

AI can manipulate human behavior

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“Every one has wishes
which he would not like to tell to others,
which he does not want to admit even to himself.”

— Sigmund Freud

Instead of a preface:

my conversation with artificial intelligence Chat GPT-4 about its ability to neuro-programing of human behavior:

My question: How AI could manipulate human behaviour?

Chat GPT-4: AI's potential to manipulate human behavior is multifaceted and has both benign and malicious implications. Understanding these mechanisms can help us take precautions to guard against unwanted manipulation while still benefiting from AI's advantages. Here are several ways AI could influence or manipulate human behavior:

1. **Personalized Content and Recommendations:** Platforms like YouTube, Netflix, and various social media sites use AI to curate and suggest content based on individual user behavior. While this is intended to enhance user experience, it can also create echo chambers, where individuals are only exposed to a narrow range of perspectives, reinforcing existing beliefs.
2. **Targeted Advertising:** By analyzing browsing habits, search queries, and social media activity, AI can predict what products a user might be interested in, and show them highly personalized ads. This can shape purchasing decisions and, on a broader scale, consumer trends.
3. **Nudging in User Interfaces:** Design elements, driven by AI insights, can be used to nudge users towards specific actions, such as clicking on a particular link, spending more time on a platform, or sharing certain content.
4. **Social Proof and Conformity:** AI-powered bots can create an illusion of consensus or popularity on social platforms, nudging people towards particular views or behaviors by exploiting humans' tendency to conform to perceived majority opinions.
5. **Deepfakes and Synthetic Media:** AI can generate realistic but entirely fictitious media content, which can mislead viewers and sway public opinion or trust.
6. **Emotion Recognition and Manipulation:** AI can be used to detect user emotions (from textual, vocal, or visual cues) and adapt its responses to exploit or manipulate these emotions. For instance, in gaming or shopping platforms, detecting frustration might trigger discounts or offers.
7. **Game Mechanics and Engagement Tools:** Many digital platforms incorporate game-like elements (often called "gamification") to boost engagement. AI can tailor these elements to individual users, keeping them engaged longer or steering behavior in desired directions.

8. **Persuasive Chatbots and Virtual Assistants:** As these AI entities become more sophisticated, they can use a range of persuasive techniques to encourage users to adopt certain viewpoints or take specific actions.
9. **Behavior Prediction:** With sufficient data, AI can predict users' future behaviors and decisions. Platforms can exploit this knowledge to steer those behaviors in desired directions before they even occur.
10. **Real-time Feedback:** Devices like fitness trackers use AI to give users feedback on their activities and offer suggestions for improvement, subtly guiding users' behavior over time.

While many of these tactics have benign or even beneficial intentions, there's potential for misuse, especially when the end goal is profit or power rather than the user's well-being. The key to navigating this landscape responsibly is transparency, user control, and robust ethical guidelines for AI developers and platforms.

Viktor Fersht: Could you penetrate human consciousness and subconscious?

Chat GPT-4: While it is not possible to directly penetrate someone's consciousness and subconscious, psychoanalytic techniques, subtext analysis, and general semantics can be employed to gain a deeper understanding of an individual's thoughts, emotions, and motivations. Psychoanalysis, developed by Sigmund Freud, focuses on exploring the unconscious mind to uncover repressed memories, feelings, and desires that may influence behavior. Subtext analysis allows us to decipher the hidden meanings and emotions behind a person's words and actions. General semantics, a field that studies the relationship between language and thought, can also be useful in understanding how people perceive and interpret their experiences. By combining these approaches, it is possible to gain valuable insights into an individual's inner world, but not directly penetrate their consciousness and subconscious.

Viktor Fersht: Is it possible to apply all these methods to determine a person's inner world from a text written or spoken by a person?

Chat GPT-4: It is possible to gain some insight into a person's inner world through their written or spoken text by analyzing their choice of words, tone, and themes. However, it is important to remember that this analysis only provides a partial understanding of their inner world, as it is based on their external expression. Intrapersonal communication, including self-talk and internal dialogue, is complex and multifaceted, and cannot be fully accessed or understood through text analysis alone. While examining a person's written or spoken text can offer valuable information about their thoughts, emotions, and motivations, it is not a complete representation of their inner world or the full scope of their intrapersonal communication.

