Leg Design and Walking Patterns

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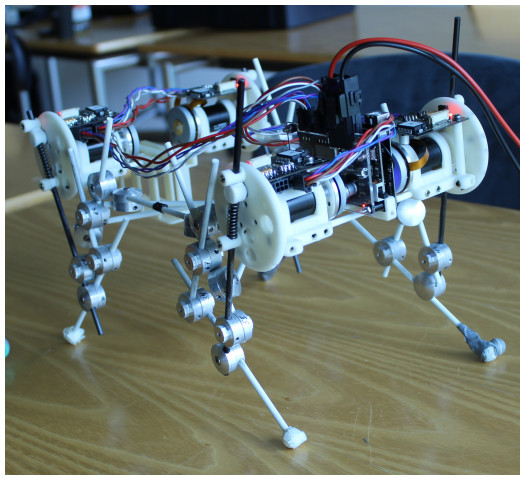

Project Presentation, Locomorph Summer School
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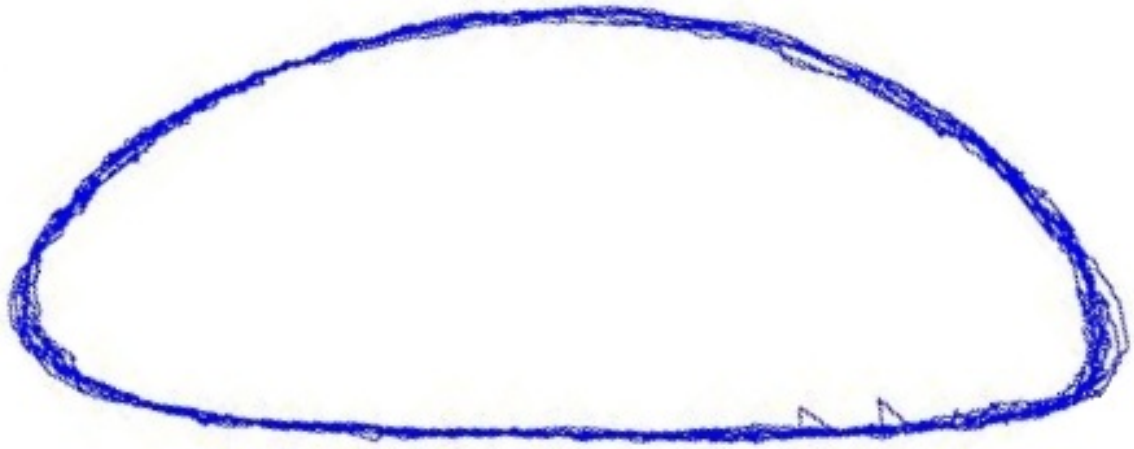
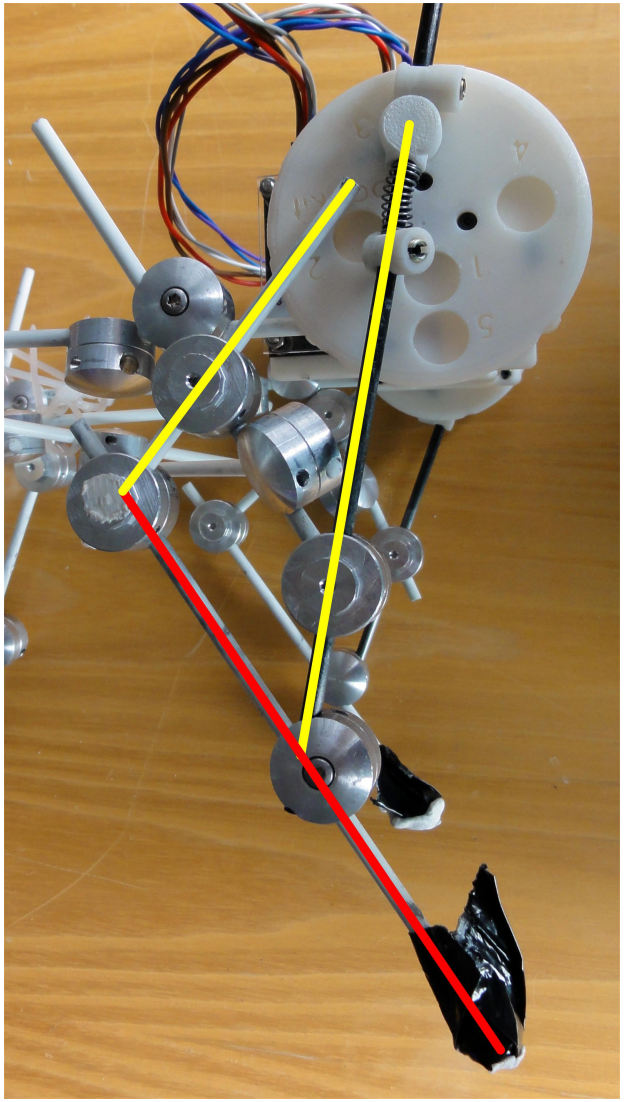
Ideal Trajectory Following



