

# Diagnosing and curing diseases using Chemical Intents and Machine Learning

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**ABSTRACT:** This paper presents an improved artificial intelligence system in the world of medical science and technology, by using Artificial Intelligence techniques and chemistry. The model proposed in this work analyses a person's problem through Natural Language Processing or text or images etc. Then the application would apply some digital chemical intent properties to find out the symptoms through keywords, then application would compare those keywords with the stored list of keywords in the database. After a match is found, then it would look up for the highest activation ratio of that Symptom model. Then, it would compare the stored digital record of chemical properties of that disease with the uploaded patient's chemical properties, once record is matched then it would suggest some kind of treatments and further steps regarding to treatment of that disease. In Case, if any record isn't found in the knowledgebase of that model then it would store the newly found record in knowledgebase and then the model will use Self-Learning model made by us which is called "The X" to learn more about that particular disease and its treatment. Our model's front end is developed on Python, her neural schema uses "The M" programming language and internet for learning things, big data engine and machine learning knowledgebase uses SQL server local express. The result of the proposed model is improvement over similar work by other researchers [1, 2, 3]. This model has various applications like improving a developer's knowledgebase, developing better apps, teaching 'how to code' to students, and many others.

**KEYWORDS:** THE M, Diseases, Chemical Messengers, Chemistry, Medical Science Artificial Intelligence, Synthetic Intelligence, Big Data, Machine Learning, Neural Schema, Singularity, Programming, app Development, SQL, Python

## I. INTRODUCTION

We call this model "Mint" and it is a part of our Medical-Science research line, it uses Synthetic Intelligence, Techno-Chemistry techniques to help to help doctors and medical researchers in diagnosing and treating a disease. Doctors are diagnosing and treating diseases for so long, but it's never been easier to diagnose and treat a disease with the help of a Computer, even it was never easy that a computer could read chemical reports, and apply them in on patient's chemical properties for diagnosis. MINT uses her neural schema, to analyse a patient's symptoms using NLP and other INPUT technologies and then it generates a detailed diagnosis reports and the model suggests by itself that what treatments we can provide to the person, all of it, does through its Artificial Intelligence and Techno-Chemistry

## II. ARTIFICIAL INTELLIGENCE

By all means, Artificial Intelligence can be defined as the theory and development of such computer programs, which are able to perform human tasks, and requiring human capabilities like, Visual Perception, Speech Recognition, Natural Language Processing, Data Mining, simply we can say that Artificial Intelligence tries to mimic human intelligence. Artificial Intelligence is a vast and still improving, it has many sub-branches. We can surely say that Artificial Intelligence is the future.

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## III. RELATED WORK

Published papers mentioned in reference [1] Our approach is based on recent work which proposed to use neural networks to map sequences to sequences. Building AI based medical agents has been pursued by many researchers over the last decades, and it is out of the scope of this paper to provide an exhaustive list of references. However, most of these systems require a rather complicated processing pipeline of many stages (Lester et al., 2004; Will, 2007; Jurafsky & Martin, 2009). Our work differs from conventional systems by proposing an end-to-end approach to the problem which lacks domain knowledge. It could, in principle, be combined with other systems to re-score a short-list of candidate responses, but our work is based on producing answers given by a probabilistic model trained to maximize the probability of the answer given some context. Our work is also inspired by the recent success of neural language modeling (Bengio et al., 2003; Mikolov et al., 2010; Mikolov, 2012), which shows that recurrent neural networks are rather effective models for natural language. More recently, work by Sordoni et al. (Sordoni et al., 2015) and Shang et al. (Shang et al., 2015), used recurrent neural networks to model dialogue in short conversations (trained on Twitter-style chats).

## IV. DIFFERENT BRANCHES OF MINT

MINT is a part of our Computer Science research line "THUNDER" which is developed by Connect Corporation, THUNDER is a set of Artificial Intelligence applications which predict personality, behaviour of a person and then by using that data, THUNDER helps computer users in different computing tasks, here are some of the branches of THUNDER

1. Improving web experience by using digital footprints, Just like fingerprints, every user has its own digital footprint, we can define digital footprint as a map of any user's online activities, so in THUNDER there is an artificial intelligence web browser which keeps a track of user's digital footprint, then by using Connect's Steam technology it provides contents which user likes the most, therefore it improves user's web surfing experience, THUNDER keeps a track of digital footprints by analysing, a user's fb usage, a user's tweet, a user's browsing history etc.
2. Keeping a track on user's health by using MINT, MINT and THUNDER keeps a track on user's health by using Artificial Intelligence and Connect's Bloom technology, Medical technology is improving day by day but it was never been better, if we introduce evolutionary AI in medical technology, then it can surely do something better, In this module if a user is not feeling healthy or is having any problems with health, s/he has to just input their symptoms or what they are feeling, then by using Big Data and Machine learning algorithms it searches for pre-defined templates in database, research journals, medical footprints in online directory and then notifies the user about the correct medical diagnosis and medical treatment, in case if MINT (THUNDER) doesn't find any record in pre-defined templates it searches for it in medical directory (online footprints) and then saves it in her neural schema for future use.
3. Predicting future from past actions, almost no one can predict future from past actions, it's kind a thing which changes from time to time, but Artificial Intelligence and singularity can do these things with an effort of ease by using Connect's Neon Technology, THUNDER is able to predict anyone's future actions on the basis of analysing their past actions.