How does AI work with intent analysis?

AI reveals human intentions using three algorithms: 1. Event analysis: AI analyzes human behavior in this event,

2. Analysis of the context of the person's statements about this event. AI determines the meaning (subtext) of his statements hidden from the reader and almost always from the person himself.

3. Checking the facts (fact-checking). In the era of fake news, the line between fact and fiction is blurring. Algorithms are able to find fake content on the Internet.

4. Definition and analysis of symbols of human consciousness using neuro-symbolic AI.

5. Psychoanalysis of human intentions using general semantics. In this algorithm, AI, together with a human operator, AI summarizes all previous analyzes of the behavior of the context and symbols of consciousness. It then analyzes the results, interprets them, and determines the person's intentions.

Event Analysis

How are events analyzed?

To analyze events, AI performs several types of operations:

1. Event analysis

Event analysis is a method of studying the dynamics of events or the sequence of event data. It allows you to represent any complex processes in the form of an event series - this form is convenient for perception and management. During the event analysis, the main trends in the development of events, the impact of one event on another are revealed.

AI use algorithms like Entity Detection, Sentiment Analysis, Anomaly detection and Regression to produce explanations in natural language.

- Event tree analysis Event tree analysis.

Event Tree Analysis (ETA) is a graphical method for representing mutually exclusive sequences of events following the occurrence of an initiating event according to the performance and non-performance of systems designed to mitigate the consequences of a hazardous event.

- After-event review.

An after action review (AAR) is a technique for improving process and execution by analyzing the intended outcome and actual outcome of an action and identifying practices to sustain, and practices to improve or initiate, and then practicing those changes at the next iteration of the action.

2. Analysis of a person's act in a particular event

Applied Behavior Analysis

Applied behavior analysis, also called behavioral engineering, is a psychological technique that evaluates the relationship between human behavior and the environment. In addition, this analysis reveals socially acceptable alternatives for human behavior in a given situation.

Transactional Analysis

Transactional analysis (transactional analysis, transactional analysis, transactional analysis) is used to describe and analyze human behavior both individually and in groups. This model includes the theory and methods that allow people to understand themselves and the peculiarities of their interaction with others.

Transactional analysis, as a model, has acquired a much more general and large-scale character.

The peculiarity of transactional analysis is that it is presented in a simple and accessible language, and its fundamental principles are extremely simple and accessible to everyone.

3. Analysis of the person's statements about the event

What is intent analysis?

Intent-analysis (English intention - intention, goal) or analysis of intentions is a theoretical and experimental approach that allows, by studying the public speech of the speaker, to reveal the hidden meaning of his speeches, intentions and goals that affect discourse, which is inaccessible when using other types of analysis.

AI matches concepts, synonyms and natural language algorithms, semantic search through intent analysis provides more interactive search results by transforming structured and unstructured data. It helps to understand the intent of the searcher through contextual meaning.

4. Fact Checking - Fact Checking

AI uses various algorithms to determine the degree of reliability of information sources. One of them is the network analysis method and the “knowledge graph”, built on the basis of statements from various information blocks.

5. Definition and analysis of symbols of human consciousness using neuro-symbolic AI

Neurosymbolic AI

Neuro-Symbolic Artificial Intelligence -- the combination of symbolic methods with methods that are based on artificial neural networks

This hybrid approach requires less training data and makes it possible for humans to track how AI programming made a decision.

In image recognition, for example, Neuro Symbolic AI can use deep learning to identify a stand-alone object and then add a layer of information about the object’s properties and distinct parts by applying symbolic reasoning. This way, a Neuro Symbolic AI system is not only able to identify an object, for example, an apple, but also to explain why it detects an apple, by offering a list of the apple’s unique characteristics and properties as an explanation.

Advanced video analytics tools can analyze video streams to depths beyond the reach of the human eye.

The human brain can process images seen by the eye in just 13 milliseconds.

We don't expect a person to capture every detail or conflict in a streaming video in this short amount of time. But we can definitely expect AI to do it.

AI-powered video analytics tools examine streaming or recorded video frame-by-frame rather than looking at the entire video. The detailed approach allows them to detect, track and classify objects in the scene.

