UNIVERSIDAD NACIONAL DE INGENIERIA

FACULTAD DE CIENCIAS

CIENCIAS DE LA COMPUTACION

Título del Trabajo

Practica Calificada 5: Modelamiento Dinámico

Autores

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Curso

Inteligencia Artificial

Profesor

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1. Planteamiento del problema

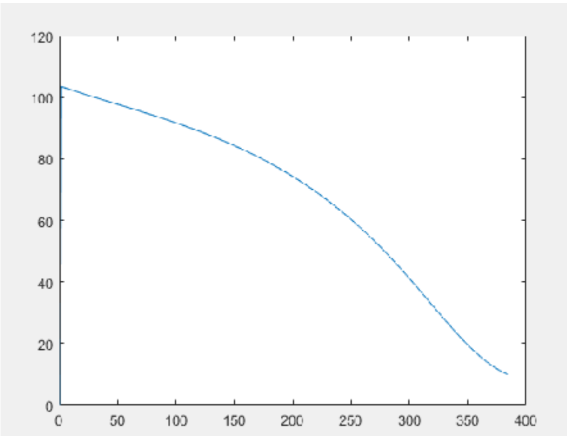
En este informe trabajaremos con un programa para el entrenamiento de una red neuronal dinámica para modelar un sistema no lineal utilizando el algoritmo DBP.

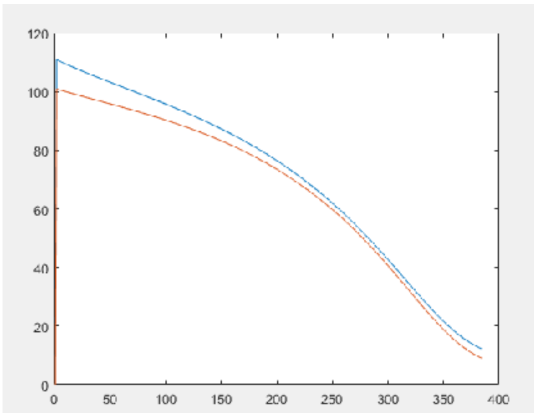
El sistema tiene 1 entrada y 2 señales de salida, variaremos los valores de centro, porcentaje de error.

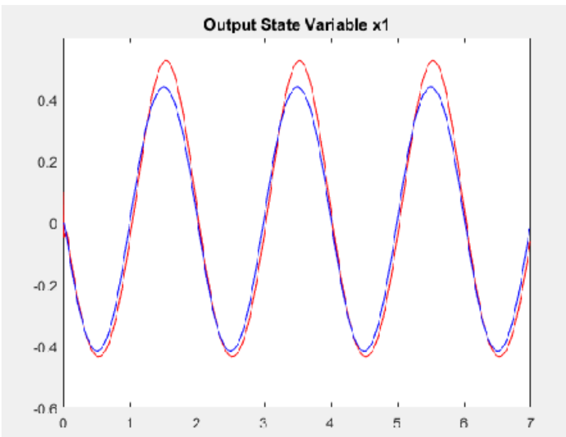
2. Primer intento:

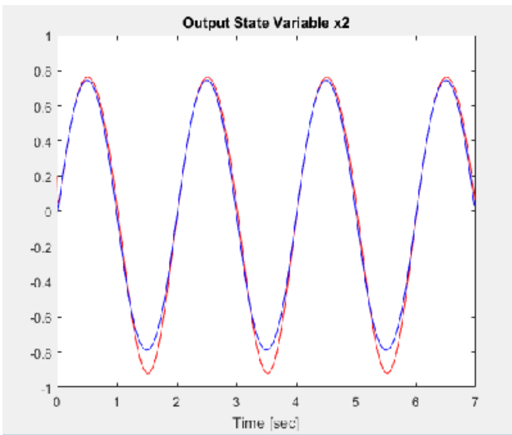
2.1. Entrenamiento_ U1:

