

# Presenting Natural Computing research lines

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<http://www.gcn.us.es>



# Research directions

## Bioinspired computational paradigms

- \* **Membrane computing**
- \* DNA computing
- \* Cellular Automata
- \* ...

## Theoretical aspects

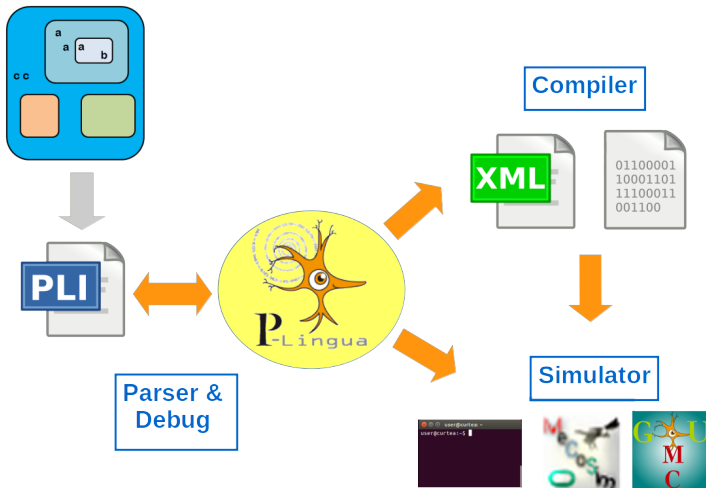
- ▶ Computational completeness
- ▶ **Computational complexity**
  - **P vs NP**

## Practical aspects

- ▶ Problems / challenges
- ▶ **Tools**

# P-Lingua framework

Free software (GNU GPL license) <http://www.p-lingua.org>



# Research lines I

## Computational modelling

### \* Systems Biology

- Quorum sensing
- EGFR
- Apoptosis
- Angiosarcoma ...

### \* Ecosystems

- Bearded vulture
- **Zebra mussel**
- P. oleracea (Boston)
- Giant Pandas ...

## Development of simulation tools



# Research lines II

## Industrial applications

- \* Fault Diagnosis (Spiking Neural P systems)
  - Power systems
  - High speed trains
  - Virus propagation ...
- \* Problem solving
  - metaheuristics (optimization)
  - robot path planning
  - watermarking ...

## Implementation ( $\neq$ Simulation)

- \* Joint work (in progress)