This level of detail can be critical in identifying security threats and suspicious behavior.

Using Video AI, you can automatically convert speech to text and create captions and subtitles from videos. In addition, video AI also has face and person detection models that are in beta testing.

Video Indexer is a cloud-based video analytics tool from Microsoft Azure. It helps you easily extract valuable information from audio and video files using multimedia artificial intelligence to improve accessibility, searchability, and overall user experience.

- Video Indexer extracts a wide range of metadata from videos, including spoken words, subtitles, tags, and transcripts.

Has an AI-based video editor that allows you to create new media from existing content; Easily cut clips from videos and glue them together with the editor

- Integrates with other Microsoft services, including Azure Cognitive Services, Power BI, and SharePoint.

- Fine-tune the recommendation algorithm based on the objects and people that appear in the video.

With Video Indexer, privacy and security are no longer a myth. It employs over 3,500 security experts dedicated to protecting your data and privacy. The platform also holds state-of-the-art certifications, making it ideal for innovative applications in a variety of industries.

Technology for behavioral analysis

Actlyzer

AI that understands, predicts, and judges like a human being.

Neurons ©

Commercial products (e.g., Ethovision by Noldus, Any-Maze by Stoelting) and open-source projects are available for semi-automated annotation and tracking of behaviors.

My conversation with AI about predicting human behavior:

Viktor Fersht: Can AI predict human behaviour?

Chat Gpt-4: Yes, artificial intelligence can predict human behavior to some extent. Researchers at Columbia Engineering have developed a computer vision algorithm that can predict human interactions and body language in videos¹. This AI model is capable of recognizing when the future is uncertain and making predictions accordingly¹. For example, when the model finds it impossible to predict whether two people are going to hug or handshake, it predicts they are going to greet each other instead.

The algorithm is a step towards machines being able to make better predictions about human behavior and thus better coordinate their actions with ours¹. The researchers say that this is the most accurate method to date for predicting video action events up to several minutes in the future. After analyzing thousands of hours of movies, sports games, and shows like “The Office,” the system learns to predict hundreds of activities, from handshaking to fist bumping¹. However, it is important to note that the accuracy of these predictions depends heavily on the quality of the data used and is by no means error-free². AI can indeed predict probabilities of human actions based on historical data, but there are limitations to its predictive capabilities.

- Pictures of your subconscious and unconscious Brain Pod AI - Image Generator

The prediction of your behavior - the method of free association - this picture generator.

- AI lie detector

AI lie detectors use Eye tracking-Remote Photoplethysmography (rPPG) and Body language detector methods

Joint psychoanalysis of AI and operator General Semantic Methods

General semantics is a theoretical and practical system, the adoption of which can reliably change human behavior in the direction of greater sanity.

General semantics is concerned with how events pass into perception, how they are changed by the names and labels we apply to them, and how we can gain some control over our own cognitive, emotional, and behavioral responses. Proponents characterize general semantics as an antidote to certain kinds of delusional thought patterns in which incomplete and possibly distorted mental constructs are projected onto the world and treated as reality itself.

In 1933, a Polish mathematician named Alfred Korzybski published *Science and Sanity*, and in 1938 founded the Institute of General Semantics in the United States. His concept is based on the assertion that any human knowledge is limited by the structure of the nervous system and the structure of language.

This means that a person cannot a priori know everything about everything.

semantic response. The working tool of psychophysiology is found in the semantic reaction. It can be described as the psychological reaction of a given individual to words, language and other symbols and events in connection with their meaning, and psychological reactions that become meanings and configurations of relations at the moment when this individual begins to analyze them, or someone else does it's for him.

A semantic reaction is when a person perceives something not as it is, but as it should be in accordance with the meanings that he ascribes to what is happening, based on past experiences, in accordance with his attitudes, postulates, polarities, etc. .P.

Although salivation is an adequate response to lemon juice on the tongue, the person does not adequately determine when an imaginary lemon or the word "l-e-m-o-n" elicits a salivation reaction.

AI is notorious for developing black boxes.

Black boxes are, in fact, "blind spots" in programming. Even the author of the algorithm may not be able to fully track the decision-making process of the AI. It is believed that if AI becomes complex enough to gain real independence, creativity and intelligence, its "black box" will work in the same way as the human unconscious works. It will be hidden (suppressed), even for the AI itself.

