

Flood Detection



10 agents with water level detection sensor in different areas within one water system

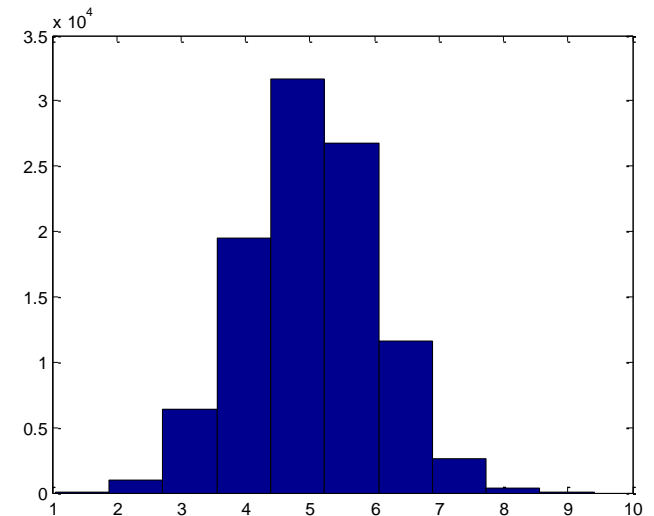
Flood Sensor

Ability: read water level

Simulate:

Every second(s) or millisecond(s) generates a number (water level)

Data $\sim N(5, 1)$ (normal distribution)

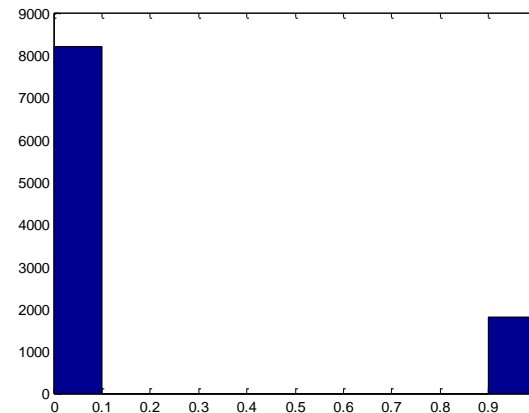
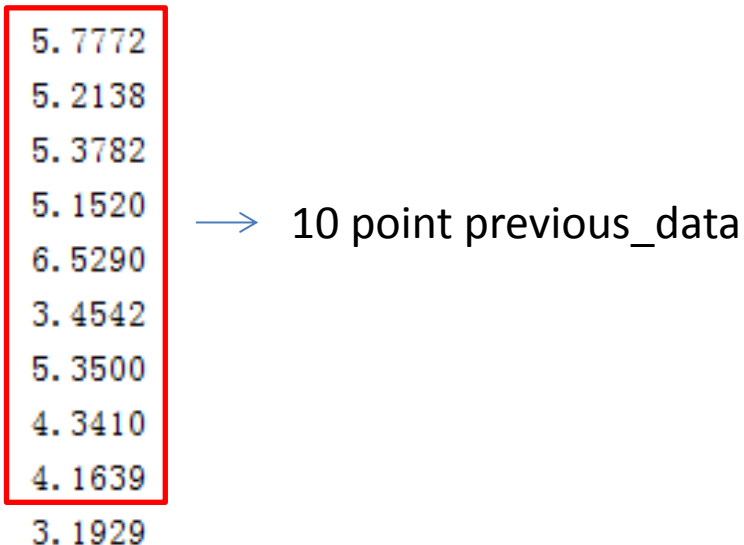


Flood Agent

- Ability:
- every interval of time fetch data from the flood sensor
 - Judging the warning status (True or False)
 - Sending warning message to warning agent

Judging Algorithm:

```
If data - mean(previous_data) >= std(previous_data)
    True
Else
    False
```



18.3% for a flood agent
send warning message

Warning Agent

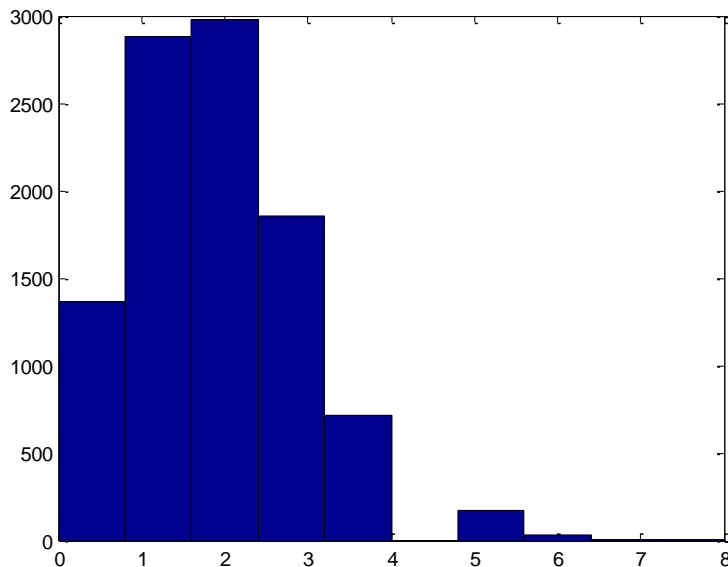
Ability: Receiving message from every flood agent, decide the if send a “Flood Warning”

Judging Algorithm:

This will ask for
synchronous
problem

Suppose there are 10 flood agents

If the number of the warning message received at
the same time ≥ 6 ($\geq 60\%$)
Then send Flood Warning



The probability for an Warning Agent to send a
Flood Warning is about 2%

Warning Agent

Ability: Receiving message from every flood agent, decide the if send a “Flood Warning”

Judging Algorithm:

Suppose there are 10 flood agents

If within 2 seconds get 5 warning messages from flood agents(from different agents or from the same agent)

the same time ≥ 6 ($\geq 60\%$)

Then send Flood Warning