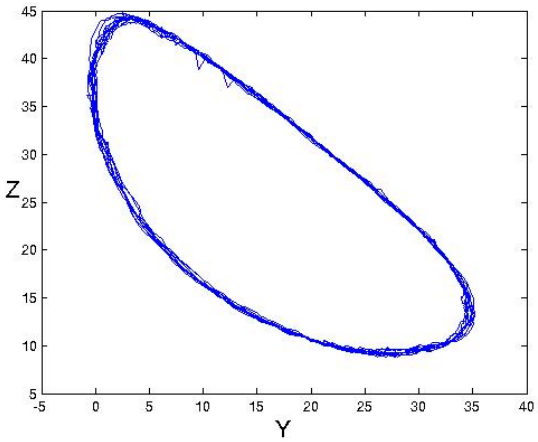
- "Pancake"-like foot trajectories for fast walking
- Make sure the flat part is where the leg is on the ground

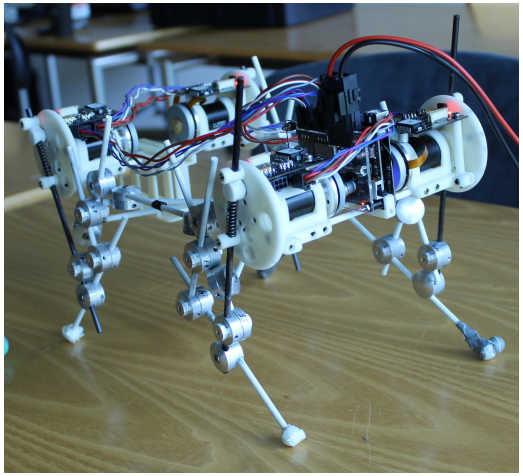
Leg Design



- Un-actuated (passive) knee instead of actuated knee
- 4-bar structure
- Quite unstable (Thanks, Jørgen for suggestions that helped!)

Experiments: Motion Capture





- Thanks, Martin!!
- Leg design allows us to achieve “pancake”-shape foot movements
- Not true for SpringyBot ➡ leg design helps!
- Pancake is just not quite flat on the surface

