

Example:

Step One– Bayesian Inference One

$$P(H|E) = \frac{P(E|H) \cdot P(H)}{P(E)}$$

1. Prior Probability (*Environment is dangerous*)
 $P(H) = 0.78$
2. Likelihood that threat is real based on *external stimuli*
 $P(E|H) = 0.81$
Likelihood that threat is not real
 $P(E|\neg H) = 0.79$
3. Marginal Probability
 $P(E) = P(E|H) \cdot P(H) + P(E|\neg H) \cdot 1 - P(H)$
 $P(E) = 0.81 \cdot 0.78 + 0.79 \cdot 0.22$
 $P(E) = 0.8056$
4. Plug into formula

$$P(H|E) = \frac{0.81 \cdot 0.78}{0.8056}$$

$$P(H|E) = 0.784260178749 \text{ or } 78.4\%$$

Step Two– Fuzzy Logic

Fuzzy Sets = based on $P(E|H)$

- Low Threat(rest, GABA)
 $\mu_{\text{Low}}(P) = 1 - P$
- High Threat(fight-or-flight, Glutamate)
 $\mu_{\text{High}}(P) = P$

Recall, $P(H|E) = 0.784260178749$

Low Threat:

$$\mu_{\text{Low}}(P) = 1 - 0.784260178749$$

$$\mu_{\text{Low}}(P) = 0.215739821251$$

High Threat:

$$\mu_{\text{High}}(P) = 0.784260178749$$

$$\mu_{\text{High}}(P) > \mu_{\text{Low}}(P)$$

Glutamate is activated.

Step Three– Activation

Since Glutamate is activated Step Three executes

$$f(t) = \begin{cases} 2 & \text{if } 3600 \leq t < 5400, \\ 1 & \text{if } t \geq 5400, \\ 0 & \text{if } t < 3600. \end{cases}$$

Time(t) = 6284 seconds

t = 1

Extra Synaptic GABA is activated

Step Four– Bayesian Inference Two

$$P(H|E) = \frac{P(E|H) \cdot P(H)}{P(E)}$$

1. Prior Probability (*number from $\mu_{High}(P)$*)

$$P(H) = 0.784260178749$$

2. Likelihood that life is in danger

$$P(E|H) = 0.56$$

Likelihood that life is not in danger (*number from $\mu_{Low}(P)$*)

$$P(E|\neg H) = 0.215739821251$$

3. Marginal Probability

$$P(E) = P(E|H) \cdot P(H) + P(E|\neg H) \cdot 1 - P(H)$$

$$P(E) = 0.56 \cdot 0.784260178749 + 0.215739821251 \cdot 1 - 0.784260178749$$

$$P(E) = 0.439185700099 + 0.046543670473$$

$$P(E) = 0.485729370573$$

4. Plug into formula

$$P(H|E) = \frac{0.56 \cdot 0.784260178749}{0.485729370573}$$

$$P(H|E) = 0.904177772041$$

Step Five– Conscious Transformation

If $P(H|E) > 0.80$

Then conscious transformation happens
