PSY 1451: Debugging the Brain: Computational Approaches to Mental Dysfunction

Harvard College/Graduate School of Arts and Sciences: 203211

Term: Spring 2016-2017

Course Instructor(s): Samuel Gershman

Location: William James B6 (FAS)

Meeting Time: Wednesday 14:00-15:59

Exam Group: FAS14_B

Course Description: This course examines recent work applying computational models to mental disorders. These models formalize psychopathology in terms of breakdown in fundamental neurocognitive processes, linking normal and abnormal brain function within a common framework. Computational modeling has already begun to yield insights, and even possible treatments, for a wide range of disorders, including schizophrenia, autism, Parkinson’s, depression, obsessive-compulsive disorder, and attention-deficit hyperactivity disorder. The course will consist of weekly readings from the primary literature, with one student leading the discussion of each paper

Notes: Open to graduate students and advanced undergraduates, with permission of instructor.

Course Requirements

Grading will be based on the following elements:

(1) Reading responses (50%): every week, students will be given reading assignments. By 9pm on the night prior to the lecture, students should post on Canvas (in the Discussions section) a set of questions or comments about the reading (at least one question or comment per paper). These will be used as the basis for discussion in the lecture.

(2) Class participation (50%): students are expected to participate in each class. Additionally, one student will be assigned to lead the discussion about one reading. The student will begin by giving a short (10 minute) summary of the paper along with discussion questions, and then the class will have an open discussion.

Grading Rubric

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<th>Grade</th>
<th>Description</th>
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<tr>
<td>94-100 A</td>
<td>90-93 A-</td>
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<tr>
<td>87-89 B+</td>
<td>83-86 B</td>
</tr>
<tr>
<td>80-82 B-</td>
<td>77-79 C+</td>
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<tr>
<td>73-76 C</td>
<td>70-72 C-</td>
</tr>
<tr>
<td>67-69 D+</td>
<td>63-66 D</td>
</tr>
<tr>
<td>60-62 D-</td>
<td>Below 60 (fail)</td>
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**Academic Honor**

You are expected to submit your own, original work for the exam and the final paper. Any misconduct will be reported, as is required by the college. Discussing your ideas with others and getting feedback on your work is encouraged, but you are required to cite any and all ideas that are not your own, and ensure that any assignments you turn in are your own writing and the result of your own research.

**Accessibility**

Any student needing academic adjustments or accommodations is requested to present their letter from the Accessible Education Office (AEO) and speak with the professor by the end of the second week of the term, (specific date). Failure to do so may result in the Course Head’s inability to respond in a timely manner. All discussions will remain confidential, although AEO may be consulted to discuss appropriate implementation.

**Class 1: Introduction and overview**

1/25/17


**Class 2: Schizophrenia, part 1**

2/1/17


**Class 3: Schizophrenia, part 2**

2/8/17


**Class 4: Psychosis, hallucinations and delusions**

2/15/17


**Class 5: Attention-deficit hyperactivity disorder**

2/22/17


**Class 6: Obsessive-compulsive disorder**

3/1/17


**Class 7: Autism, part 1**

3/8/17


**Class 8: Autism, part 2**

3/22/17


**Class 9: Depression**

3/29/17


**Class 10: Anxiety and panic**

4/5/17


**Class 11: Addiction, part 1**

*(An alternative time will determined for this week due to the Passover holiday. This class will be optional but participation is strongly encouraged.)*


**Class 12: Addiction, part 2**

4/19/17


**Class 13: Impulsivity and impatience**


**Course Summary:**

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