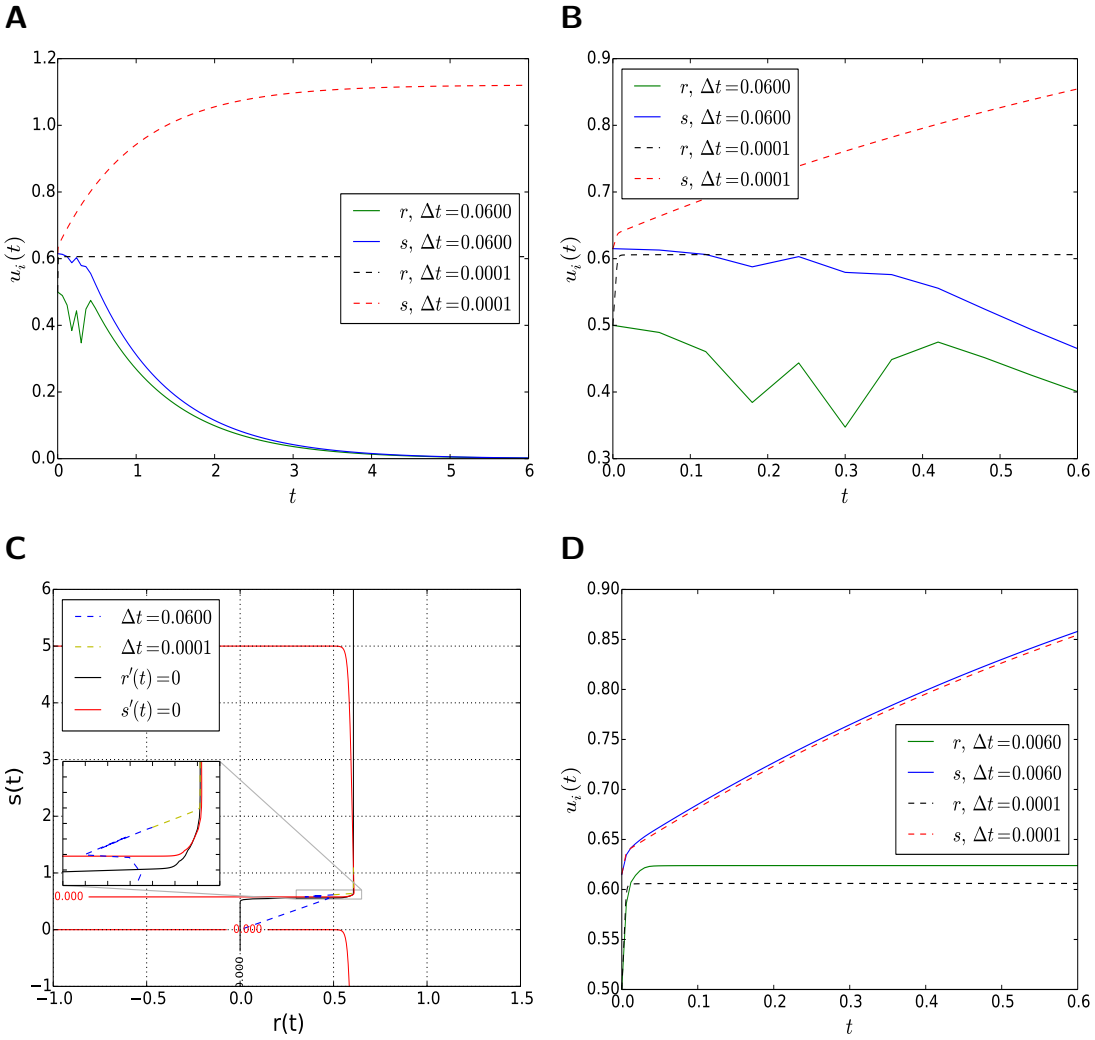

Figure 2: I refer to this subfigure (D).

And I want to refer to all of the figures; see Fig. 2. Cleverref is NICE!!

By the way if you want to add some examples of your own put them in this repo and we can make a collection of LaTeXhowto's

2 Concluding remarks

LaTeXis NICE

Acknowledgement

IPython is also NICE; see Pérez and Granger (2007).

Appendix A Equations and reference to them

A.1 Differentiation of integral equations

Theorem A.1. *Let $F : \mathbb{R} \to \mathbb{R}$ be given as*

$$F(t) = \int_a^t f(t,s)\,\mathrm{d}s, \tag{A.1}$$

where f is a continuous differentiable function for all $s, t \in \mathbb{R}$ and well defined for $f(t,t)$. Assume uniform convergence of the integral $\int_a^t [f(t+h,s) - f(t,s)]\,\mathrm{d}s$, where $h > 0$. Then the derivative of F is given as

$$\frac{\mathrm{d}F}{\mathrm{d}t}(t) = \int_a^t \frac{\partial f}{\partial t}(t,s)\,\mathrm{d}s + f(t,t)$$

Proof. Consider the difference given as

$$\begin{aligned}
\frac{F(t+h) - F(t)}{h} &= \frac{1}{h}\left(\int_a^{t+h} f(t+h,s)\,\mathrm{d}s - \int_a^t f(t,s)\,\mathrm{d}s\right) \\
&= \frac{1}{h}\left(\int_a^t f(t+h,s)\,\mathrm{d}s + \int_t^{t+h} f(t+h,s)\,\mathrm{d}s - \int_a^t f(t,s)\,\mathrm{d}s\right) \\
&= \frac{1}{h}\left(\int_a^t [f(t+h,s) - f(t,s)]\,\mathrm{d}s + \int_t^{t+h} f(t+h,s)\,\mathrm{d}s\right)
\end{aligned}$$

Then by the mean value theorem for integrals where $t^* \in [t, t+h]$ and the limit definition of the derivative we get

$$\begin{aligned}
\frac{\mathrm{d}F}{\mathrm{d}t}(t) &= \lim_{h\to 0} \frac{1}{h} \int_a^t [f(t+h,s) - f(t,s)]\,\mathrm{d}s + f(t+h,t^*) \\
&= \int_a^t \frac{\partial f}{\partial t}(t,s)\,\mathrm{d}s + f(t,t)
\end{aligned}$$

□

A.2 Reference to equations, sections and theorems(which could be used as example etc.)

Theorem A.1 is nice to know of if you encounter something like Eq. (A.1).

References

Pérez, F. and Granger, B. E. (2007). IPython: a system for interactive scientific computing. *Computing in Science and Engineering*, 9(3):21–29.

Todo list