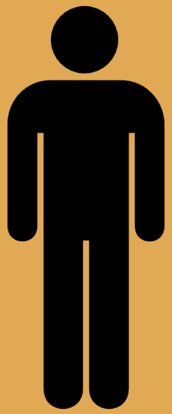
WOULD YOU RUN AWAY FROM A T-REX?

Team Panchreston

THE PROBLEM

- To flee or not to flee? Predict the probability.
- What if the predator is big?
- What if the predator is fast?
- What about next time?



MODEL DEVELOPMENT

- Relative size of predator
- Rate of change of relative size of predator
- Squash function
- Learning rate
- Numerical Methods

OUR MODEL

$$\frac{dy}{dt} = \left[\log\left(1 + \left|\frac{S(t)}{S_0}\right|\right) * \mathrm{S}'(\mathrm{t}) + \mathrm{y}\right] * \lambda + y(y-1)$$

OUR MODEL

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- $\frac{dy}{dt}$: The rate of change of the decision

OUR MODEL

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- $\frac{dy}{dt}$: The rate of change of the decision
- $S(t)$: The size of the predator as a function of time

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- $\frac{dy}{dt}$: The rate of change of the decision
- $S(t)$: The size of the predator as a function of time
- S_0: The initial size of the predator

OUR MODEL

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- $\frac{dy}{dt}$: The rate of change of the decision
- $S(t)$: The size of the predator as a function of time
- S_0: The initial size of the predator
- $\mathrm{S}'(\mathrm{t})$: The rate that the predator's size is changing

OUR MODEL

$$\frac{dy}{dt} = \left[\log\left(1 + \left|\frac{S(t)}{S_0}\right|\right) * \mathrm{S}'(\mathrm{t}) + \mathbf{y}\right] * \lambda + y(y-1)$$

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- y: The probability of fleeing

OUR MODEL

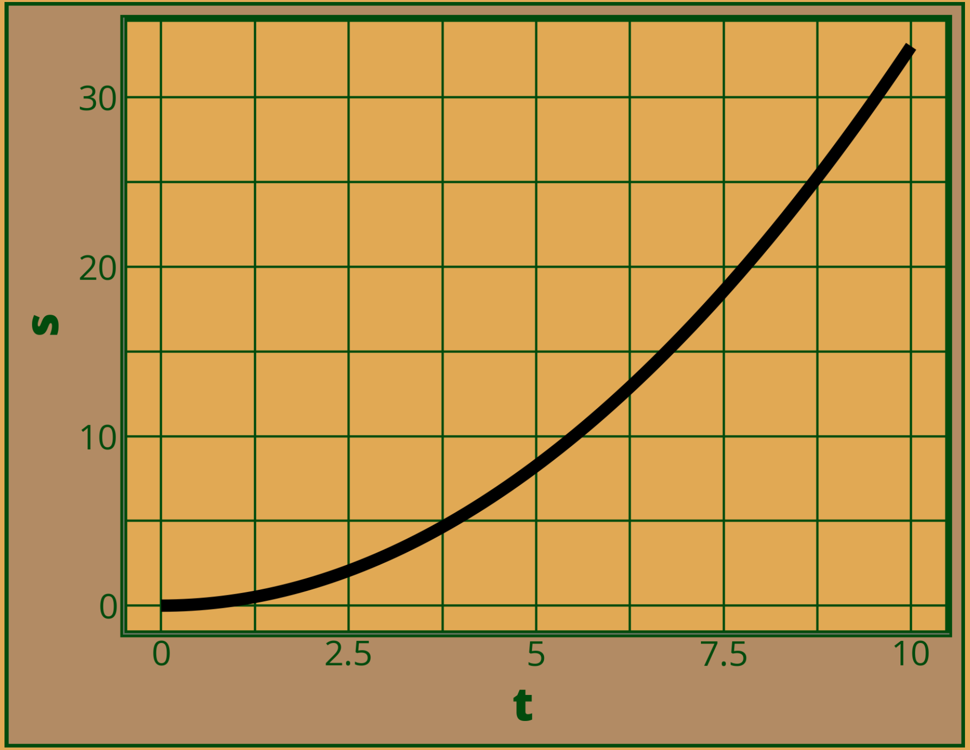
$$\frac{dy}{dt} = \left[\log\left(1 + \left|\frac{S(t)}{S_0}\right|\right) * \mathrm{S}'(\mathrm{t}) + \mathrm{y}\right] * \boldsymbol{\lambda} + y(y-1)$$

- $\frac{dy}{dt}$: The rate of change of the decision
- $S(t)$: The size of the predator as a function of time
- S_0: The initial size of the predator
- $\mathrm{S}'(\mathrm{t})$: The rate that the predator’s size is changing
- y: The probability of fleeing
- λ: The learning rate

DEFINITIONS

$$\frac{dy}{dt} = \left[\log\left(1 + \left|\frac{\boldsymbol{S(t)}}{S_0}\right|\right) * \mathrm{S}'(\mathrm{t}) + \mathrm{y}\right] * \lambda + y(y-1)$$