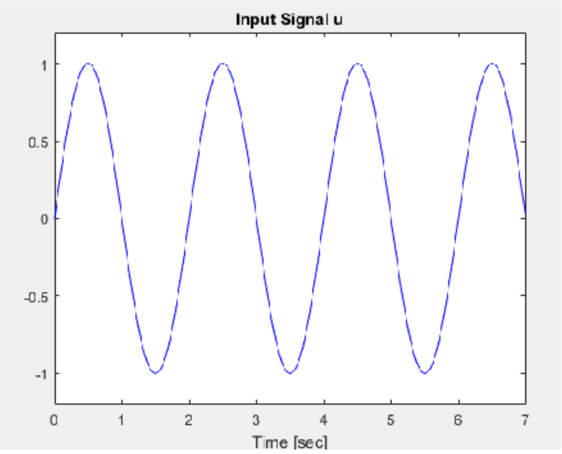
Datos iniciales	Automático
learning rate [v w]	0.02
learning rate [c: sigmoid center]	0.05
learning rate [a: sigmoid slope]	0.05
maximum value of error function (percentage %):	10
number of iteration steps	1000
erreltotal	0.0991





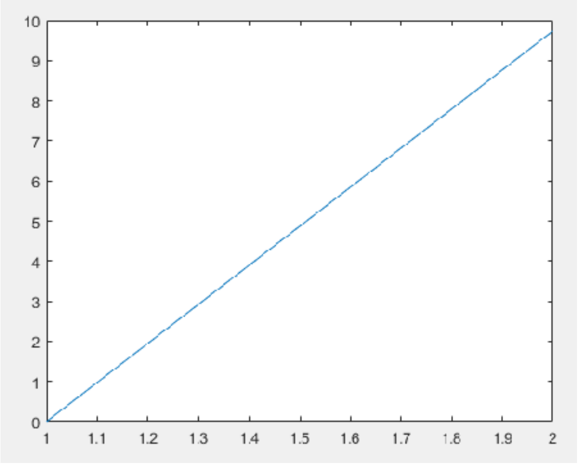


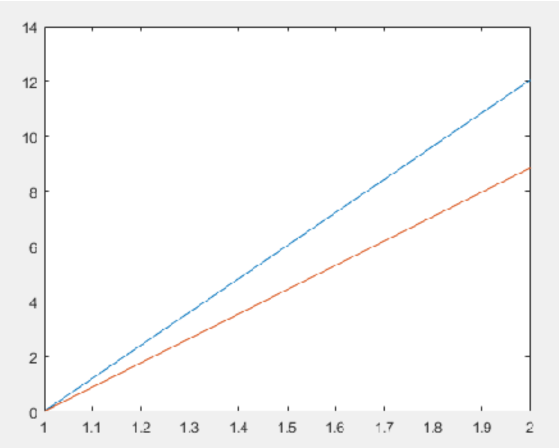


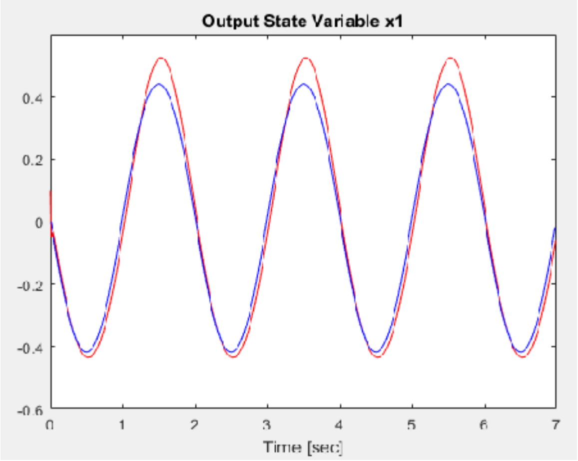


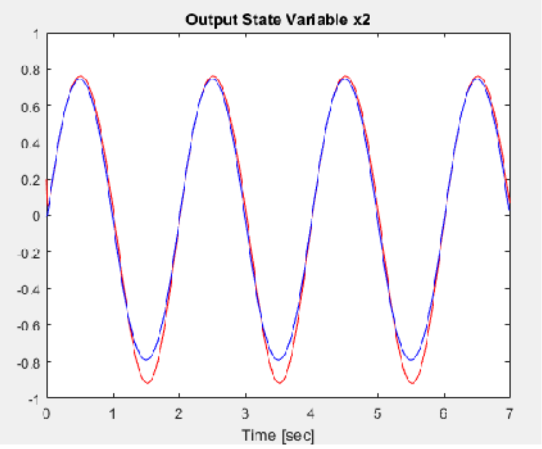
2.2. Validando_ U2:

