Assist Autism Spectrum, Data Acquisition method using Spatio-temporal Model

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ABSTRACT : Employing a giant information set of harvested tweets, we tend to The Autism Spectrum Disorder (ASD) is progressively being recognized as a serious public health issue that affects or so zero.5-0.6% of the population. The aim of this work is to analyse if Twitter, as a extremely standard platform for data exchange, is used as a data-mining supply that may aid gift a series of experiments that examine a variety of linguistic and linguistics aspects of messages announce by individuals inquisitive about ASD. Our findings, the primary of their nature within the revealed scientific literature, powerfully encourage extra analysis on this subject and gift a methodological basis for additional work.

KEYWORDS: Autism Spectrum Disorder (ASD), Spatio-temporal Model, Parts of Speech (POS), Latent Semantic Analysis (LSA).

I. INTRODUCTION

We have a tendency to describe the primary study of Twitter as a medium for mining knowledge referring to the population affected by the Autism Spectrum Disorder (ASD). Considering the well-known challenge of reaching and fascinating with this specific target population, it's clear that our work and findings pave the means for any work of outstanding potential profit to public health. These advantages embody the enrichment of the corpus of information of the condition itself by the medical profession, and therefore the redoubled understanding of the practices and considerations of these tormented syndrome.

Popular analysis direction focuses on numerous styles of prediction supported tweet sentiments inferred from the tweet's emoticons or exploitation linguistics-based classifiers. as an example, Assur and Huberman showed that tweet posting rate is wont to forecast film box workplace revenues, whereas Baucom etal. used sentiment to analysis the connection between the content of tweets and therefore the outcomes of NBA competition games. Bollen etal. showed that tweet sentiments, aggregately seen as a mirrored image of public mood levels, is be wont to predict the incidence of socio-political, cultural, and economic events [2].

In distinction to the irregular studies on completely different diseases delineated higher than, the employment of Twitter knowledge within the management of extremely contagious diseases like respiratory disease has attracted a additional targeted try [1]. For instance, Culotta investigated whether or not the frequency of illness contagion |respiratory disease epidemic related tweets are often associated with 'ground truth' knowledge from centre for disease management and prediction. However more proof of the ability of Twitter knowledge was presented by Chew and Eysenbach UN agency incontestable that the spatiotemporal distribution of relevant tweet frequencies throughout the 2009 H1N1.

Although the employment of Twitter for data-mining info associated with ASD has not been explored however, there has been some preliminary work on the employment of different social media and ASD. for instance, Newton et al.

used Linguistic Inquiry and Word Count (LIWC) dictionaries to com-pare writing patterns of people with ASD and people of neurotypical bloggers [6].

II. LITERATURE SURVEY

Social play and autistic spectrum disorders, The article considers the nature of the presumed social play deficit in autistic spectrum disorders (ASDs). The nature of play and its typical development is outlined and discussed in relation to play development in ASDs. It is suggested that social play is a confluence of two strands of development that are affected in autism: social and emotional development, and the cognitive development of play. It is shown that social play develops in a transactional way and in ASDs initial social difficulties prevent the development of social interaction, with its role in eliciting and enriching spontaneous play [4].

Design issues on interactive environment for children with autism, the article addresses design issues that are relevant in the AURORA project which aims at developing an autonomous, mobile robot as a therapeutic tool for children with autism. Cognitive theories of mindreading are discussed and related to the AURORA project. This approach is put in the broader context of interactive environments, which autonomous mobile robots are a special case of. Implications of this research for interactive environments in general, and virtual environments in particular are discussed [5].

Robots as social actors: aurora and the case of autism, the role of predictability and control in robot-human interaction. This involves the central question whether humans are good models for synthetic (social) agents. Design issues based on cognitive accounts towards robot-human interaction are discussed with respect to the author's recent work on building interactive robotic systems as remedial tools (teaching devices) for children with autism, a project which crucially requires a careful analysis of human-robot relationships, and which cannot rely on the 'natural' tendency of humans to be interested in agents that appear life-like and social, a factor which is currently exploited extensively in the believable agents research community [7].

facilitating collaboration among children with autism though robot-assisted play, Autonomous robots can be used to foster and support collaborative play among children with autism in a number of different settings. Because autism impairs one's skills in social communication and social interaction, this makes it particularly difficult for children with this disorder to participate in many different forms of social play, particularly collaborative play due to the interpersonal skills needed to coordinate and synchronize people's actions through constantly communicating with them. Since these children have trouble playing collaboratively, this further hinders their ability to develop the necessary skills of interacting and communicating with others [9].

Human-robot interaction in autism: face, an android-based social therapy, in human-machine social interaction, the intersection between biology and engineering needs a context which allows for the development of adapting dynamics. The android FACE is able to interact with the external environment, interpreting and conveying emotions through non verbal communication. FACE captures expressive and psychophysical correlates from its interlocutor and actuates behaviours following two communicative modalities of semeiology [11].