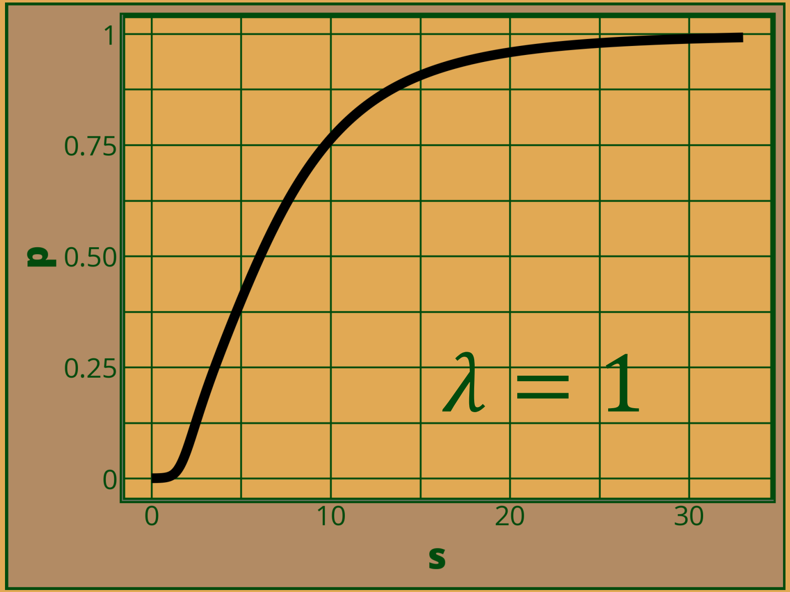
- $S(t) = \frac{1}{3}\mathrm{t}^2$

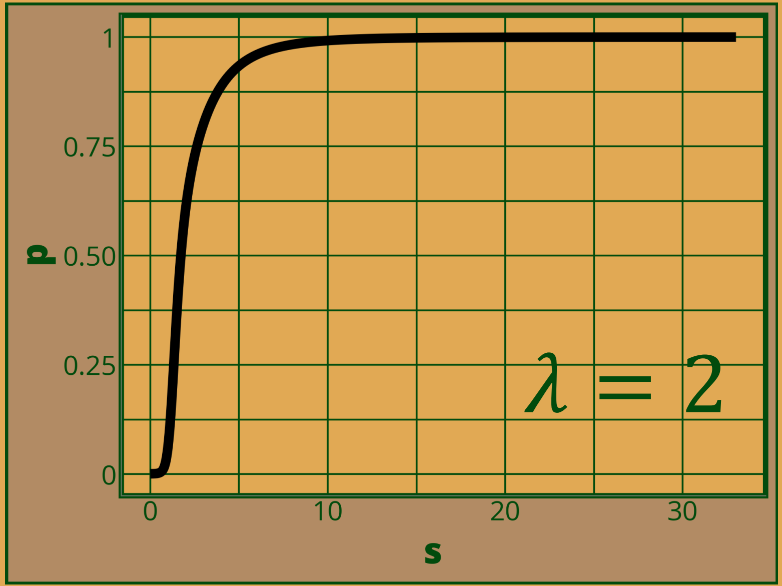


DEFINITIONS

$$\frac{dy}{dt} = \left[\log\left(1 + \left|\frac{S(t)}{S_0}\right|\right) * \mathrm{S}'(\mathrm{t}) + \mathrm{y}\right] * \boldsymbol{\lambda} + y(y-1)$$

