2014 Summer School in Computational Sensory-Motor Neuroscience (Your goals: Train? Launch?)

Thoroughman 1 – Computation Intro

Natural Computation

Operational definition: Signal information comes in; characteristic information comes out [output]
- signal: variable that can be represented by a series of numbers, over time and/or space, that is or represents something “real”

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td>- Linear vs Nonlinear</td>
<td>Q = C*V</td>
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<tr>
<td>- Single vs multidimensional</td>
<td>V = I*R</td>
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<tr>
<td>- Temporal vs spatial (or both)</td>
<td></td>
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<tr>
<td>- Algebra, integration, differentiation</td>
<td>neuromuscular junction</td>
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<tr>
<td>- Deterministic vs stochastic</td>
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</tbody>
</table>

My goals for us
- Rigor
- Tools
- Connection
- Creativity
Sensory. Multiscale
  - Periphery
    o Signals? Systems? Natural Computations?
    o Audition. Cool! Vibrations in air transformed into percussion at eardrum. That moves fluid which shears hairs on cells which change current within. Cells arranged on cochlea which has, along spiral, varying resonant frequencies.
  - Central
    o Encoding vs Decoding
    o Computations?
  - Modeling
    o Goals?
    o Workflow?