SYDE 556/750
Simulating Neurobiological Systems
Lecture 0: Administrative Remarks

Andreas Stöckel

January 7, 2020

UNIVERSITY OF WATERLOO | FACULTY OF ENGINEERING

Organization (I)

Instructor

Andreas Stöckel

Office	E7-6342 (office hours in E7-6323)
Email	astoecke@uwaterloo.ca
Website	http://compneuro.uwaterloo.ca/people/andreas-stoeckel.html
GitHub	https://github.com/astoeckel

Course website

- http://compneuro.uwaterloo.ca/courses/syde-750.html
- https://github.com/astoeckel/syde556-w20

Organization (II)

Course times and location

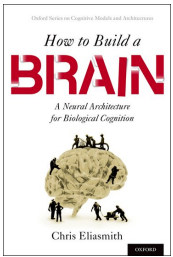
- **Tuesday:**
  11:30-12:50 in **E5-4106** (SYDE 556/750)
- **Thursday:**
  9:00-10:20 in **E5-6004** (SYDE 556/750)
- **Thursday:**
  10:30-11:20 in **E5-6127** (SYDE 750, optional for 556)

Office hours

- Office hours are generally in E7-6323.
- Potential times:
  `Tue 13:00-14:00`, `Tue 15:00-16:00`, `Thu 11:30-12:30`, `Fri 10:30-11:30`
- Alternatively, if that time doesn't work for you, by appointment.

Textbooks and Readings

Main text:
Chris Eliasmith and Charles H. Anderson *Neural Engineering: Computation, Representation, and Dynamics in Neurobiological Systems*, MIT Press, 2003.



Optional:
Chris Eliasmith *How to Build a Brain*, Oxford University Press, 2013.

Coursework

Four Assignments (60% of the mark)

- 20%, 20%, 10%, 10%, respectively
- Roughly two weeks for each assignment
- Everyone must write their own code, generate their own graphs, and write their own answers.

Final Project (40% of the mark)

- 5% presentation, 35% report
- Build a model of some neural system.
- For 556 students: extension of something seen in class
- For 750 students: research project with more novelty
- Have your project approved via email before Reading Week!

Schedule (I)

Date	Reading	Topic	Assignments
WEEK 1			
Jan 7	Chapter 1	Introduction	
Jan 9	Chapter 2	Neurons	
WEEK 2			
Jan 14	Chapter 2	Population Representation (I)	#1 posted
Jan 16	Chapter 2	Population Representation (II)	
WEEK 3			
Jan 21	Chapter 4	Temporal Representation (I)	
Jan 23	Chapter 4	Temporal Representation (II)	
WEEK 4			
Jan 28	Chapters 5, 6	Feedforward Transformations (I)	#1 due*, #2 posted
Jan 30	Chapters 5, 6	Feedforward Transformations (II)	
WEEK 5			
Feb 4	Chapter 8	Dynamics (I)	
Feb 6	Chapter 8	Dynamics (II)	

Schedule (II)

Date	Reading	Topic	Assignments
WEEK 6			
Feb 11	Chapter 7	Analysis of Representation	#2 due*, #3 posted
Feb 13	*provided*	Temporal Basis Functions	
Feb 14			Project proposal due
WEEK 7		— *Reading week, no lectures* —	
WEEK 8			
Feb 25	*provided*	Symbols (I)	
Feb 27	*provided*	Symbols (II)	
WEEK 9			
Mar 3	Chapter 8	Memory	#3 due*, #4 posted
Mar 5	*provided*	Action Selection	
WEEK 10			
Mar 10	Chaper 9	Learning (I)	
Mar 12	Chaper 9	Learning (II)	

Schedule (III)

Date	Reading	Topic	Assignments
WEEK 11			
Mar 17	*provided*	Spatial Semantic Pointers	#4 due*
Mar 19	*provided*	Biological Details	
WEEK 12			
Mar 24	*provided*	Other modelling frameworks	
Apr 2		Conclusion	
WEEK 13			
Mar 31, Apr 2		Project presentations	
WEEK 15			
Apr 15			Projects due*

* The project and all assignments are due at midnight ($\approx$ 11:59p EST) of that day.

Homework

- **Get the textbook**
  ("Neural Engineering", Chris Eliasmith and Charles Anderson, 2003)
- **Be able to run `jupyter lab` or (`jupyter notebook`) with Python 3**
  Install `numpy`, `scipy`, and `matplotlib`. You may want to use Anaconda, which ships with these packets preinstalled.
- Have a look at the **course website** and the **lecture notes**.
- Start thinking about a **project** . . . already.