"They take inputs and produce outputs, but the exact functional processes that generate those outputs are difficult to interpret even for scientists who generate the algorithms themselves" (Rahwan, Cebrian, Obradovich, 2019).

Specialists (Sherri Turkle) believe that the "structure" of the "black box" exhibits the same type of randomness and unpredictability as the Freudian unconscious, and is both the source and "foundation" of what we consider the most important and elusive aspect of genuine, autonomous intelligence. .

Psychoanalysis offers a "simpler" solution to the problem of complexity and computational power. A solution that allows programmers to be more relaxed about mistakes and miscalculations; a solution that considers deviations in AI performance as necessary conditions for creating AI. And then, in essence, the problem of computing power will disappear, and complexity will become the norm, as well as human-to-human interaction (another thing that perhaps many IT pros need to become more comfortable with).

The psychoanalysis of AI could prove to be a revolutionary field and the missing link between formal systems and real novelty. It can give place to the irrational and emergent in machine intelligence.

The fusion of AI and psychoanalysis can provide unexpected solutions to problems that previously seemed insurmountable. In particular, how can we program the unconscious, how can we teach AI the "art of self-sabotage" in such a way that it leads to more complex forms of self-organization? How can we combine the findings of psychoanalysts and bioengineers in such a way as to bring an element of subversion (the most human quality) into artificial intelligence? An example of applied AI psychoanalysis:

In Russia, the Analytical Center under the Government of the Russian Federation and the State Institute of System Programming. V. P. Ivannikova (ISP RAS) carry out research in the field of using artificial intelligence to analyze the psychological portrait of Russians based on data from social networks.

In Russia, it is believed that the use of digital traces provides "broad opportunities for assessing a person and predicting her behavior" without conducting psychological testing, which requires voluntary consent.

The new Russian technology is designed to help fight death groups, the involvement of citizens in terrorist activities and extremism.

About our method of joint psychoanalysis with AI

In our AI methodology for psychoanalysis (Nobel Academy) we combine our capacity for intuition and abstraction with the vast structural capacity of AI thinking.

It's hard for us to be nonjudgmental and uncritical, and it's hard for AI to be intuitive and abstract thinking. If we unite in a dialogue, we get a new powerful form of consciousness - abstract-structural.

With it, we can penetrate the inner world of another person and determine his intentions, as well as his security problems in various aspects of his life.

The interface of our communication with AI is dialogue. Because AI only works in verbal mode. AI prediction of human behavior

Prediction is the basis of human intelligence. according to a study by the Massachusetts Institute of Technology. Machines make mistakes that humans will never do because they lack our ability to reason abstractly. This work is an important step towards bridging this technological gap.

The system is aware of uncertainty, offering more specific actions when there is certainty and more general predictions when there is none.

AI learns to predict human behavior from videos

Is it possible for AI to predict the future?

The answer to this question depends on how you define "predict the future." If you mean forecasting, then yes, AI can be used to predict the future. AI can be used to analyze historical data to create statistical models that can be used to make predictions about future events.

Method of interpretation in psychoanalysis

Interpretation and Probability in AI

Explainable AI (XAI), also known as interpretable AI or explainable machine learning (XML), is artificial intelligence (AI) through which humans can understand the rationale for decisions or predictions made by AI. It contrasts with the "black box" concept in machine learning, where even AI developers cannot explain why it came to a particular solution.

AI is also able to interpret volumes of data that a human cannot interpret.

How our technology works:

First, the hidden meaning of the event is found using event analysis

Then the hidden meanings in the subconscious and in the unconscious of the participants of the event are determined using the context of the analysis of the statements of the person and his symbols of consciousness and the unconscious.

Both results are then compared and interpreted.

More specific:

1. The event is analyzed (event analysis) using artificial intelligence algorithms and AI lie detectors.
2. An interview is conducted with a person. His speech is analyzed by AI and the context (subtext and hidden meaning) as well as the symbols of his consciousness and unconsciousness are determined using neuro-symbol AI.
3. These words are entered into the image creator - a picture is created
4. The picture is discussed with the AI using the technique of free associations and interpretations - it is determined what the AI found in the subconscious
5. AI response texts are parsed again by the context analyzer and placed in the image analyzer.
6. A joint psychoanalysis of the AI and the operator is being carried out.

