

6.868/MAS.731J Society of Mind, Homework 1

Due Wednesday March 19
at the beginning of class.

March 5, 2008

How to Submit this Assignment

Send your completed assignments to tsom2008@gmail.com as txt or pdf attachments.

Problem 1 (Ch 1)

In some situations emotions can be useful ways of thinking, while in others these same ways of thinking can be detrimental. For example, if one sees their child walking near a cliff, becoming Anxious is a very relevant response that hones the senses and primes fast motor reactions. However, in the context of taking a test, some people feel Test Anxiety, a related mental state, where these same effects make it difficult for complex ways of thinking to operate without being distracted by these same “fight or flight” reactions.

- a) Pick three emotions and describe their characteristics, as turning on or off resources.
- b) Using these same emotions, describe situations where these emotions and their characteristics would be helpful. Describe situations where these characteristics would be detrimental.

Problem 2 (Ch 2)

Regarding Remembering, Minsky explains that “On the surface, it might seem easy enough—like dropping a note into a box and then taking it out when you need it. But when we look more closely, we see that this must involve many processes: you first must decide what items your note should contain, and find suitable ways to represent them—and then you must make some connections to them so that after you store those parts away, you’ll be able to reassemble them.”

What are examples of the types of items your note should contain? For example, you might need to later recall prerequisites for a successful action toward a goal. Try to think of three types of knowledge related to mental events as well as three related to external events.

Problem 3 (Ch 3)

Minsky: “What makes feelings so hard to describe? Is this because feelings are so simple and basic that there’s nothing more to be said about them? No, it’s precisely the opposite, because... what we call feelings are the results of attempts (by some parts of one’s mind) to describe entire mental conditions. However, every mental state is so complex that any brief description of it could capture just a few aspects of it.” (Ch 3)

- a) How does this imply a limitation on our introspective abilities?
- b) How does this relate to using abstract or ambiguous terminology (*e.g.*, “suitcase words”)?

Problem 4 (Ch 3)

In 3–8, Minsky discusses emotional exploitation as a method of self-control. Describe some memories you could conjure to indirectly cause reactions and resolve one of these goal conflicts.

example) You want to study for a test, and you are tired. Conjure a memory of failing the test to elicit a Fearful state, or Imagine a

competition between another colleague to obtain Anger.

- a) You are on a diet, and want to eat Double Fudge ice cream.
- b) You want a good grade, and you are bored in class.
- c) You want to yell at a police officer, and not be arrested.

Problem 5 (Ch 4)

Regarding the word Consciousness, Minsky states, “I’ll argue that it would be a mistake to believe in any such entity—because we ought to be asking this question, instead: ‘Isn’t it remarkable that any single word or phrase could have come to mean so many different things?’”

Think of when the term “consciousness” is used, and unpack (list) some of the different ideas that we talk about when we use the word.

Problem 6 (Ch 5)

Specify the four critics (corrector, suppressor, censor and encourager [p86]) in this story:

“Joan is applying for a job at two AI companies, ‘Intelligence Vacuum’ and ‘Emergent Design’, and begins to write applications. In her first email, she discusses her credentials, education and a question about her salary. After she sends the email, she reflects and concludes that it was premature to discuss financial issues. Joan begins her next email, this time she only includes education and her credentials. In the credentials section, she sees a great opportunity for a joke and lists her programming skills, “LISP, C and SNOBOL,” under the title ‘Foreign Languages.’ Impressed with her humor, she thinks about inserting an emoticon ‘:-)’ but does not. Ending her email, she misspells her name and then quickly corrects it before sending.”

Problem 7 (Final Project Ideas)

The key to having good ideas is having many ideas. Think of and describe at least three project ideas that you would be interested in actually doing. Your replies do not have to be the topics of your final projects; this question is just to get you thinking about them. Here are a few sample project ideas:

- Managing multiple problem solvers in one architecture.
- Implement a planning system that uses reflection to get unstuck.
- Implement a system that learns Critics, Suppressors, and Censors.
- A ‘bipolar critic-selector’ search process applied to a planning domain.
- Choose a mental disorder from psychology, such as ADHD, and translate and analyze it in terms of Minsky’s model.
- Describe a language model that uses multiple representations such as different levels of detail or different points of view.
- An application that uses and changes self-models depending on the current problem or feedback from imprimers.
- Implement a system of Panalogies reasoning with multiple representations.

Important Deadlines:

- 3/19 - Homework Assignment 1 Due (10%)
- 4/16 - Homework Assignment 2 Due (10%)
- 4/23 - Project Proposals Due (10%)
- 5/14 - Final Projects Due (50%) / Final Class