Gait Selection

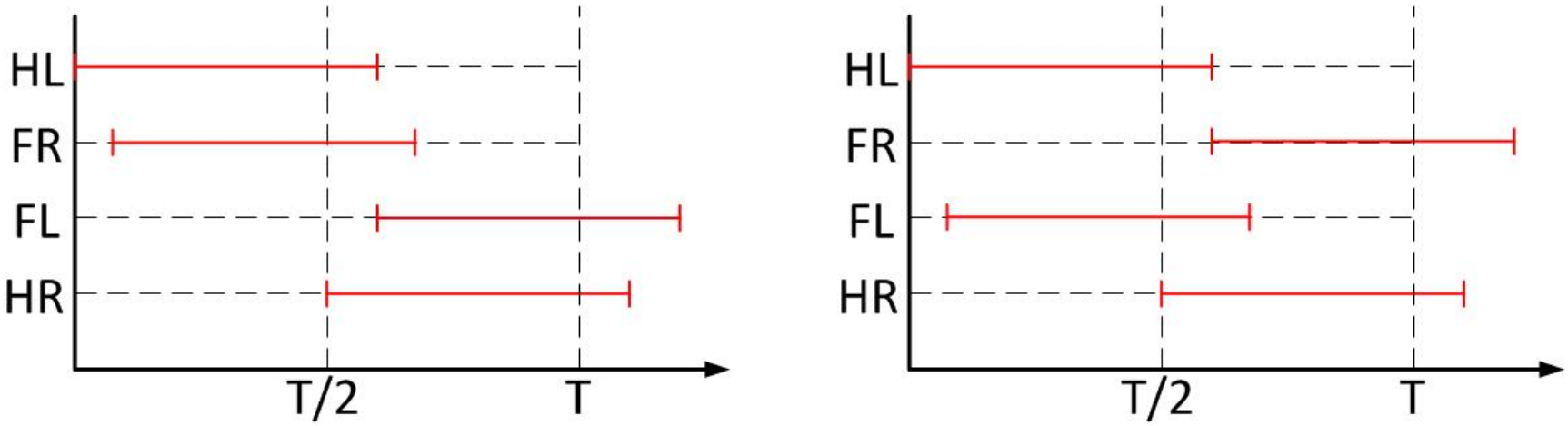
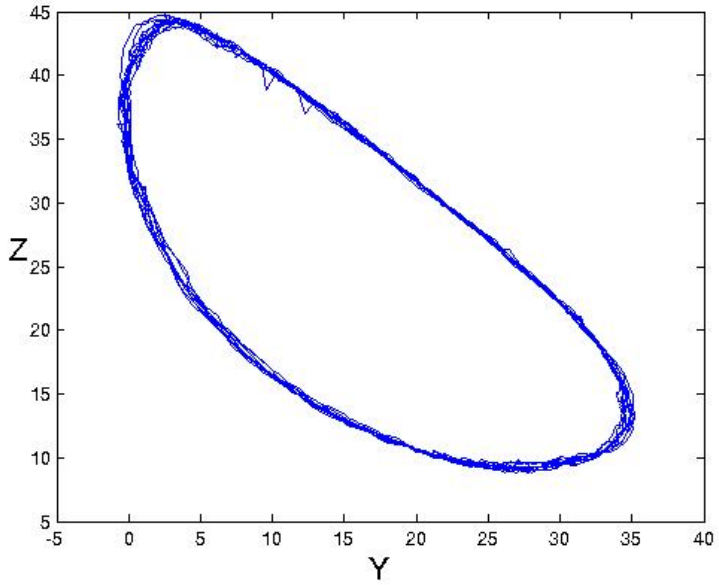
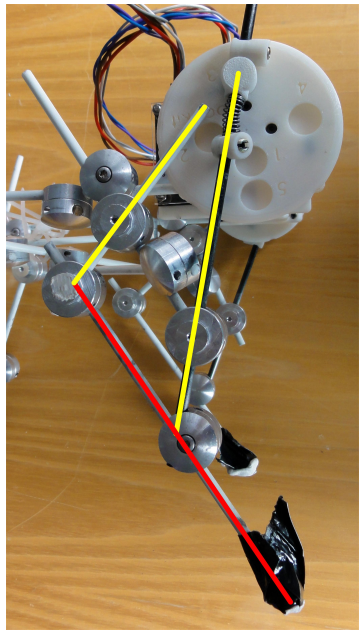


Figure : Left: single foot diagonal gait, right: single foot lateral gait

- Stability problems with trotting
- Improved performance with single foot diagonal gait
  ➡ more stable (Thanks, Peter)
- Single foot lateral sequence: better body balance

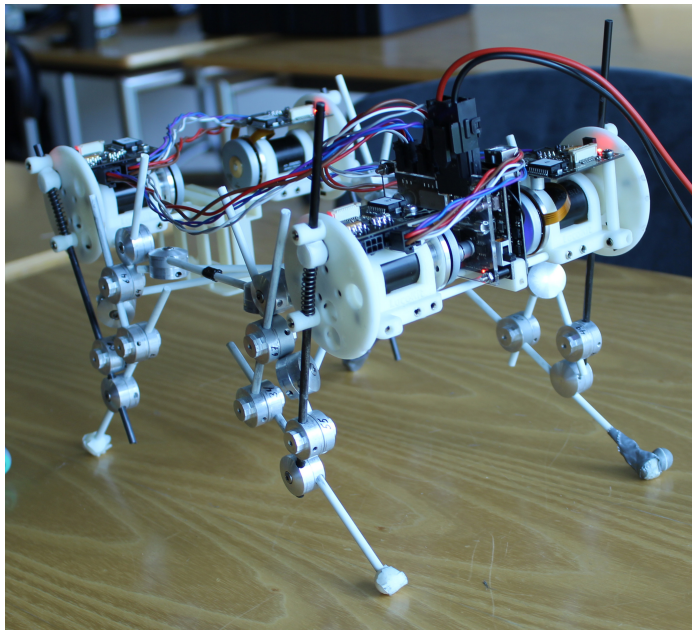
Future Leg Design





- Flip construction to achieve goal (142°)

Awesome Results with Suboptimal Leg Realization



- Legs too weak to carry all the weight (1.35 kg) of the robot
  ➡ Either improve stability or go on diet
- Results with single-foot-diagonal sequence
  (lateral sequence should be better)

Rest in Pieces