Behaviour Dynamics in Social Networks - Assignment 7

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Abstract

Verification by mathematical analysis of stationary points.

1 Determine equilibria for a constant stimulus 1

The values chosen for the parameters are: $repetition = 30$, $duration = 30$, $\eta_1 = 0.4$, $\eta_2 = 0.3$, $\mu_1 = 0.8$ and $\mu_2 = 0.9$.

1.1 Question 1

The final equilibrium values for the states rep, prep and feel based on observations in the simulation are:

$$rep : 1$$
$$prep : 0.991535551$$
$$feel : 0.89068188.$$

1.2 Question 2

The observed equilibrium values based on observation in the simulation:

$$\omega_1 = 0.832149364$$
$$\omega_2 = 0.898285371.$$

The predicted equilibrium values based on mathematical analysis:

$$\omega_1 = 0.832149364$$
$$\omega_2 = 0.898285371.$$

The two sets of values for the connection weights are equal, therefore the accuracy is 100%.

1.3 Question 3

The differences between aggregated impact and values for the two adaptive connections for these equilibria vary from 0 to 0.2 in the first case (aggimpact-ω_1) and from 0 to 0.1 in the second case (aggimpact-ω_2).