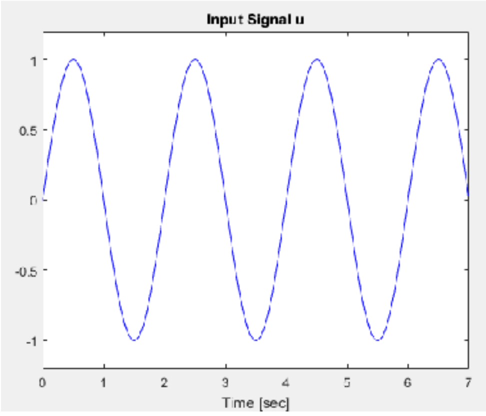
Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	10
number of iteration steps	2
erreltotal	0.0982





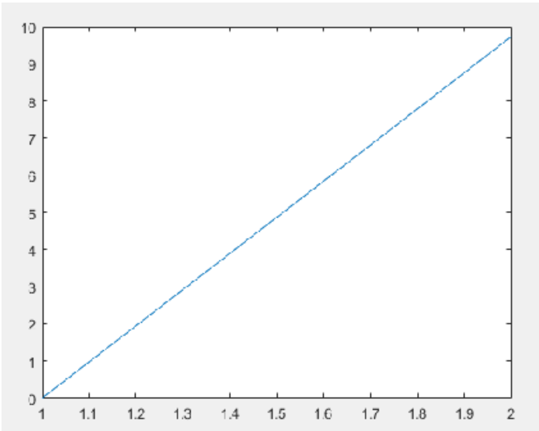


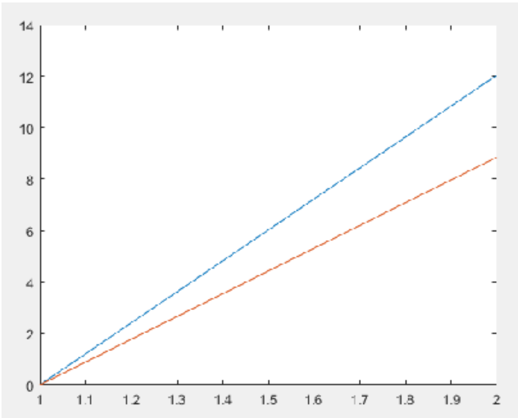


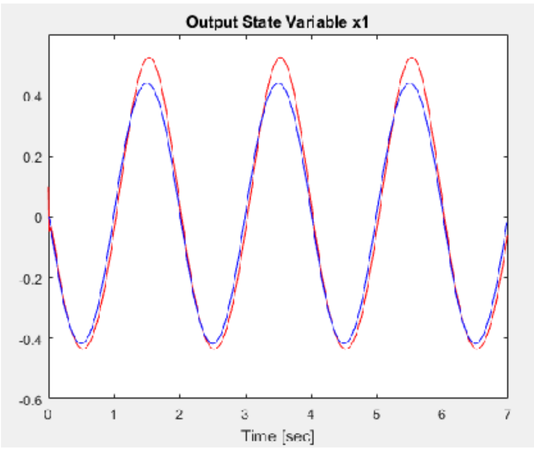


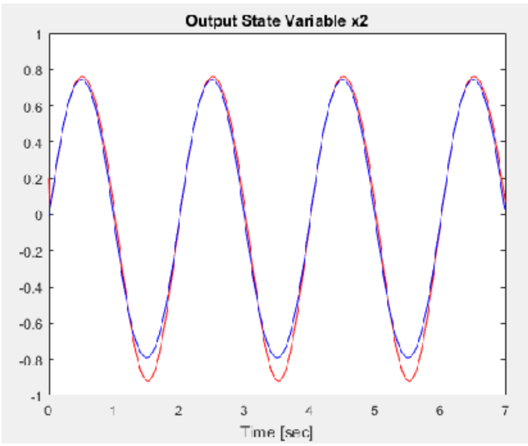
2.3. Validando_ U3:

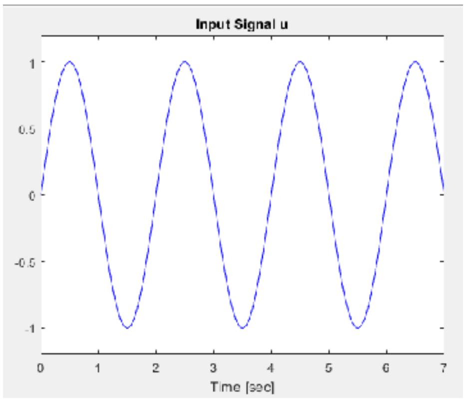
Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	10
number of iteration steps	2
erreltotal	0.0989







