Identifying, Recognition, and Diagnosing Students with Learning Disabilities and Depression Based on Artificial Intelligence

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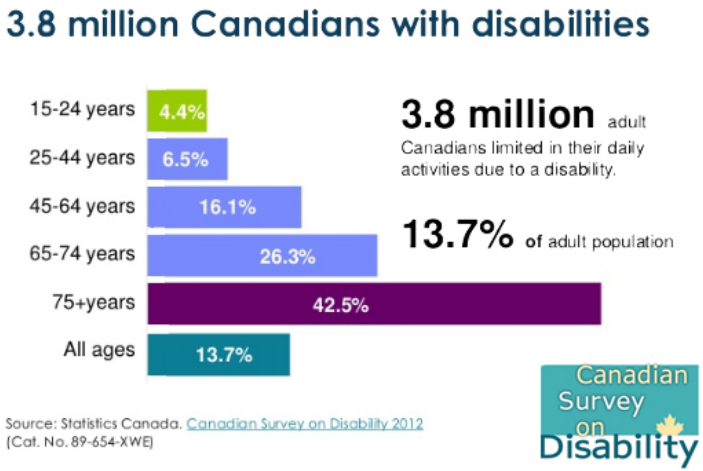
March 12, 2018

Outline

Statistics of Disability and Depression

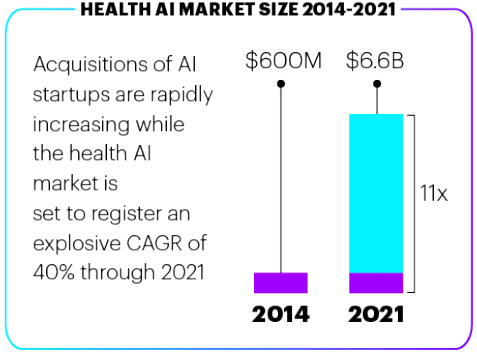


Source: https://www.technologyreview.com

- Almost 14 percent of the Canadian population aged 15 years or older – or 3.8 million individuals – reported a difficulty or impairment due to a long-term condition or health problem that limited their daily activities.
- The prevalence of disability increased with age, with the average onset age in early 40s.

Artificial Intelligence in Health Care

- AI is exploding in popularity.
- Growth in the AI health market is expected to reach $6.6 billion by 2021—that is a compound annual growth rate of 40%
- E.g., Software that can understand images, sounds, and language is being used to help people with disabilities and depression such as deafness and autism in new ways.



Source: https://www.technologyreview.com

Problem

Source: https://www.vamosblog.co.uk

- How to identify, recognize, and diagnosing students with learning disabilities and depression.
- How to recommend the insightful and effective therapy to solve these issues.

Literature Review

- A system that can recognize such kind of actions using deep learning techniques thereby, notifying the caretakers/parents so that they can get the situation under control in lesser time [1]
- A deep neural network architecture to address the Facial Expression Recognition problem across multiple wellknown standard face datasets [2]. Moreover, a Mobile Face Recognition System for Visually Impaired Persons is proposed in [3]
- Enhancing deep learning sentiment analysis with ensemble techniques in social applications which can be utilized to detect and prevent the depression [4]
- Down Syndrome Prediction/Screening Model Based on Deep Learning and Illumina Genotyping Array is proposed in [5]

Reference

V. S. P. Patnam, F. T. George, K. George and A. Verma, "Deep Learning Based Recognition of Meltdown in Autistic Kids," 2017 IEEE International Conference on Healthcare Informatics (ICHI), Park City, UT, 2017, pp. 391–396

A. Mollahosseini, D. Chan and M. H. Mahoor, "Going deeper in facial expression recognition using deep neural networks," 2016 IEEE Winter Conference on Applications of Computer Vision (WACV), Lake Placid, NY, 2016, pp. 1–10

S. Chaudhry and R. Chandra, "Design of a Mobile Face Recognition System for Visually Impaired Persons, in arXiv: 1502.00756v2

O. Araque, I. C.-Platas, J. Fernando S.-Rada, C. A. Iglesias, Enhancing deep learning sentiment analysis with ensemble techniques in social applications, Expert Systems with Applications, Volume 77, 2017, pp 236–246

B. Feng, D. C. Samuels, W. Hoskins, Y. Guo, Y. Zhang, J. Tang, and Z. MEng, "Down syndrome prediction/screening model based on deep learning and illumina genotyping array," 2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), Kansas City, MO, 2017, pp. 347–352

Challenges

- Identify and recognize the sentiment and emotion features
- Faster handling of responding for real time used cases
- Data authenticity, confidentiality, ready, and integrity for real time applications (e.g., social media, crowd sourcing)
- The accurately predict what types of catastrophic incidents might put patients back into the hospital
- Maintain the patient identity, location, security, and privacy

Objectives

- Enhance privacy system to Identify, Recognize, and Diagnose Students with Learning Disabilities and Depression
- Improve the accuracy and performance of object recognizing to detect the semantic and behavivor features
- Develop algorithms to analyze the sentiment bahavior of the depression information on the social network
- Develop algorithm to evaluate and analyze the progress of depression and diabiliies learning

Methodology

- Exploit the Artificial, Deep, Recurrent, Convolutional neural networks (ANN,DNN,RNN,CNN), Supervised, Unsupervised, and Deep Reinforcement learning, Search Engine algorithm to improve the quality of object recognition
- Apply a natural language user interface to attempt to answer questions, make recommendation
- Predict the negative or dangerous behavior of disabilities and depression student based on the social media network

Expectation of Contribution

- A privacy system to Identify, Recognize, and Diagnose Students with Learning Disabilities and Depression
- A new solution for Disabilities and Depression Therapy by tracing, evaluating, analyzing both the sentiment of user behavior in the real world and social network

Study Plan

Activity	Progress	2017		2018			2019			2020			2021	
		S	F	W	S	F	W	S	F	W	S	F	W	S
DGA1005	100%													
DGA1031	50%		NA											
DGA1032	0%													
DGA1033	0%													
Literature reivew	70%													
Exploit the Artificial, Deep, Recurrent, Convolutional neural networks (ANN,DNN, RNN,CNN), Supervised, Unsupervised, and Deep reinforcement learning to improve the quality of object recognition	0%													
Build-up machine learning algorithms and artificial intelligence in order to recognize, analyze and make the explanation of a given object by using smartphone camera.	0%													
Make the approximated verification method to confirm the accuracy of generated information	0%													
Writing thesis	0%													
Publications	0%													