Research Meeting

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MATLAB Implementation of Hodgkin-Huxley

Summary

- Solve Hodgkin-Huxley equations using Euler's method
  - Cannot find explicit solution on MATLAB
  - Use numerical method (Euler's method here)

Input and Output

- Two files **HH_model.m** and **example.m**
  - HH_model.m - function gets current, base voltage, and returns voltage and conductance
  - example.m - script file running HH_model with a specific values of input and plotting results

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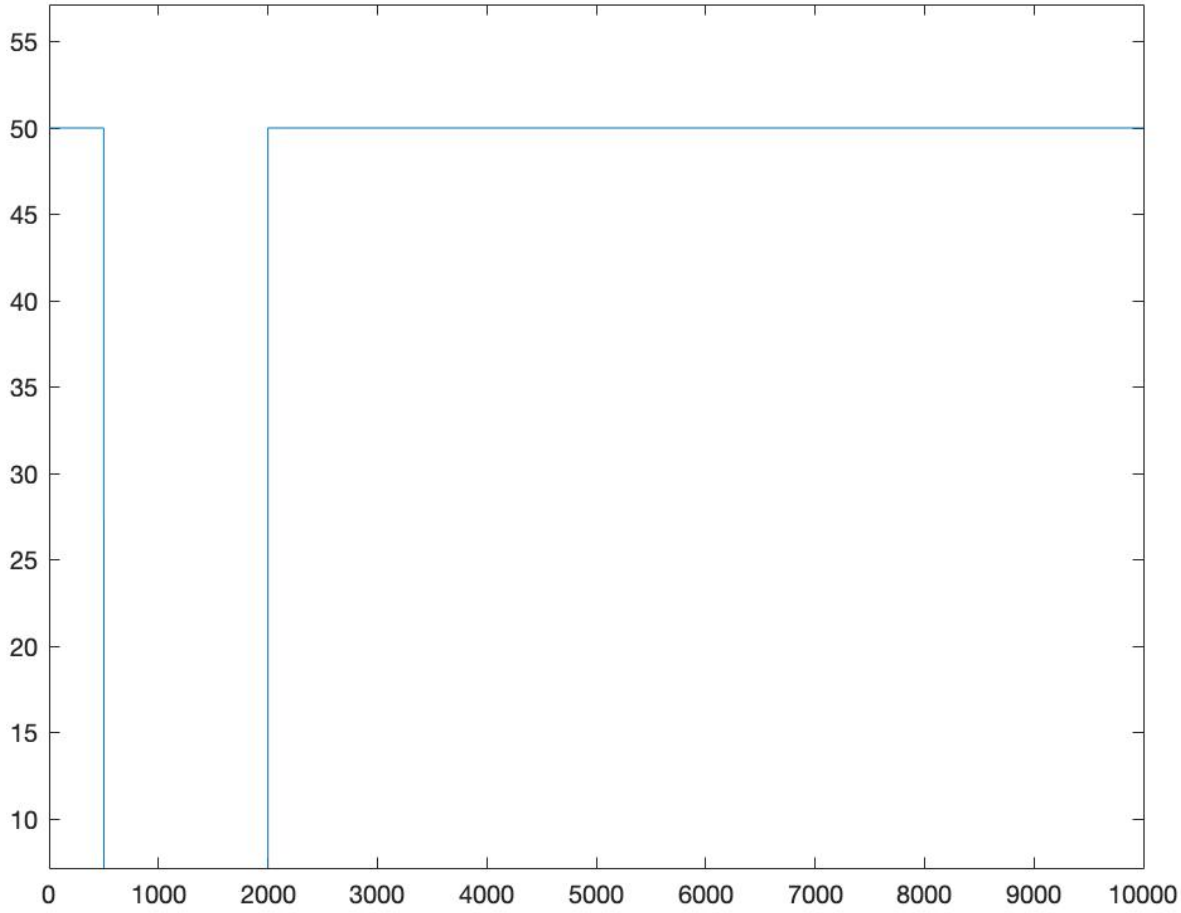
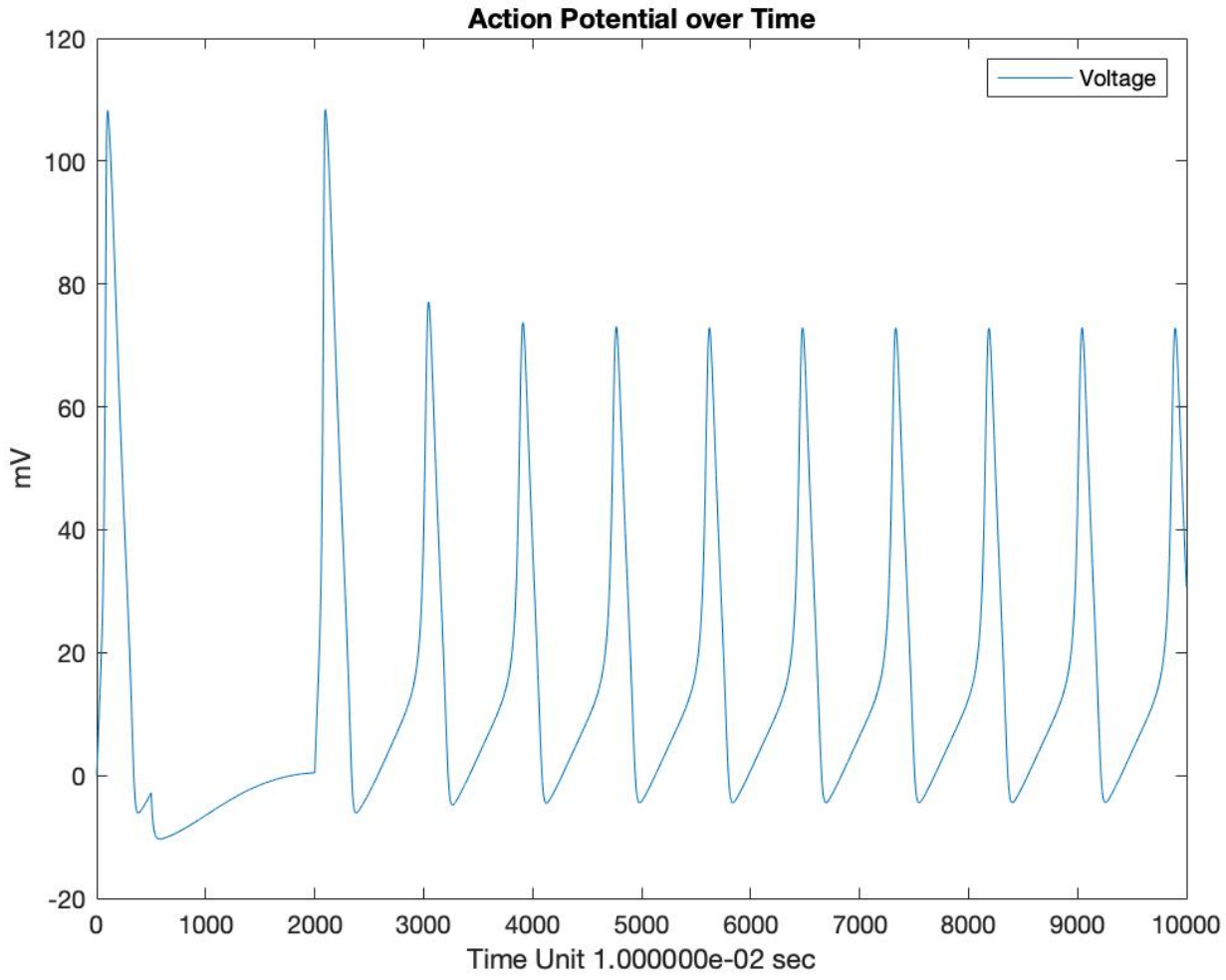
Example (Input)

- Current below, base voltage 0, and step size 0.01)



MATLAB Implementation of Hodgkin-Huxley

Example
(Output)