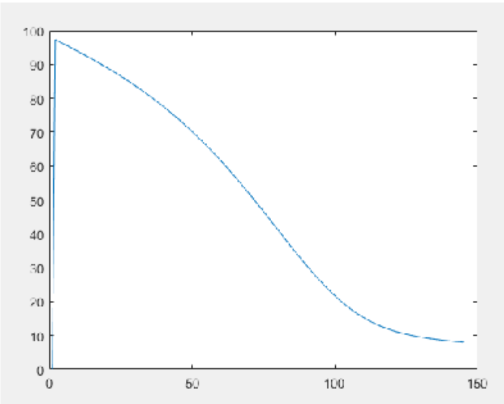


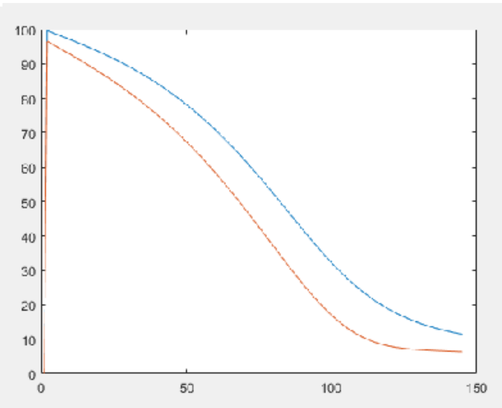


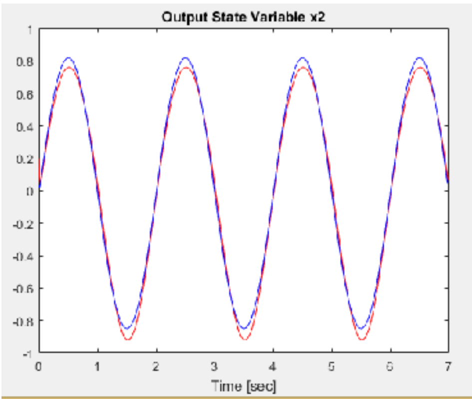
3. Segundo intento:

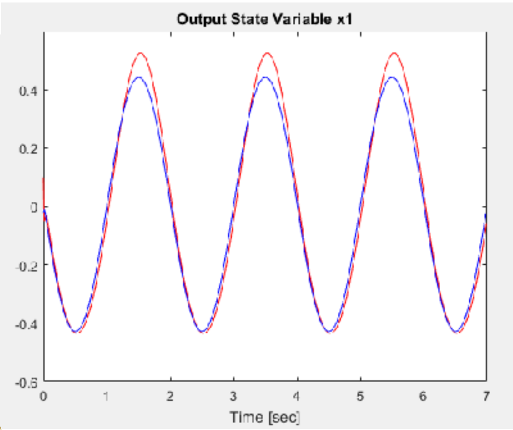
3.1. Entrenamiento_ U1:

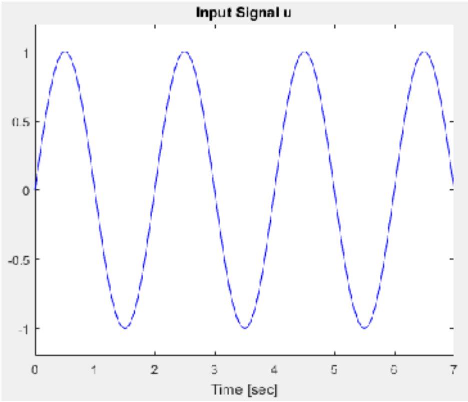
Datos iniciales	Automático
learning rate [v w]	0.08
learning rate [c: sigmoid center]	0.05
learning rate [a: sigmoid slope]	0.05
maximum value of error function (percentage %):	9
number of iteration steps	1000
erreltotal	0.0880





