today:

• Tom Libby as guest speaker
• idea generation for course project
Bio-Inspiration, Biological Models

Biology
- Observe
- Modeling
- Experiment
- Analysis

Robotics
- Design
- Modeling
- Control
- Experiment
- Analysis

Robotics Technologies
- Bionics
- Biomimetics
- Biorobotics
- Bio-inspired robotics

Synthetic Methodology
Robotics Models

Biological Understanding
- Biological cybernetics
- Artificial life
- Adaptive behaviors
engineering vs research
oversimplified

- Engineering process:
  - task definition → concept development → design → test → manufacture/deploy

- Research process:
  - concept development
  - feasibility analysis
  - publication/commercialization
idea generation

• main point: generate as many ideas as possible, but *do not evaluate them*.

• Some starting points (3 minutes each):
  
  • Think of a biological capability you wish you understood better
    
      • e.g. catching, locomotion in various animals, things you’ve seen in the wilderness,
  
  • Think of how a robot could be improved
    
      • e.g. a robot you wish you had, a robot you’ve used or seen
  
  • Think of things that are totally unrelated
idea evaluation

• Now, spend a few minutes reducing these ideas down to about three of your favorite. After we are done with this step, you will discuss these with your neighbor (but don’t do that yet).

  • group them into rough categories

  • propose one or two “research objectives” you could ask of the most promising ones

• Discuss with your neighbor (5 minutes each)

  • get feedback, form more ideas, practice explaining
# Evaluation of Ideas

<table>
<thead>
<tr>
<th></th>
<th>Idea 1</th>
<th>Idea 2</th>
<th>Idea 3</th>
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<tbody>
<tr>
<td>Feasible in a quarter’s time</td>
<td>+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Plays to your strengths/expertise</td>
<td>0</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Interesting</td>
<td>+</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Interesting for funding agencies</td>
<td>0</td>
<td>0</td>
<td>0</td>
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