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(DEEMED TO BE UNIVERSITY)
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Anand Nagar, Krishnankoil - 626126, Srivilliputtur (via), Virudhunagar District, Tamilnadu.

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:21-12-2020

Department	COMPUTER SCIENCE AND ENGINEERING	Application No.	202020142
Area of Research	COMPUTING & AI	Research Mode	PART TIME

Name :N ARUNKUMAR

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Gender :MALE

Category :OC

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Father's/Husband's Name	M NARAYANAN	Father's/Husband's Occupation	BUSINESS
Family Income	N/A	Residental Type	URBAN
Birth Place	BANGALORE	Mother Tongue	TELUGU
Religion	HINDU	Martial Status	MARRIED
Aadhaar No.	675261003801	PAN No.	AHQPK5300A
Physically Challenged	NO	Type of Disability	-

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Permenant Address:
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BANGALORE
BANGALORE DISTRICT
KARNATAKA
INDIA
Pin-560001

Qualification

Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
MASTERS OF SCIENCE	INFORMATION TECHNOLOGY	KARNATAKA STATE OPEN UNIVERSITY	2008	N/A	A	DISTANCE
BACHELORS OF SCIENCE	COMPUTER SCIENCE	BANGALORE	1998	N/A	C	REGULAR

Experience

Organization	Designation	Experience From	Experience TO	Work Nature
FIRST ADVANTAGE	VICE PRESIDENT INNOVATION	2019-10-28	1970-01-01	INNOVATION RESEARCH AND PRODUCT DEVELOPMENT
HARMAN CONNECTED SERVICES	ASSOCIATE DIRECTOR	2017-01-01	2019-10-28	FOR FIRST ADVANTAGE CLIENT, SAME ROLE
HARMAN CONNECTED SERVICES INDIA	ASSOCIATE DIRECTOR	2014-04-01	2016-12-31	FOR FIRST ADVANTAGE CLIENT, SAME ROLE

FIRST ADVANTAGE	PORTFOLIO MANAGER	2013-01-15	0204-03-31	INTERNATIONAL PRODUCT DEVELOPMENT

Payment Details					
Transaction ID	Reference		Date of transaction	Amount	Status
202020142_201224113641	VICI9589814417		24-12-2020	600	SUCCESS

Differently Enabled. Study and Methods of Augmentative Human Computer Interfaces that can detect, assist and include differently abled people into day to day life

By Arun Narayanan Kumar

> One billion people, or 15% of the world's population, experience some form of disability. Persons with disabilities, on average as a group, are more likely to experience adverse socioeconomic outcomes than persons without disabilities.
>
> -- The World Bank on Disability, Oct 2020
>
> https://www.worldbank.org/en/topic/disability

Summary

Accessibility guidelines, policies and mandates are increasing in importance and criticality, rightly so. Not being sensitive to individual's abilities to learn, adapt and cope is a form of exclusion in itself. Certain conditions are degenerative and could worsen on repeated (ab)use of improper interaction patterns. For instance, constant use of mouse and QWERTY keyboards has been the biggest contributors to Repetitive Stress Injury (RSI), yet we do not have mainstream success in alternative methods. On the other hands, kids with learning disabilities are only now beginning to see some assistive tools to augment their learning.

But several accessibility guidelines are an afterthought designed to assist knowledge capture and/or dissipation (or in general, an interaction) for *already* differently abled people. While it is an inclusive approach, it is inefficient in curbing the alarming rate of increase in disabilities.

In this research, I hope to document issues, possible methods to detect indicators of an early onslaught of disabilities and methods that can arrest degeneration, augment learning and interaction into a series of Augmentative Interaction Patterns & Systems powered by Artificial Intelligence.