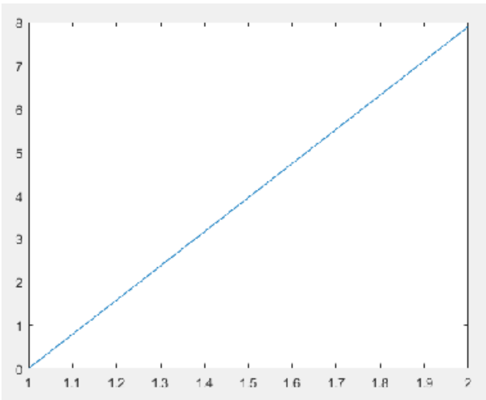


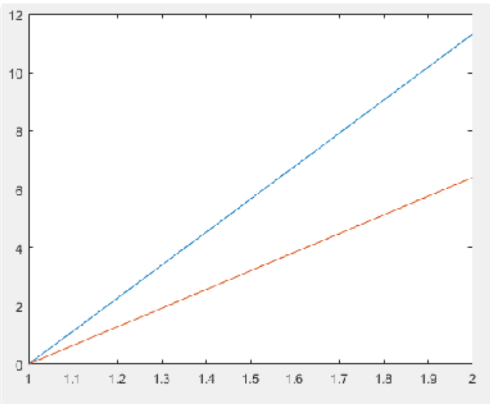


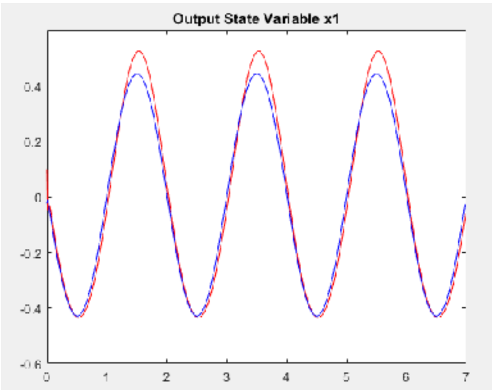


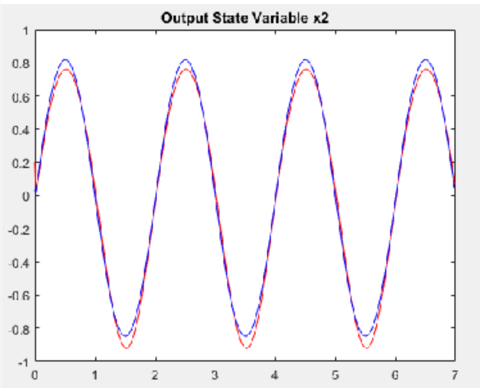
3.1 Validando_ U2:

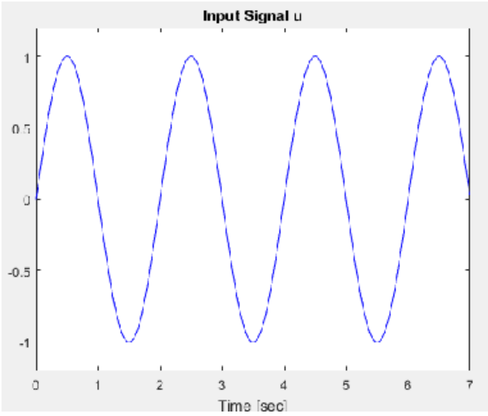
Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	8
number of iteration steps	3
erreltotal	0.0849