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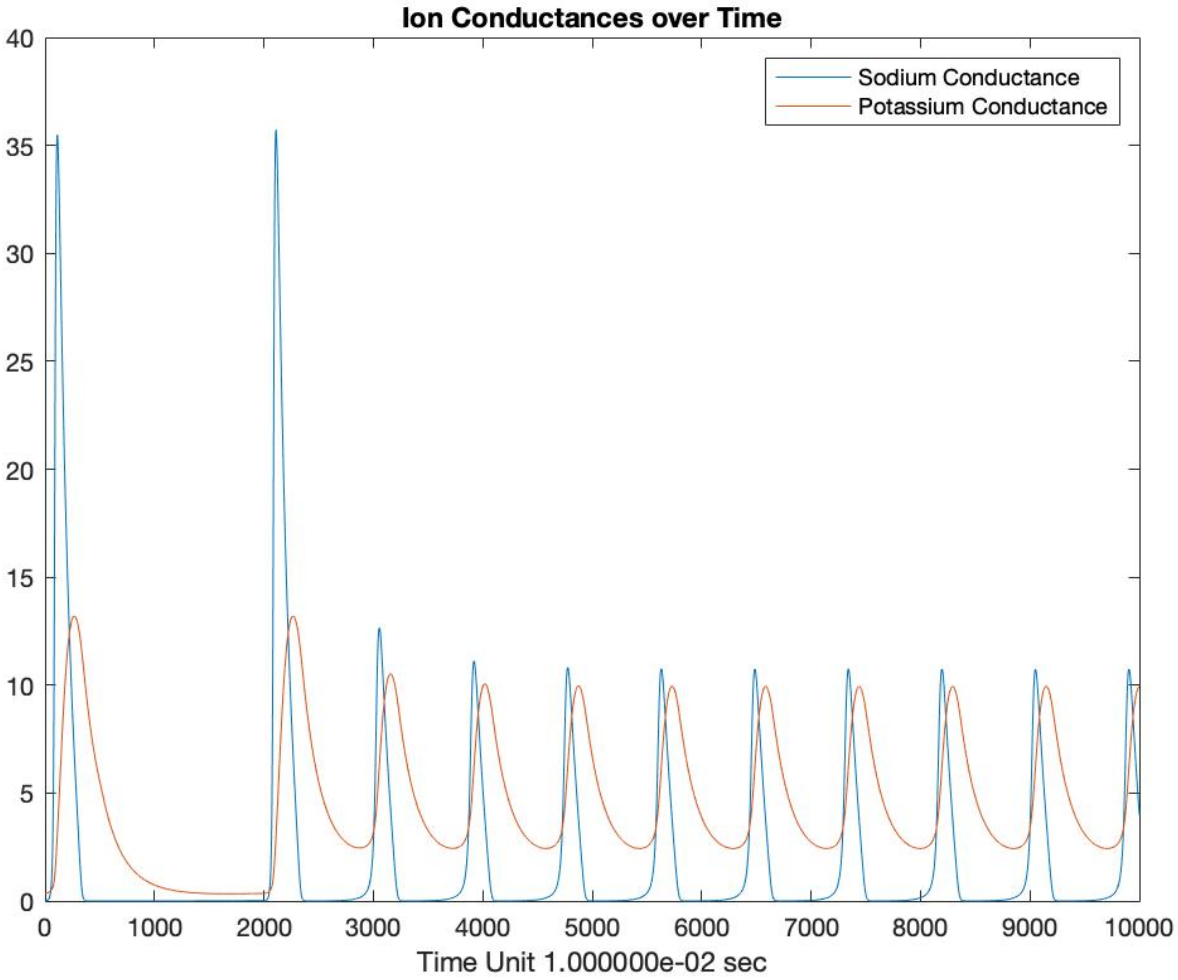
Example
(Output)



Apply Hodgkin-Huxley Model to Flow Problems

Applying Hodgkin-Huxley Model for analyzing flows of markets

- Correspondence between axon and commercial market
- Axon - Market of North America
- Voltage - Customer demand or consumption level
- Ion currents - Supply or production level of different drugs
- Conductance - Policies control drug flows

To Do

- Literature Review on continuous flow problems with focus in drug market
- Investigate policies and collect data of drug products in interest, e.g., opioid
- Modify Hodgkin-Huxley model for continuous flow problems