Smartphone based autism social alert system, Autism currently affects 1 in every 88 American children impairing their social interactions, communications and daily living. Often, parents, educators, and researchers need to purchase expensive equipment to help autistic children cope with challenges in their daily living. In this paper, we present the Smartphone-Based Autism Social Alert (SASA) system which we design to help such children. Our system can automatically detect their stereotypical behaviours such that early interventions can be taken by caregivers or teachers [13].

Detailed requirements for robots in autism therapy, Robot-based autism therapy is a rapidly developing area of research, with a wide variety of robots being developed for use in clinical settings. Specific, detailed requirements for robots and user interfaces are needed to provide guidelines for the creation of robots that more effectively assist therapists in autism therapy. This paper enumerates a set of requirements for a clinical humanoid robot and the associated human interface. The design of two humanoid robots and an intuitive and flexible user interface for use by therapists in the treatment of children with autism is described [30].

An affordable compact humanoid robot for autism spectrum disorder interventions in children, Autism Spectrum Disorder impacts an ever-increasing number of children. The disorder is marked by social functioning that is characterized by impairment in the use of nonverbal behaviours, failure to develop appropriate peer relationships and lack of social and emotional exchanges. As part of this project, the robot and the electronic and control software have been developed, and integrating semi-autonomous interaction, teleoperation from a remote healthcare provider and initiating trials with children in a local clinic are in progress [13].

Approach to promote social and communication behaviours in children with autism spectrum disorders, Most autistic people present some difficulties in developing social behaviour, living in their own world. This study has the goal to improve the social life of children with autism with a main focus in promoting their social interaction and communication. The generalization of the acquired skills by the child in new contexts and environments are also tested. Results are described showing the outcomes of the experiments [15].

Human-robot interaction as a tool to evaluate and quantify motor imitation behaviour in children with autism spectrum disorders, Children with Autism Spectrum Disorders (ASD) have difficulties engaging in imitation behaviour. Available clinical tests that evaluate imitation rely on subjective observation and categorical "yes" or "no" data We describe the development of a method to quantify imitation using a robot, kinematic data and a Dynamic Time Warping algorithm [21].

III. EXPERIMENTAL FINDINGS AND DISCUSSION

For our analysis having printed the motivation and our final vision for this work, and placed it in context of previous analysis on data-mining social media, we tend to currently flip our attention to the most contribution of this paper. we tend to begin by de-scribing the information set we tend to used [8].

A.DATA ACQUISITION

Data acquisition is that the method of sampling signals that live planet physical conditions and changing the ensuing samples into digital numeric values which will be manipulated by a pc. Knowledge acquisition systems (abbreviated with the form DAS or DAQ) generally convert analog waveforms into digital values for process [9].

Data acquisition applications are controlled by package programs developed mistreatment numerous general purpose programming languages like Lab VIEW, BASIC, C, Fortran, Java, Lisp, Pascal. complete knowledge acquisition systems.

There are ASCII text file package packages providing all the required tools to amass knowledge from completely different hardware instrumentality. These tools return from the scientific community wherever advanced experiment needs quick, versatile and convertible package. Those packages are typically custom match however a lot of general DAQ package just like the most Integrated knowledge Acquisition System is simply tailored and is employed in many physics experiments worldwide.

B. PROCESSING

Much of the add this paper considerations the analysis of topics mentioned by means that of Twitter [10]. during this context it's useful to possess totally different inflections of identical word normalized and diagrammatic by one term [12]. In linguistics this method is cited as lemmatization and that we apply it mechanically mistreatment the freely out there TweetNLP soft-ware package. Additionally, we tend to take away the questionable 'stop words' that don't carry abundant which means themselves (e.g. articles and connectives), in addition as all punctuation marks and emoticons [11].

IV. METHODS AND RESULTS

A.ZIPF'S LAW

Zipf's law states that given some corpus of tongue utterances, the frequency of any word is reciprocally proportional to its rank within the frequency table . so the foremost frequent word can occur close to double as typically because the second most frequent word, thrice as typically because the third most frequent word, etc. for instance, within the Brown Corpus of yankee English text, the word "the" is that the most often occurring word, and by itself accounts for nearly seven membered of all word occurrences (69,971 out of slightly over one million). faithful Zipf's Law, the second-place word "of" accounts for slightly over three.5% of words (36,411 occurrences), followed by "and" (28,852). solely one hundred thirty five vocabulary things area unit required to account for 0.5 the Brown Corpus [17]. The same relationship happens in several different rankings unrelated to language, like the population ranks of cities in numerous countries, corporation sizes, financial gain rankings, ranks of variety of individuals look a similar television station, so on. the looks of the distribution in rankings of cities by population was initial noticed by Felix Auerbach in 1913 [22]. By trial and error a knowledge set will be take a look attended to envision whether or not Zipf's law applies by checking the goodness of work of AN empirical distribution to the hypothesized law distribution with a Kolmogorov-Smirnov test, so comparison the (log) chance magnitude relation of the ability law distribution to different distributions like AN exponential distribution or lognormal distribution.[6]once Zipf's law is checked for cities, an improved work has been found with b = one.07[clarify].whereas Zipf's law holds for the higher tail of the distribution, the complete distribution of cities is log-normal and follows Gibrat's law [14].