Specific Aims

The primary goal of this research is to

- Identify and catalogue known traits and warnings that indicate disabilities which would be the foundation of an AI powered monitoring system, that continuously monitor for early indicators.
- Develop a model for self learning interaction system that can trained and tailored to every individuals need. To build and scale such a system requires a fundamentally strong automated and augmentative Artificial Intelligence system.
- Future research can be built upon these methods that specializes such a system with Industry specific assistive systems. For example, A Math visualization assistant for Primary school kids, Voice and Visual programming for Software Engineers, Tailor made work-break-work recommender system for employees under high risk for musculoskeletal disorders.

> According to the Occupational Safety and Health Administration (OSHA), RSI affects some 1.8 million workers per year. One government study puts the cost of RSI between $17 billion and $20 billion a year.
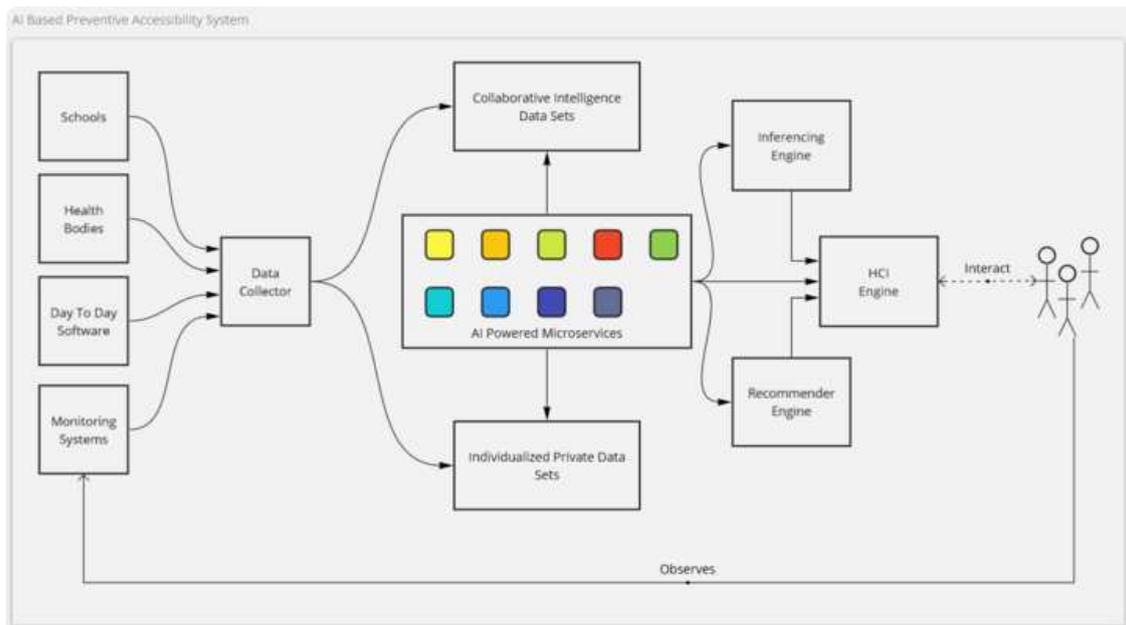>
> -- Healthday Report, Dec 2019
>
> https://consumer.healthday.com/encyclopedia/pain-management-30/pain-health-news-520/repetitive-stress-injury-rsi-646236.html

Background and Significance

Experimental Design and Methods

In order to build a coherent pipeline for a self-learning system that is oriented towards preventive accessibility, we must adopt and establish open data initiatives in a common protocol to capture and interpret data. The data could be grouped into Anonymized collaborative intelligence data sets, access controlled individualized assessment data sets and a pattern catalogue. A series of AI assisted microservices could operate on the data sets to identify, enrich and derive a recommendation. Once a series of recommendations are derived, a multi-modal interaction paradigm that could use, Voice, Video, Augmented Reality, Virtual Reality, Mixed Reality, Touch-screen and other immersive interaction models that could be adopted in a preventive or prescriptive manner.

The last decade has seen a resurgence in voice assisted systems like Alexa, Google Mini. The key takeaway is its affordability which has made them very pervasive from miniatured home devices to built into speaker and phones. Their applications are, however, still in very early stages and more general purposes or entertainment oriented. Special purpose systems or extensions to the same can be adopted to make these services pervasive to consumers.