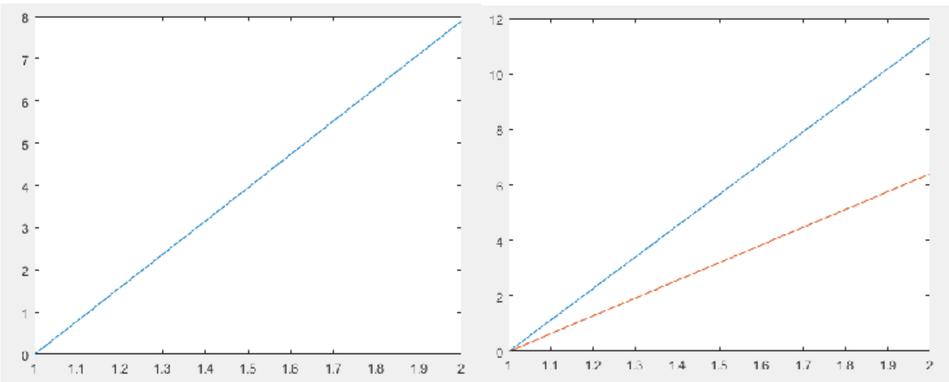


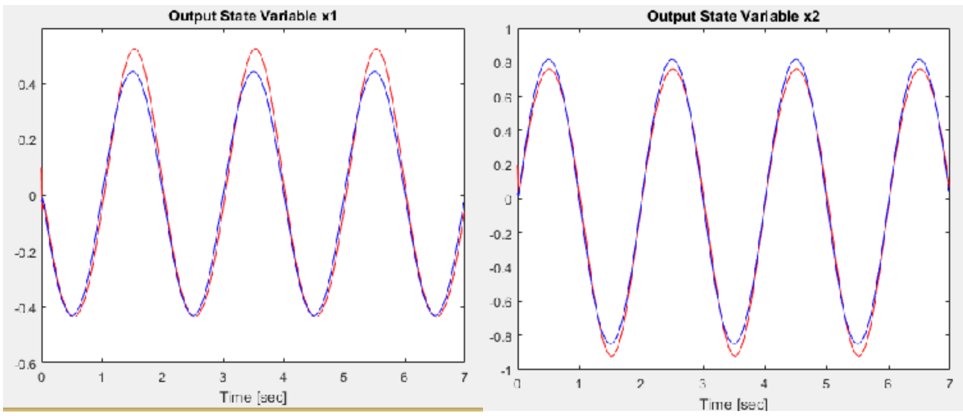


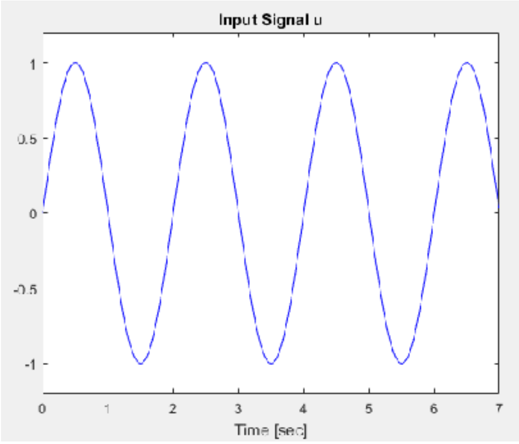


3.2 Validando_ U3:

Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	11
number of iteration steps	3
erreltotal	0.0863



