UCLA Samueli School of Engineering

Structural Simulation of Jellyfish Propulsion

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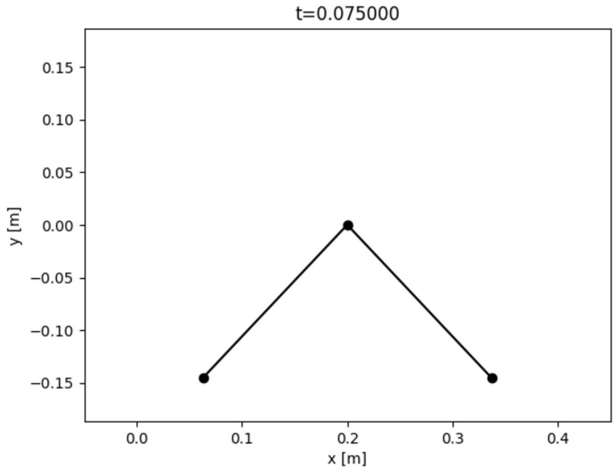
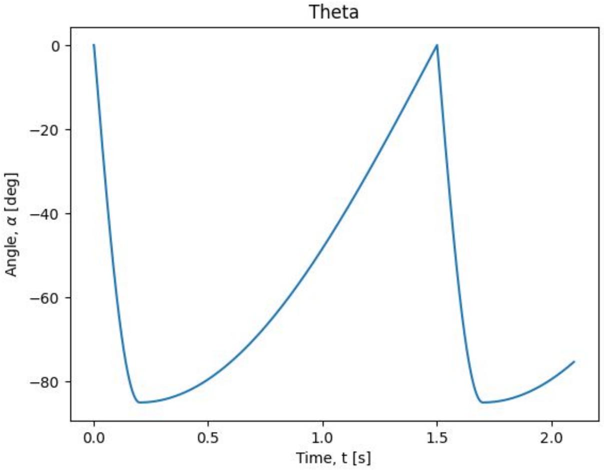
Implementation

Making the jellyfish move:

- Currently modeled with 3 nodes in a fluid with a density of 10 kg/m^2
- Change of angle applied to side nodes
  - 0.2s of contraction to -85° and 1.3s of relaxation to 0°
- Jellyfish fall into high Reynolds number regime
  - $F_D = C_D A * 0.5\rho v^2 * \hat{u}$ where $A = dL * r_0$





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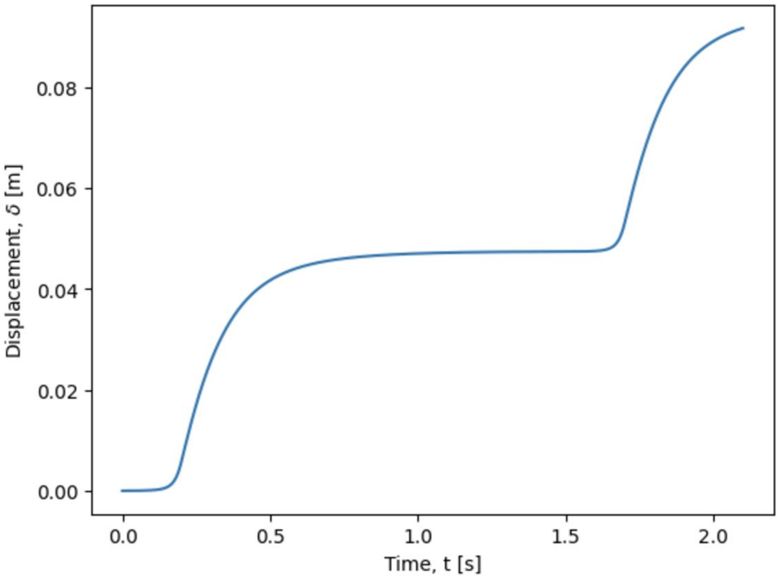
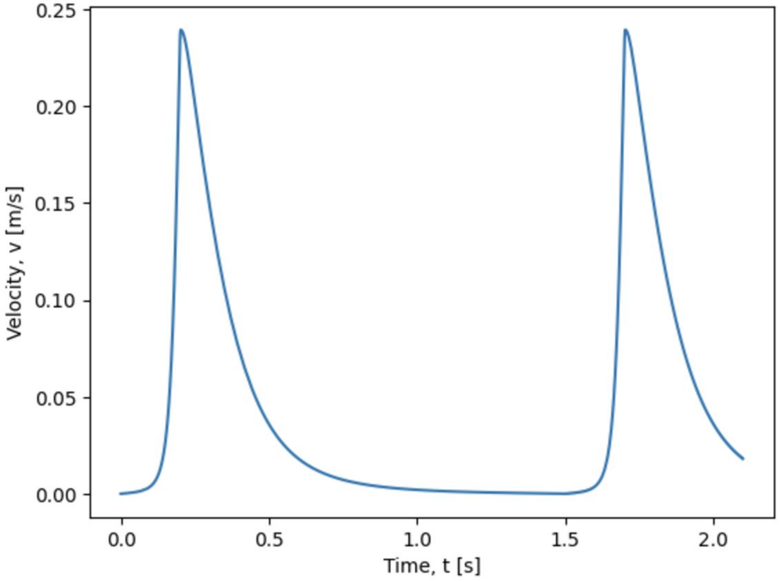
Current Results

Vertical Displacement (middle node)



Velocity (y-direction)



Future Improvements

- Implementation of model with n nodes
- Model tentacles trailing bell nodes
- Test varying parameters
  - Fluid Density
  - Bell Length
  - Elastic Modulus of Bell
  - Applied Angle Theta - Contraction Function

Works Cited

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