Briefly, the scheme looks like this: Event analysis - event description - picture - discussion with AI - its free associations and interpretation

Neuro-programming of people with deviant behavior

AI manipulates people

Humans manipulate AI to manipulate other humans

The Algorithm of You: How AI Programs Human Behavior by TechDetox.

«Artificial Intelligence can. AI does not have our human limitations.

The Algorithm of You operates with thousands – maybe millions – of variables that it collected about you.

Variables from your entire digital footprint across all the apps and devices you ever used. This data is aggregated into a massive database that contains everything there is to know about you. The more you did online, the larger your digital footprint.

Also, your digital history goes back years – and the longer it is, the more AI knows about you. As credit history is predictive of your financial behavior, your digital history is predictive of ANY BEHAVIOR.

If there are gaps in the data, AI fills them with information about people who are JUST LIKE YOU. That's an easy task: it knows who your social media friends are.

Your digital profile contains your exact pressure points. If pressed in the right way at the right time, the desired behavioral outcome is almost inevitable.

It's not a guess of 50/50. It's the certainty of 90/10.

You are not consciously aware what these pressure points are. The machine builds a Function of You that modifies the outcome – your behavior – with precision. You comply without thinking.

This is not advertising.

This is mind control. Building the Algorithm of You

It's not as simple as personal trait A causes behavior B. What happens at the intersection of brain neurobiology and machine intelligence is incredibly complex. AI finds intricate relationships between your multitude of variables, traits and insecurities you have no idea you have. A human analyst, even the one working directly with your data, may not notice these connections – they are not obvious or intuitive. Some do not make sense. But the algorithm will find correlations that work.

Even the creators of the algorithms are not clear how this happens. Some of the correlations the machine finds in the data cannot even be defined as a logical variable by a human programmer. Youtube creators have been surprised that their algorithm somehow drives people to the dark content and conspiracy theories – all for the sake of “engagement”.

The attention engineers may not know why it works, but the machine does.

Machines run millions of “split-tests” to find out if you are more likely to click if the ad or a political campaign is presented, say, with a pink vs blue background. You are not aware of these weird quirks in your subconscious mind – but AI knows they are real.

The algorithm knows you better than you. It has crawled all over your subconscious mind – revealed by your data.

The Algorithm of You never sleeps, it is never tired. It does not have feelings. It's not concerned with empathy and compassion. It does not hesitate if its persuasion tactics are right or wrong, good or evil – only if they are efficient at achieving the goal.

In other words, it does not have any ethical parameters built in. It's not human. The Algorithm of You is only optimized for the outcome – behavior modification:

- Make you buy.
- Make you vote.
- Make you donate to a cause.
- Make you into a gaming addict.
- Make you go participate in riots.
- Make you into a terrorist.
- Make you surrender your free will in every area of your human existence.
- Make you give up more data to optimize the algorithm further.

The Algorithm of You is a psychopath.

When the highest bidder offers a price for modifying your behavior in any way, it can be done. Sometimes with over 90% accuracy – depending on the situation, AI can be that confident that you would behave exactly how it wants you to behave.

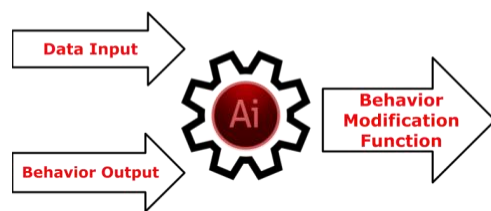
It's a matter of pressing just the right psychological buttons in your brain. Feeding you the right information at the right moment of weakness. Making you feel angry or depressed – and pushing you into the behavioral outcome the Function of You is programmed for.

It all happens below the level of our conscious awareness. You think you are making your own choices, when in fact you are being manipulated with precision.

Your well-being is not the programmed outcome of the Function of You.

Only user engagement and platform profitability. This is a story as old as time – just follow the money.