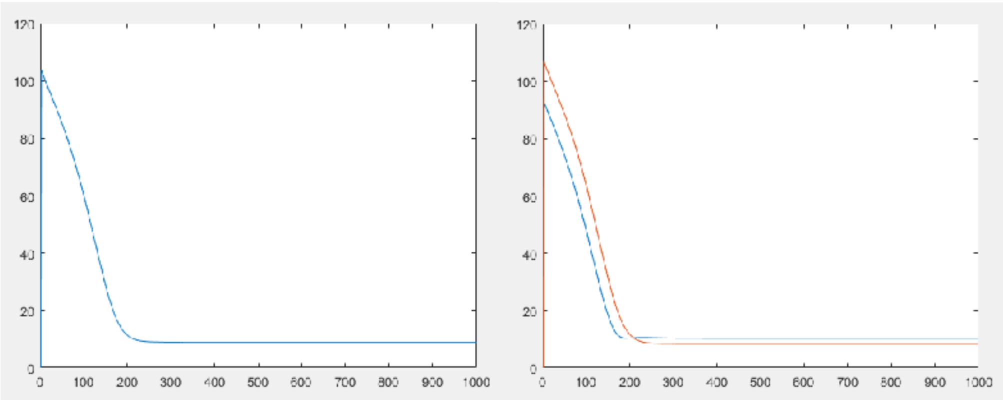


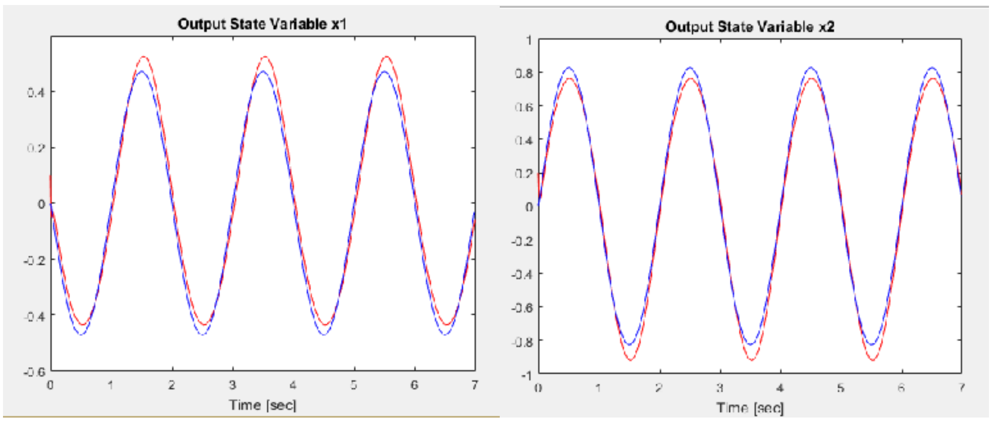


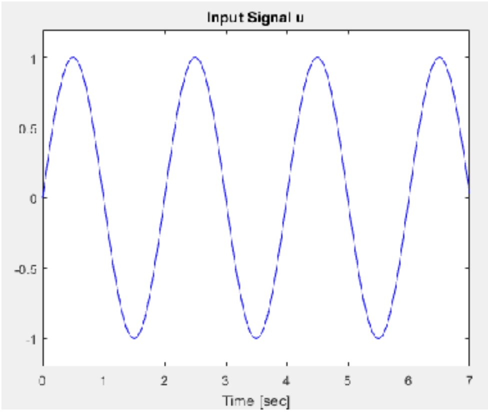
4. Tercer intento:

4.1. Entrenamiento_ U1:

Datos iniciales	Automático
learning rate [v w]	0.05
learning rate [c: sigmoid center]	0.01
learning rate [a: sigmoid slope]	0.01
maximum value of error function (percentage %):	10
number of iteration steps	900
erreltotal	0.0947

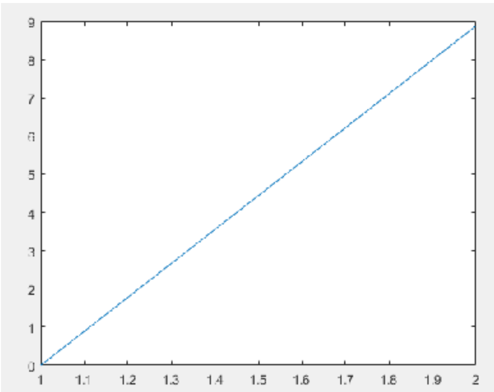


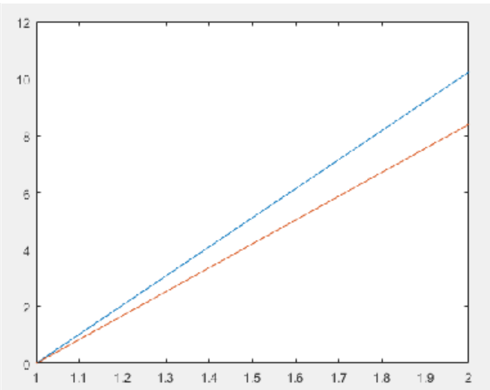


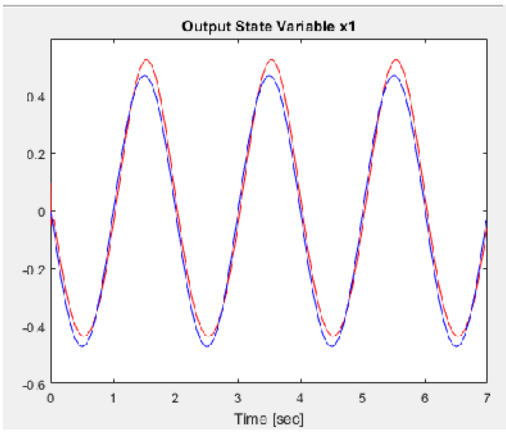


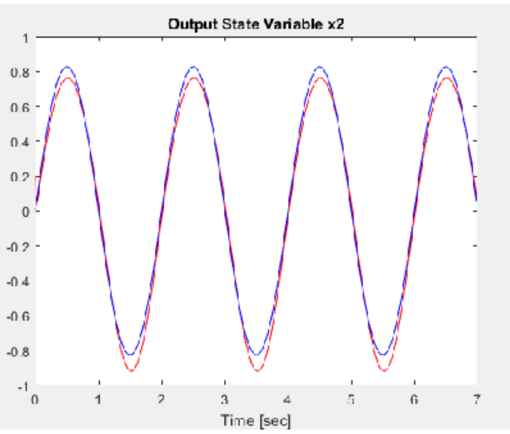
4.2. Validando_ U2:

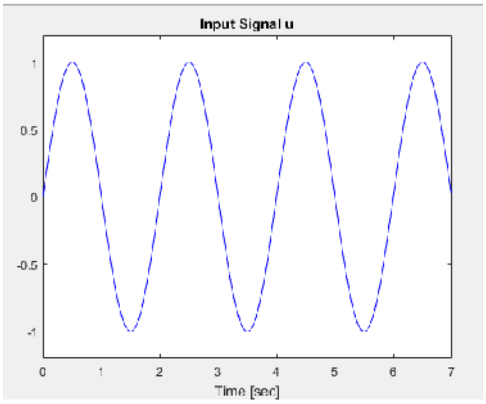
Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	8
number of iteration steps	2
erreltotal	0.0785





