# Software documentation RCCA-system

Magnus Gundersen Autumn 2016

Software documentation of the program that is used for CA and RC systems

## System overview

The system is used for examining reservoir computing systems, together with cellular automata.

### Prerequisites

The system is implemented in Python.

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## Modules of the system



### Project

Contains all specific tasks that is accomplished in the project.

#### execute\_feedforward\_majority\_task()

Runs the majority task where a bit string is presented to the system, and the system is asked whether there is a majority of 0’s or 1’s.

### Reservoir

Module that contains the possible reservoirs that can be used in the system.

#### CA

Elementary CA is implemented. The CA must be initialized with a rule, that creates a scheme for updating each iteration.

### RC-CA-system

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### RC-framework

#### Fit\_to\_training\_set()

## Specific interactions

### Non-temporal classification procedure

The system is able to be trained to classify non-temporal problems.

### Temporal system classification

A temporal system classifier must be trained with a time series training set. This training set must contain inputs to the system at each time step, and the correct output. As a temporal system, these inputs must be dependent on earlier inputs.

**Example of training-set:**

Training ex 1:

[

(0100, 001),

(0100, 001),

(1000, 001)

]

All of these examples would be fed to the RCCA-system, and the output of the system would be used to

## Miscellaneous