It is not illustrious why Zipf's law holds for many languages. but, it's going to be partly explained by the applied mathematics analysis of haphazardly generated texts. Wentian Li has shown that in an exceedingly document during which every character has been chosen haphazardly from a standardized distribution of all letters (plus an area character), the "words" follow the final trend of Zipf's law (appearing close to linear on log-log plot). Vitold Belevitch in an exceedingly paper, On the applied mathematics Laws of Linguistic Distribution offered a mathematical derivation. He took an oversized category of well-behaved applied mathematics distributions (not solely the traditional distribution) and expressed them in terms of rank. He then enlarged every expression into a Taylor series. In each case Belevitch obtained the exceptional result that a first-order truncation of the series resulted in Zipf's law. Further, a second-order truncation of the Taylor series resulted in Mandelbrot's law [19].

B. *MESSAGE LENGTH*

Some of constant general linguistic rules as standard texts do, our next goal was to explore any differential characteristics exhibited by our ASD and also the management teams. Recall from Section a pair of 1 that our knowledge set is balanced within the range of tweets, that is, the quantity of tweets within the ASD corpus is that the same as within the management corpus [16]. Yet, as seen within the previous section, the term counts within the 2 knowledge sets area unit completely different, severally eight, 989,789 and 6,713,548 – a big distinction of roughly thirty fourth. it's an on the spot implication of this observation that the common term count per tweet is larger within the ASD cluster, that is that the 1st indication of there being a distinction between tweets during this cluster and also the remainder of our knowledge corpus. The tendency of this cluster to post longer messages is additional supported by scrutiny the corresponding histograms of tweet word counts [20].

V. CONTENT ANALYSIS

Our next aim was to explore if the most talked about topics in the ASD community differ from those of the control data set. In the 1st experiment we have a tendency to approached this task by comparing the foremost often used words within the 2 knowledge sets [25]. These words is seen as a straightforward accumulative proxy for the particular content of individual messages. The key results square measure that show one hundred most frequent words in severally the ASD and management knowledge sets, displayed as supposed 'word-clouds' whereby the frequency of a specific word is encoded by the corresponding font size [26]. we have a tendency to used a linear scale, the font size so being proportional to the corresponding word's frequency in a very knowledge set.

As pronto discovered from three the foremost unremarkably used words within the 2 teams of tweets reveal a considerable difference within the nature of mentioned topics. A lot of thorough examination reveals even any significant patterns coherent with the prevailing literature on the ASD. Especially, observe the presence of an oversized variety of words within the plot cherish the ASDcluster that square measure associated with children like 'children', 'kids', 'child', and 'son', for example [28]. There square measure variety of reasons why this can be unstartling. Firstly, the identification of the ASD there foremetimes created in babyhood so it's cheap to expect that the fogeys con-fronting this new challenge would have increased initiative at seeking facilitate from the community of oldsters in a very similar state of affairs. additionally, whereas beyond question continually vulnerable [18], the vulnerability of people on the syndrome spectrum is that the greatest whereas they're young that is after they want the foremost support from their guardians and therapists e.g. at deed the abilities required to progress thorough the educational system and integrate within the society [29].

VI. PROPOSED SYSTEM

We have proposed the total system which is doing manually in our life to that echolalia attacked children on our existing system there is KASPAR is the technique find the error of the children while playing game but in our proposed system it overcomes using mechanical robot called (Android). If anybody which only to ask question to that disabled person that Speech recognized by Google Speech Engine. It convert as a text and depends upon a question that application get answer from database to reply by voice technique to that person. our idea is would might help most to drive those life as like a normal person in world [31].

A. Register With Database

Here we have to enter the details of the autism impeded peoples like Name, Father Name etc….and some personal details of that person it can be stored in to the database.

B. Parler And Text Conversion

Speech to text conversion is the module using to analyse the speech and convert the speech to text using Google speech Recognition engine (GSE) using internet and also convert the Database details to speech by using Text-To-Speech (TTS) [30].

C. Reiterate The Details

Iterate the details which is use stored in the database repeatedly by using Google speech engine(GSE) and also it repeated times that can set by our self while this is the way to express here moments easy to echolalia attacked peoples.

VII. CONCLUSIONS

The aim of this work was to analyse the potential of data-mining messages denote on Twitter to find out concerning the issues, practices, and a lot of usually topics of conversation of individuals curious about the syndrome spectrum disorder [33]. we tend to approached this drawback initial by harvest home an oversized information set of tweets every of that we tend to selected as happiness either to the ASD-related set of the info corpus or the control set. Victimization this information set we tend to conducted a series of experiments that analysed each common and differential characteristics of messages within the 2 subsets and reported a series of novel results. The foremost necessary finding, corroborated by many totally different experiments, issues the character of topics arising within the ASD set of tweets [32]. We tend to demonstrated that tweets during this set are terribly wealthy in data of doubtless high worth to public health officers and policy manufacturers, so motivating any work towards our goal of developing a tool which might be ready to monitor automatically the response of the ASD community to numerous initiatives, legislative assembly, medical advances etc .

VIII. ACKNOWLEDGEMENT

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