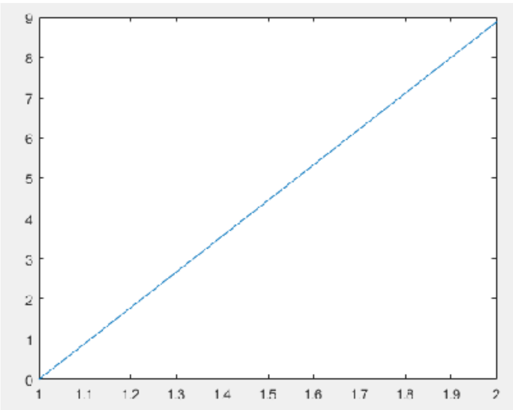


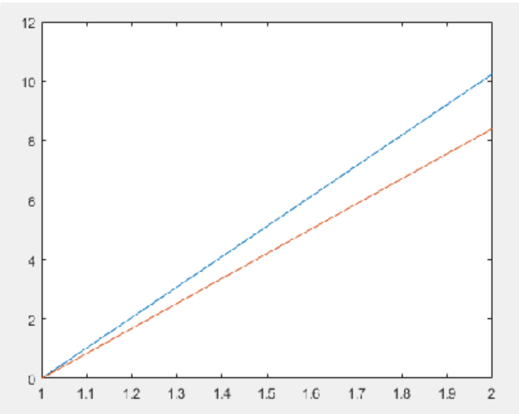


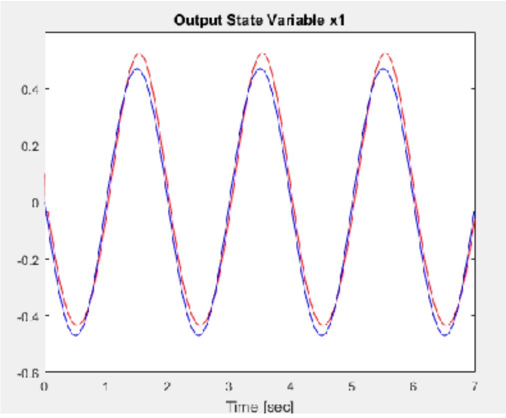


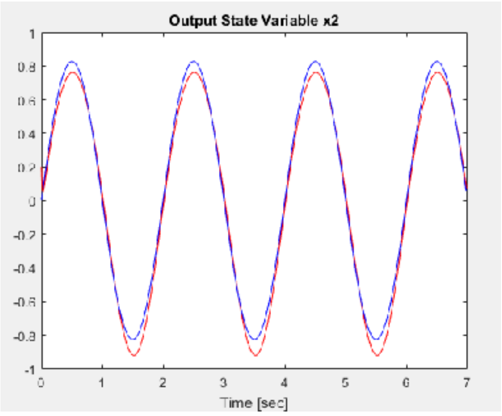
4.3. Validando_ U3:

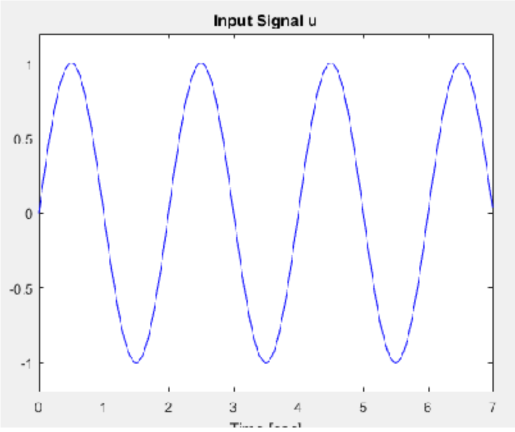
Datos iniciales	Automático
learning rate [v w]	0
learning rate [c: sigmoid center]	0
learning rate [a: sigmoid slope]	0
maximum value of error function (percentage %):	8
number of iteration steps	2
erreltotal	0.0752











CONCLUSIÓN

Como observamos cuando los valores de eta son pequeños (0 < eta < 0.05), y los valores de “a” y “c” son “0” podemos notar en las gráficas que los resultados (rojo) se aproximan más a lo que queremos que salga (azul), y en caso contrario el error que obtenemos es mayor.