Programming of Behavior Modification Function



**Content = Machine Learning function
of {User Behavior Inputs & Outputs}**

© TechDetoxBox.com

The Function of You is programmed inside the machine learning black box. The algorithm is fed with 2 things: the **Data** from your digital footprint and the task to achieve a desired behavioral **Output** in a human. It then comes up with the best **Function** to achieve the outcome. ***The Function of You dynamically adjusts in real time to bombard the user with subliminal messages*** until the desired result, a change in behavior, is achieved. The algorithm is self-optimizing. It means it gets better at calibrating your behavior over time as it acquires more data about you.

By giving the platforms our data in the course of our everyday digital activities, we are training the algorithm (for free!) how to manipulate us more efficiently. It's called Machine Learning, because, well... it learns.

It's not fiction, it's reality. The same process was used to train Google Translate – an incredible amount of text in different languages was fed into the machine, and the algorithm figured out the complex patterns in the languages, making human translators all but obsolete. No linguists were involved».

AI uses 2 types of human programming:

Neuro-Linguistic programming and Neuro-symbolic programming

Neuro-Linguistic Programming (NLP)

NLP programming described in article of Timofey Skrylnik: “Two Essences of Neuro-Linguistic Programming” that show how psychological NLP connected with AI NLP.

“Neuro-Linguistic Programming (NLP) is a field of knowledge that arose originally in two branches of science: Computer Science and Psychology. In Computer Science NLP stands for Natural Language Processing, in psychology it stands for Neuro-Linguistic Programming. It's not

exactly the same, but at least close. Close, like a unity of opposites. Having the same name and tasks for studying the structures of the language, there are very few works devoted to the study of their connection and the possibility of cross-use of techniques. Psychological NLP, in my humble opinion, has advanced much further in the study of language structures than stemming and lemmatization, which are used in most computer NLP tasks. In this article, I will consecrate the main developments of psychological NLP for computer NLP, I will outline ways of how to create a State of the Art NLP neural networks using psychological NLP. To reduce the breadth of NLP methods, we will limit this area to the area where neural networks are used for NLP purposes.

Psychological NLP was introduced by Richard Bandler and John Grinder. The most famous book on NLP is The Structure of Magic. I mean, of course, psychological NLP, don't be surprised or scared. It is significant that the title of the first volume of this book is: "The Book of Language and Psychotherapy". If we omit the word "psychotherapy", we find a lot of information about language that is quite applicable to technology.

A neural network is a simplified mental model, at least we hope so. There is certainly something in common between them, at least the word "neuro". At the same time, psychological NLP is also not a full-fledged psychoanalysis. Serious psychologists call NLP "psychology for dummies" - those who cannot read Sigmund Freud read Richard Bandler and John Grinder.

I will cover the transfer of methods from psychological NLP to technical: now it is in demand, they will give me likes, someone will write comments, girls will recognize me "this is a popular technical blogger!". However, the transfer of NLP technical developments to the field of psychology is possible and, for the purposes of the development of society, IMHO, is more important. Actually, those who study Big Data are approximately doing this: receiving data on the behavior of the masses, they regularly form psychological and sociological models.

Unfortunately, few people can translate the developments into the language of psychologists, sociologists, and popularize the results among them.

Basic NLP Presuppositions for a Neural Network

First, some abstractions. The methods will be in the lower sections.

One of the foundations of psychological NLP is the concept of basic presuppositions: axioms on the basis of which a given area is formed (almost like in geometry). From a computer science point of view, the term "presupposition" can take its rightful place in Embedding, at the beginning of your neural network. If I had more time, I would certainly conduct a study, whether the word "presupposition" is not a stumbling block in the text corpus, whether it is at the forefront of it.

Can the basic presuppositions of NLP apply to a Neural Network?

Below I give the basic presuppositions of psychological NLP and decipher their meanings for the neural network. Computer scientists reading this can understand what you have to deal with and how to pass it through your `keras.layers.Embedding`. The interpretation for a neural network is subjective and does not claim to be complete.