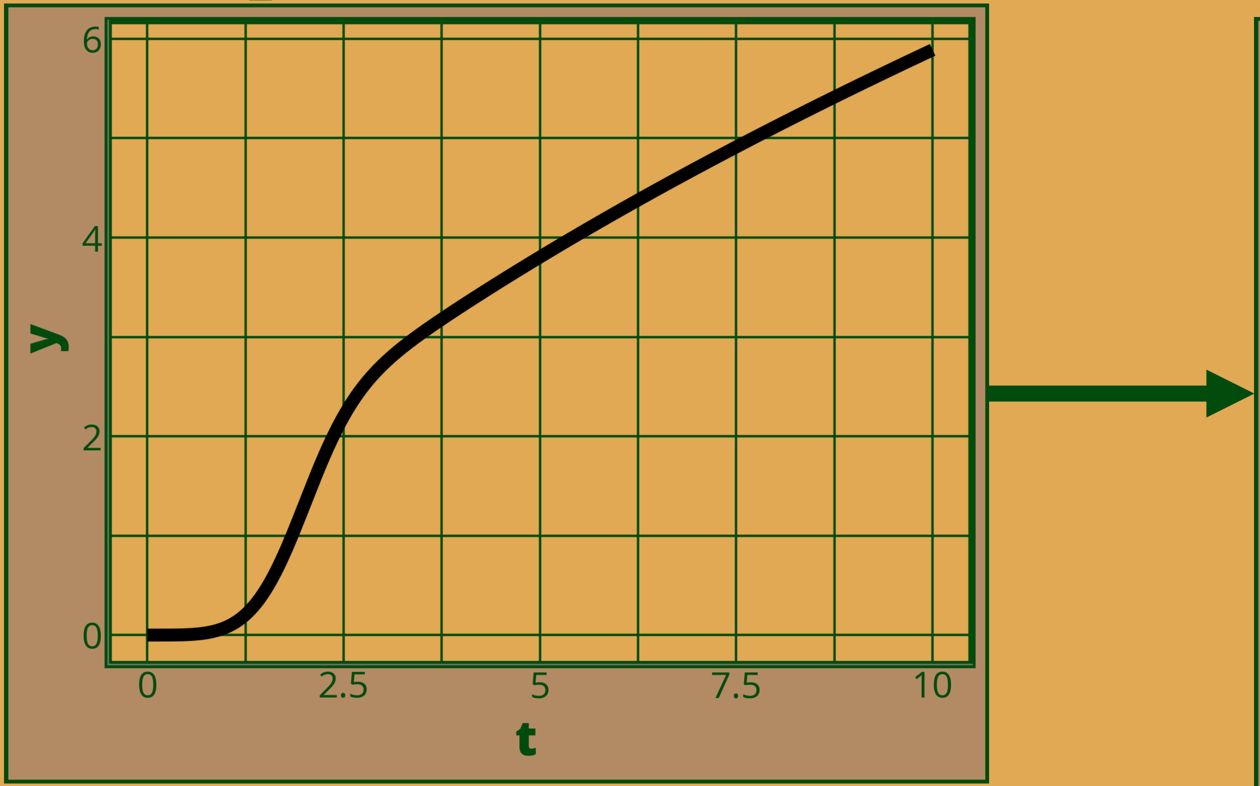
- λ: number of occurrences

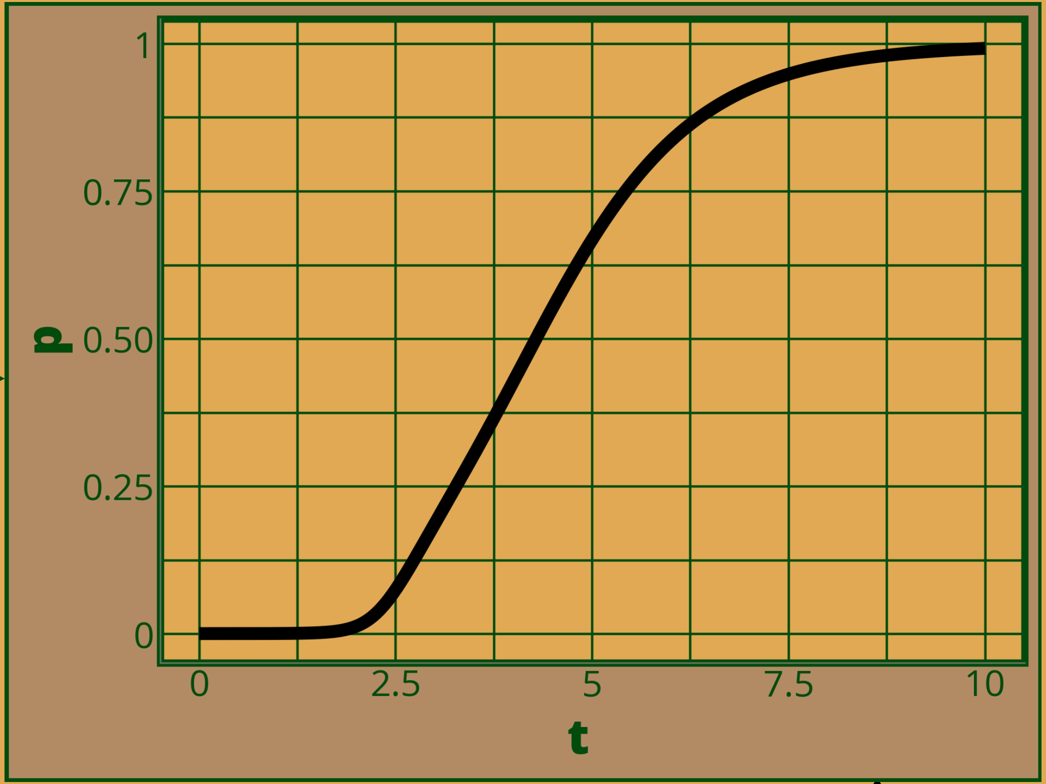




SQUASHING

- $\frac{1+\tanh(x-3.453)}{2} \in [0,1]$





References

- http://www.color-hex.com/color-palette/37167
- www.tattoowoo.com/fonts

Our Code

- https://gist.github.com/nick5435/5ba6bff9c33c09c52e1f9c106c550796