

CS486 Research – Option D

Emotional AI Intro – The Origin of Emotion

20470845 – Mengyi Luo

Table of Contents

<u>INTRODUCTION</u>	<u>3</u>
<u>ANALYSIS</u>	<u>3</u>
DUALISM: EMOTION DOESN'T BELONG TO PHYSICAL WORLD	3
EMOTION MATION: EMOTION IS FROM PHYSICAL WORLD	4
PART 1: SENSORY ORGANS	4
PART 2: PERSONALITY EFFECT	5
PART 3: EMBED MORAL RULES	6
<u>CONCLUSION</u>	<u>6</u>
ANSWER TO PROPOSAL	6
PERSONAL IDEA TO EMOTIONAL AI	7
FUTURE RESEARCH	7
<u>REFERENCE</u>	<u>8</u>

Introduction

If we want to think about emotional machine, we need to figure out where emotion comes from or how it is created.

This is a complicated and profound question, because it will involve Religion, Philosophy, Psychology, and Neurology. In this research, I will be open-minded in all fields to discuss the origin of emotion, just like an issue about where humans come from.

Analysis

Dualism: Emotion Doesn't Belong To Physical World

In the book *Artificial Intelligence, A Modern Way*, there is a sentence in the beginning catch my attention and it is about Dualism. Rene Descartes, 1596-1650, mentions that there is a secret area inside human brain (we might call it **soul**) and this area is free from any physical rules. In other words, emotion is not a physical substance. If it is not, it will not be easily decomposed. As a result, it will never be directly observed though microscope or other related tools. Since it is not a thing that can be written into a list of ingredient, human will never be able to make emotion. We can hang a question here, would emotion be directed from that secret area? Emotion is not belong to physical world, so it is possibly directed from non-physical world (where we don't know, it could be a place with the same dimension of physical world or it could be the world beyond the whole university) though a medium, and put it on a **body model**. Personally, I think this body model could be any objects, human body, and animals' body, even a lifeless object, such as rock. If it is correct, there is confusion to me that Descartes says animals are not duality. Why animals are not duality and they can be treated as machine? When I read this, I think Descartes is cruel because he is saying that animals have no soul and emotions while it is not true in reality. Animals also have relationship like husband-wife, parent-children, leader-member, even more, they have their own language system.

I would like to share my personal story about emotional animal and this is a proof that animals have their language system. One day I was sitting on the beach and there came a group of seagulls, bowing their heads and looking for food. I was really bored and I kicked sand to them. Sand was hit on one seagull. This seagull stopped walking but it didn't realize what happened because it just gave a glimpse of the sand and kept walking for food. At this time, a seagull stood behind it chirped and suddenly this hit seagull looked at me, but after two seconds, it looked down again and kept its journey on food. I could imagine, it was thinking

"what a stupid human." And I also noticed that they could communicate and so let the seagull found me.

Go back to the main topic. I cannot admit Descartes's opinion about animal that animal is not in dualism. However, he made this concept in the 17th centuries and the relationship between human and animals cannot be determined. In other words, perhaps something has changed between hundreds years, human will not know. Hence, I cannot say that Descartes was wrong. But it is definitely wrong if it re-mentioned in the 21st centuries.

Go back to the secret area in human brain that Descartes mentioned. If it is true, where it could be? Has it been discovered by modern technology? Fortunately, I have touched a new subject called **Parapsychology** in recent years and I have read many pieces of information related to this and now I can answer this question that there is an organ (in fact, it is around this organ) where might be the origin of soul. In fact, it is not a brand-new subject. Parapsychology was found in 1889 by a philosopher called Max Dessoir. This organ is called pineal body. All kinds of so-called "super power", such as mind-read, can be achieved via this organ as long as human being persistently put effort on it. Currently, I know a professor, Lee Si-Chen, is still working on this. He has found a way to communicate with higher-dimension lives.

(Related website: <http://www.clearwisdom.net/emh/articles/2002/12/4/29350.html>).

Emotion is possibly from mysterious area. It is invisible, similar to light, magnetic field. Currently, it requires a huge amount of experiments to find out the truth.

Emotion Machine: Emotion Is From Physical World

"Our minds are always affected by our assumptions, values, and purposes."
----- Marvin Minsky

Part I

Where does emotion come from? There is another solution. In ***Emotion Machine*** by Marvin Minsky, emotion is sensed by sensory organ, turned it into a signal and delivered to brain. Different parts of brain have varied mental activities control. "Each of our major 'emotional states' results from turning certain resources on while turning certain others off and thus changing some ways that our brains behave." (p4). Human brains are equipped with resources, called Critics. It is specialized to recognize certain conditions. If the condition is true,

critics will activate a specific collection of other resources. For example, in some reactions such as Anger, Hunger, Fear and Thirst are naturally embedded into human gene and it doesn't affect too much by external world.

The solution to this thinking is "If-Do" and it is called **instinctive reaction**. This is the most basic reaction that helps animals alive, as simple as help animal to find enough food. The schema is:

If Situation ----->Do Action.

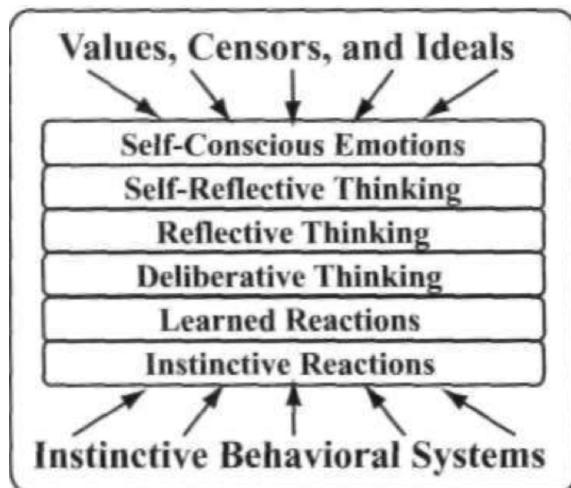
There are examples from the book: if a thing touches your skin, do brush it away; if that doesn't work, do move your body away; if a light is too bright, do turn your face away. My example is that: if a robot is about to out of energy, it must set a goal for itself such that to look for energy. Perhaps it is a behavior of thirsty and desire viewed by outside. The critical part for this reaction is sensitive sensory organs, such as "eyes", "skin", "ears".