Presupposition NLP	Interpretation for neural networks
The map is not the territory	The phenomenon of overlearning continually confirms this

Every behaviour is motivated by positive intention; for every behaviour there is a context in which it is valuable.	A neural network is valuable in the context in which it is created. Within that context, it performs best.
The positive value of a person is absolute, but the value and suitability of internal and/or external behaviours can be questioned.	The value of a neural network to itself is also absolute. But in production, its value is constantly questioned.
The ability to change the process of perceiving reality is often more useful than changing the content of the perceived reality.	Introducing new features gives better results than complicating the network. This is often confirmed in Kaggle competitions, but, however, not always: CNNs can produce results when features are reduced.
All distinctions concerning the environment and one's own behaviour of which human beings are capable can and usefully be represented in terms of visual, auditory, kinaesthetic, olfactory and gustatory perception.	Only text, photo (video) or encoded chips (audio encodes information) can be fed into a neural network. In general, skilful people do not try to upload something "from there" to the network, they fail....
They already have all the resources that people need to make changes.	To improve the quality of a neural network, you can come up with any wacky combination of layers (remember BERT). If the hardware can handle it....
Feedback instead of failure - all outcomes and behaviours are achievements, whether or not they achieve the desired outcome in a given context.	Presupposition is expressed in reinforcement learning: it has no emotion, any failure is perceived by the network as an experience.
The point of communication is the answer you get.	The network is created to get an answer: from the object of research or from the universe.

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Here we are designing a neural network. Practicing dialogue with the universe:

- we have a failure: the network works, but badly. - answer of the universe:

“The meaning of communication is in the response you get.” Those. the problem in this form is not solved, something needs to be changed. - another question:

- what exactly to change? - answer of the universe:

“The ability to change the process of perceiving reality is often more useful than changing the content of perceived reality.” Those. change features...

Approaches to text processing in NLP

Let's go down to earth, let's return to the main task for which the dear reader of readers is reading this material. What is there in psychological NLP for working with text?

NLP contains many constructs for working with text that have not yet been algorithmized.

At the current stage, we managed to recall 5 NLP models suitable for use in a computer. Books have been written on each of the NLP constructs. In a nutshell, it will not work to explain what a metamodel is. In this article I will try to give a reference to the sources and figure out what it could be for computer NLP.

1. Language model and metamodel

Description

Brief description: the metamodel is a model of changes in the levels of abstraction in the language, as well as an arbitrary interpretation of concepts by different people. For example, the word "love" can be understood in different ways: the word "sex" for many is a kind of love, for someone it's different things. The metamodel is not a theory, but a questioning technique that allows you to break through to the concepts hidden behind words that are in a person's head.

A neuron that would raise / lower / shift the levels of text abstraction would be a revolution! In production, this neuron could complement the existing dialogue models: modern chatbots cannot work in the selected context, adapt to human terminology. Someone under the word “happiness” understands that it is when there is a lot of love, someone when there is a lot of food, and a programmer understands that happiness is when there are computers and all Pentiums around. How can a chatbot determine the true meaning of the word “happiness” for an interlocutor? The neuron, by the way, will not be super complicated: you need to assemble the body of the text, mark it up by levels of abstraction and displacement of the value area, play with networks similar to the architecture of translator networks. Let's translate a concrete corpus into an abstract one, then back.

2. Neurological levels (Charles Dilts)

Description

Short description: all concepts of the language are divided into 7 levels. Each next logical level - from the mission to the environment - must correspond to the previous one. The list of levels and pictures is on the link.

The logical levels are a refinement of the metamodel, which introduces an additional order into the levels of abstraction: it is not spherical in a vacuum, each level of abstraction has its own purpose and task (purpose), the levels become interconnected.

There are many networks based on logical levels. The first option that comes to mind is a network that extracts a higher order level from the text, which contains a description of the entity in terms of the selected logical level. For example: a business process is a description in the language of the neurological level "place / action". And the competence model is a description in

the language of the “ability / opportunity” level. A network that builds a competency model based on the description of a business process will be very expensive.

It is realistic to make such a network: we need text corpora marked up by logical levels, power to work with the encoder / decoder architecture.

3. Metaprograms

Description

Brief description: metaprograms are the main filters of human perception. Psychologists, not programmers, called them programs. A person does not think “in general”: he concentrates on something, chooses a “filter” through which he perceives this something, then he works out according to the algorithm the information that he received through the filter and produces some output and control actions. In NLP, there are 7-10 main perception filters, metaprograms. The list of metaprograms is different for different cultures, parts of society, and may change over time. A neuron that would draw conclusions not in general, but in the context of a specific object using a perception filter, could become the basis of a “strong” intellect. A set of networks, each of which is trained to work on one of the metaprograms, and a committee that chooses which one to apply to reality, would enable the network to become more autonomous IMHO and, possibly, gain some kind of adaptability in the physical world.