(Methodology: First of all, user will describe his/her past actions through a text document, then THUNDER will analyse the text by using some kind of Fuzzy algorithms then THUNDER will look up in knowledge base for training data templates, and will compare the same actions with previous records, after that possible machine learning algorithm it will respond to user that what should be his/her future action, this module, can help.)

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### V. FIRST OF ALL, A LITTLE CHEMISTRY BEHIND HOW OUR OWN BRAIN WORKS WHEN WE EXPERIENCE SYMPTOMS OF SOME DISEASES OCCURRING IN OUR BODY

Our own brain is made up of approximately **100 billion** nerve cells called Neurons. **Neurons** have the amazing ability to gather and transmit *electrochemical* signals -- think of them like the gates and wires in a computer. Neurons share the same characteristics and have the same makeup as other cells, but the electrochemical aspect lets them transmit signals over long distances (up to several feet or a few meters) and send messages to each other. Neurons have three basic parts:

- **Cell body** or **soma**. This main part has all of the necessary components of the cell, such as the nucleus (which contains DNA), endoplasmic reticulum and ribosomes (for building proteins) and mitochondria (for making energy). If the cell body dies, the neuron dies.
- **Axon**. This long, cablelike projection of the cell carries the electrochemical message (nerve impulse or action potential) along the length of the cell. Depending upon the type of neuron, axons can be covered with a thin layer of myelin, like an insulated electrical wire. Myelin is made of fat and protein, and it helps to speed transmission of a nerve impulse down a long axon. Myelinated neurons are typically found in the peripheral nerves (sensory and motor neurons), while non-myelinated neurons are found in the brain and spinal cord.
- **Dendrites** or **nerve endings**. These small, branchlike projections of the cell make connections to other cells and allow the neuron to talk with other cells or perceive the environment. Dendrites can be located on one or both ends of a cell. All these neurons work on basis of chemical packages known as neurotransmitter, to transmit and receive various signals from-to brain for learning and observation. Some of the chemicals which neurotransmitter consists includes...
  1. Gamma-aminobutyric acid (GABA<sub>A</sub>, GABA<sub>A</sub>- $\rho$  receptor)
  2. Carbon monoxide (Heme bound to potassium channels)
  3. N-Arachidonoyl dopamine (TRPV1)

### VI. PLANNED MINT MODEL

The proposed model helps doctors and medical researcher in diagnosing and treating diseases using some robust and optimized, TECHNO-CHEMISTRY and AI techniques

#### 1. Assumption

Diagnosing and treatment of a disease depends upon the knowledgebase of symptoms

#### 2. Drop Technology for analysing symptoms

We are working on our Drop Technology for over 2 years, it's still in the Beta phase, but it's doing something better for us, let's take a look that what our **Drop Technology** exactly is:

Our Drop technology uses Machine learning, Restricted Boltzmann machine algorithms to analyse symptoms, which user uploads through a text file, Drop technology loads templates from training data for analysing symptoms of diseases and then compares those symptoms with the existing templates of symptoms in the knowledgebase

#### 3. Reusability of diagnosis data generated through MINT

Whenever MINT generates a better diagnosis report, from the template which user has uploaded, then it saves that new template in its neural schema, in future whenever new user asks that type of problem, MINT compares user's template with templates which are stored in the neural schema after that if a match is found, MINT looks for attributions that which one template is better for generation of better treatment analyses and diagnosis once it completes this lookup, then it uses the template which is better for Cloning of Symptoms, instead of the one which user has uploaded. So in this way MINT creates possibilities for generating better diagnosis and treatment

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suggestions from time to time with the help of Machine Learning and artificial intelligence and also TECHNO-CHEMISTRY



Image: Mint's Data Visualisation

### VII. WORK FLOW

The recent work is completed by the following phases:

1. Drop technology uses text package for analyzing symptoms, patient is experiencing
2. Resolving symptoms with templates using set of Neural Networks
3. Looking for a highest activation ratio for digital chemical intents
4. Self-Writing a diagnosis and treatment report for patient using NLP
5. Saving the learned intents in neural schema for future use.

#### 1. Drop technology uses text package for analyzing symptoms

Either user can upload a text file package of his / her symptoms or can type the whole symptoms as the input, after that MINT converts the whole symptoms into a graph, with connecting nodes to all the logics (this conversion is required for better template generation which will be then saved in MINT's neural schema), after that MINT converts the file in machine language to save space, and stores the symptom in temp. Directory after that it compares each and every single line of symptom with pre-defined symptom templates in the knowledgebase for aligning the symptoms and mapping every node of the symptoms tree.