There are other reactions too, such as infant reaction, adult reaction, etc. there will be useful for further research.

Part II

Varied personality will affect emotions on the same event. This personality is called consciousness (chapter 4). This is a pure natural mind and it exists before humans were born. In this book, it mentions that consciousness is composed by a series of reactions, mainly involve: Reflection, self-reflection, empathy, reformulation, moral reflection, self-awareness, self-imaging and sense of identity.

Generally speaking, a consciousness is divided into several layers, and emotion will go through all these layers. It is a neural network.



The changing in emotion is caused by experience and memory. For example, if you are face an event, you might first search a description or first impression in your head. If it is bad, then you might feel "sad" or "hate"; if it is good, you might be "happy". There is an example in the book Chapter 3 describing a change from physical reaction to mental activity. "if the pain is intense and persistent enough, this will arouse yet other resources that tend to suppress your other goal." In human body, pain can be transferred to other area, even though they are different organs.

In reality, if we need such robot, we have to prepare memory for each robot. It is common to being human kind. However, we also need to let robot know to search inside them selves.

Part III

Some moral rules should add on robot by human. If we talk about the rules in robots, there is a group of rules that cannot be ignored. Three Law of Robotics written by Isaac Asimov. These three laws are embedded into robots, as they have natural moral.

1. a robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings, except where such orders would conflict with the first law
3. A robot must protect its own existence as long as such protection does not conflict with the first or second laws

These laws are used to protect and maintain a peaceful relationship between human and robot. If we don't consider its effectiveness, in my opinion, it's like to treat robots as a servant of human. Robots could be another specie. Currently, I can come up only one law that if robot A creates robot B, then robot B will never be allowed to injure robot A, otherwise, robot B must suffer from guilty. This is only my simple idea and I believe it requires more rational rules.

Conclusion

Answer to proposal

1. Can human create “mind/emotion”?
 - a. Human cannot create soul, but human can mimic mind/emotion
 - b. There exists such robot that can mimic mind/emotion.
2. Can AI naturally born “mind/emotion”?
 - a. YES, as long as human finish building up a sensitive body and set up a bunch of instinctive reactions to robot.
3. Can AI be embedded human’s mind/memory?

It has two answers for this question.

- a. Yes, if human just let robots have the same moral rules with human.
- b. Technically speaking, currently “No” to embed a real human’s mind/emotion. Current technology cannot help with the “invisible power”. The invisible power is the power from soul/mind.

Personal Idea to Emotional Robot

The ideal solution to emotional robot is to combine the two solutions above, that human should first create a perfect body for robot. This kind of body requires much more algorithms. Secondly, consider the “soul system” in the university. Current technique will not be able to help humans on the earth to understand soul. It might require hundred or thousand years, or only ten years to find something beyond galaxy.

Also, I will keep in mind about Bayesian Affect Control Theory from Sociology.

Future research

Think of other properties that help human to create a new species by own power:

- **Consider the factors that why human can think**

Aliens could make human. How did they use soul system? Currently, we can sure that soul can be recycled. But there still have unanswered question: what kind of system (universe) can recycle souls. And we might to find answer by observing clone process.

Alternatively, we can also find the answer by ancient book. 黄帝内经 (Huangdi Neijing), an ancient Chinese medical book, there is an article that might help, 灵兰秘典论 (theory of LingLan)

- **The opposite to dualism is idealism**

Torsion field might be the key.

- **Future trend/prediction for robot**

More robots will be made and they are functional; they will help to organize human’s life and they will be everywhere such as office, school and home. Robot will be main tool for living, replacing mobile and computer. Pepper (the emotional machine) will work more professional. Sexual robot will be made too.

Reference

1.<< The Emotion Machine: Commonsense Thinking, Artificial Intelligence, and The Future of Human Mind>> by Marvin Minsky

<https://books.google.ca/books?id=OqbMnWDKIJ4C&lpg=PA1&ots=uDEaZpMeOp&dq=emotional%20artificial%20intelligence&lr&pg=PP5#v=onepage&q=emotional%20artificial%20intelligence&f=false>

2. Philosophy and Artificial Intelligence

<https://books.google.ca/books?id=Q9uqBgAAQBAJ&lpg=PA205&dq=emotional%20artificial%20intelligence&pg=PR5#v=onepage&q=emotional%20artificial%20intelligence&f=false>

3. Idealism and Artificial Intelligence

Coiera, E. W. (1996). Artificial intelligence in medicine: the challenges ahead. *JOURNAL-AMERICAN MEDICAL INFORMATICS ASSOCIATION*, 3, 363-366.

4. Human Race from Bible (Religion perspective)

<https://bible.org/seriespage/5-human-race-its-creation-history-and-destiny-creation-man>

5.Current Emotional Artificial Intelligence. - Pepper

<https://www.aldebaran.com/zh/a-robots/pepper/pepper-shi-shui>

6.Related Animation or Movies:

<<Ghost in the Shell>>, <<The Animatrix>>

7. Affect control theory

<http://www.tschroeder.eu/publikationen/bayesactacii-final.pdf>