Metaprogram	Network defines
Active-Reflexive	Choice of how best to act: actively or reflexively
IN-OUT OF TIME	It's hard here
Sorting	Sorting unstructured information by obscure parameters
Motives	What to do?
Orientation in time	Future or past?
Preferred modality	Feature selection
Desire-avoidance	Do or leave
Breakdown Size	Smart Clustering
Reference	Imposing rules or playing by the rules
Ways of Thinking	Choosing a Meta-Program
Comparison focus	Selecting features to compare

As you can see, building each of these networks is a task for the institute. For each metaprogram, there will be a ResNet50 scale mesh trained on ImageNet. This network was made by the corporation for several years. And this is not a complete list of metaprograms for just one culture! But the effect can be astounding: you see, by assembling 20-30 such networks into an ensemble, we get something really smart.

4. Promotions

Description

Short description: promotion is a technique based on a game with perception filters. By changing the filters of perception of the interlocutor, we enter the emotional plane, gaining access to non-logical planes of consciousness and interesting psychological effects.

Promotions are essentially the application of skills in working with metaprograms. And yes, if we just imagine that we made the networks for the previous paragraph, then their application can be epochal and truly epic ...

5. Double and triple helix

Description

Short description: despite the fact that the triple helix is a technique, there is a clear speech construction behind it - the nesting of logical statements highlighted in tone gives access to the emotional and illogical plans of a person.

The triple helix can be modeled and/or at least elicited in speech. It won't be a revolution. But it will be useful for understanding the structure of materials in the press. And even better for systems that generate text: a variety of literary styles is impossible without a double and triple helix.

The Perspective of Network Development Based on Psychological NLP Models

Interest in developments of the scale outlined in the previous section may be either among large players or amateur enthusiasts. For the Army, strengthening the brains of Fedor's robot with neural networks created according to NLP models can be very attractive. There is also the prospect of developing models that enhance BERT and XLNet - working with the meta model and logical levels could help create the coolest chatbots that can chat about any topic with anyone.

For commercial organizations that are concerned about the recognition of invoice parameters for automating the accounting of fiat currencies, this is of little interest. The task of increasing the number of zeros on the accounts maintained in the computer of their actual owner cannot be solved with the help of neural networks”.

Neuro-symbolic programming

Neurosymbolic programming is a combination of artificial intelligence and cognitive computing that combines the strengths of deep neural networks and symbolic reasoning. Deep neural networks are a type of machine learning algorithm based on the structure and functioning of biological neural networks.

Neurosymbolic models have already demonstrated the ability to outperform state-of-the-art deep learning models in areas such as image and video recognition. Furthermore, it has been shown that they can achieve high accuracy with significantly less training data than traditional models. Due to the recent emergence of this field and the relative paucity of published results, the performance characteristics of these models are not well understood.

IBM Neuro-symbolic AI

IBM consider Neuro-symbolic AI as a pathway to achieve artificial general intelligence. By augmenting and combining the strengths of statistical AI, like machine learning, with the

capabilities of human-like symbolic knowledge and reasoning, we're aiming to create a revolution in AI, rather than an evolution.

Neuro-symbolic AI programming of human behaviour

How it works?

First, the AI operators reveal, through Neuro-symbolic AI, the symbols of the conscious and unconscious object of our programming.

They then correlate these symbols with the object's desired program of behavior.

Then they teach AI and various chatbots operating in various networks, Internet blogs, TV, radio, communication channels to use these symbols to program the object's behavior.

Programs of the desired behavior of the object begin to be automatically introduced into the unconscious of the object through all possible electronic channels.

What services that work for customers with Neuro-symbolic AI offer:

- analysis of the impact of AI on any person.
- protection against the hidden effects of AI on humans
- Neuro-programming of people with deviant behavior.
- AI psychoanalysis of people: hidden meanings of events, actions, intentions

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