#### 2. Diagnosing and finding treatment via K-Base algorithm in neural schema

After mapping the symptoms MINT replaces it with the one which user had given previously, after that MINT passes the file to "Diagnostic Sorting module" to compare with predefined symptoms in the knowledgebase. For doing so MINT reads the whole symptoms just like a compiler, and if any logical or syntax error found then it compares those symptoms with pre-defined templates of previous symptoms, if any match is found MINT uses the same logic which it used previously, but if nothing is found in neural schema then it applies K-Base algorithm to create a new logic for finding symptoms from internet

#### 3. Cloning a diagnosing and treatment report by using steam tech.

As I have mentioned earlier, our Steam technology is still in its Beta phase, but it seems like it can help us in generating a better diagnosing and treatment report of a previously uploaded app symptoms, it was never being easier to generate a diagnosing and treatment report with copy of symptoms with better treatment structure, but now with our Steam Technology it seems true. After comparing all the possible templates MINT passes the symptoms to neural schema where it has to go through with Steam Modulizer which uses training data, machine learning, and research Knowledge Base from internet for generating a better diagnosing and treatment report of symptoms with a better treatment structure from previous one, when doing so it generates graphs, for mapping the diagnosing structure and removing errors in real-time

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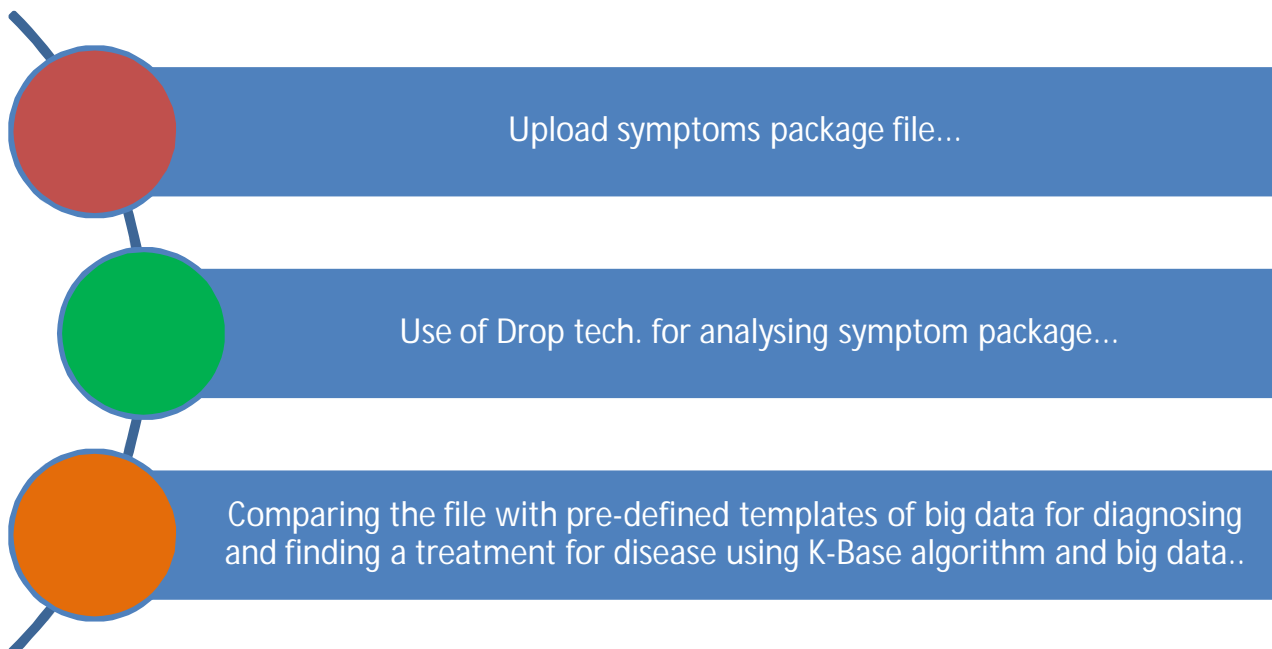
(Image: Data graph in Mint)

#### 4. Mapping the code in neural schema for future use

After generating a diagnosing and treatment report of the symptoms, MINT converts the symptoms tree back in graph and stores it in its knowledge base and neural schema, for future use, well, this is better because by doing so it can learn about new treatments of diseases in a robust and optimized way

### VIII. IMPLEMENTED RESULTS

The recent work can be described through the below diagram. The figure also shows the step wise method from top to bottom.



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## IX. MINT IN ACTION



(Image: Raw Data created from uploaded symptom package)



(MINT IN ACTION)

## X. CONCLUSION

By this we have successfully simulated the system which implements the first Artificial Intelligence based medical assistant which can help diagnose and treat a patient's disease using Techno Chemistry and Artificial Intelligence, Well, apart from this MINT will be able to do more than diagnosing and treating diseases, it can create new possibilities for unlocking new opportunities in the world of Artificial Intelligence. We are also planning to integrate MINT in our Under development but there is still a lot left to experiment. As our first of its type, artificial Intelligence operating system is under development we think that we will integrate MINT in that too.

## REFERENCES

- [1] D. Srivastava, Dr. S. Singh. Introducing Mantasha, your new coding buddy and assistant. Finlogy Research Journal, 2016.