Random variable is an abstract mathematical object that resembles a device that shows numbers on a display. Each device presents a characteristic preference for numbers of specific ranges.

A couple of random variables can be visualized as a couple of devices. If the variables are not independent, then the devices are connected, which results in the operation of one device influencing the operation of the other.

Time series is like a simple database.

<table>
<thead>
<tr>
<th>Time</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>index: Integer</td>
<td>index: Integer</td>
</tr>
<tr>
<td>Time: string</td>
<td>value: real</td>
</tr>
</tbody>
</table>

Time series can also be considered as a 2xn table of which the first column is the time and the second the values of the n measurements.

User's guide of \( X \)

Switch on the device to display a number
Switch off and back on the device to display another number

The whole game in statistics

For a given time series, identify the best stochastic process.

The means to accomplish this is to analyze the time series with the sample moments (mean, variance, autocovariance...) and they build a numerical model (eg. AR(s)) that hopefully describes well the ideal stochastic process.

User's guide of \( X_1, X_2 \) connection

Switch on first \( X_1 \) then \( X_2 \) to display the two numbers
Switch \( X_1 \) off and then back on to display a new set of two numbers

* The distribution functions fully describe random variables. Alternatively, I need moments (the more the better).

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