AI Based Preventive Accessibility System

References

1. World Bank - https://www.worldbank.org/en/topic/disability
2. Healthday - Health Journal - Repetitive Stress Injury (RSI)
3. Software Engineer with Disabilities - https://medium.com/@jcalderaio/started-coding-at-30-with-a-disability-6f9b81fff049

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಮೈಸೂರು

KARNATAKA STATE OPEN UNIVERSITY

MYSORE

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಕುಲಾಧಿಪತಿ, ಸಮಕುಲಾಧಿಪತಿ, ಕುಲಪತಿ ಮತ್ತು
ವ್ಯವಸ್ಥಾಪನ ಮಂಡಳಿ ಸದಸ್ಯರುಗಳಾದ ನಾವು

ಅರುಣ್ ಎನ್. ಕುಮಾರ್ .... ಅವರು,

2008 .... ರಲ್ಲಿ ನಡೆದ ನಿರ್ದಿಷ್ಟ ಪರೀಕ್ಷೆಯಲ್ಲಿ ಉತ್ತೀರ್ಣರಾಗಿದ್ದು

ಮಾಸ್ಟರ್ ಆಫ್ ಸೈನ್ಸ್ - ಇನ್ಫರ್ಮೇಷನ್ ಟೆಕ್ನಾಲಜಿ

ಪದವಿಗೆ ಅಂಗೀಕೃತರಾಗಿದ್ದಾರೆಂದು ಪ್ರಮಾಣೀಕರಿಸುತ್ತೇವೆ.
ಶ್ರೀಯುತರು ಶ್ರೇಷ್ಠ ಪ್ರಥಮ ದರ್ಜೆ ಪಡೆದಿರುತ್ತಾರೆ.

We, the Chancellor, the Pro-Chancellor, the Vice-Chancellor and the Members of the
Board of Management - Karnataka State Open University do hereby certify that

Arun N Kumar

has been admitted to the Degree of

MASTER OF SCIENCE - INFORMATION TECHNOLOGY

having passed the prescribed examination held in ....**2008**............ and

placed in the **Distinction**........ class.

ವಿಶ್ವವಿದ್ಯಾನಿಲಯದ ಲಾಂಛನದೊಂದಿಗೆ ನೀಡಿದೆ.
Given under the seal of the University

Place: Mysore

Date: **10-05-2014**

Vice-Chancellor

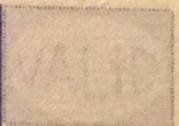Sl. No. : 05 04362   Regd. No. : 021860081   Date of Issue : 15 OCT 2014

Signature :   Signature :   Signature :

Entered by *Vishwanatha. M.*   Verified by : Suma H. R.   Scrutinized by : **Puttamadamma**

VALID

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ಮೈಸೂರು

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Vice-Chancellor

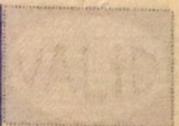Sl. No.   : 05 04362   Regd. No. : 02186008l   Date of Issue : 15 OCT 2014

Signature :   Signature :   Signature :

Entered by Vishwanatha. M.   Verified by : Suma H. R.   Scrutinized by : Puttamadamma

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ಮೈಸೂರು

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Place: Mysore
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Vice-Chancellor

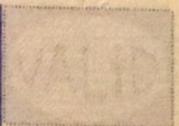Sl. No.　　: 05 04362　　Regd. No. : 02186008l　　Date of Issue : 15 OCT 2014

Signature　:　　　　　　Signature :　　+　　　　　Signature　:

Entered by Vishwanatha. M.　Verified by :　Suma H. R.　Scrutinized by : Puttamadamma

November 30, 2020

RE: Employment Letter

To Whom It May Concern,

Arun Kumar is a current employee in good standing. He was hired by FADV Canada on 10/28/2019 and previously worked for FADV India. Arun is the Vice President of Innovation.

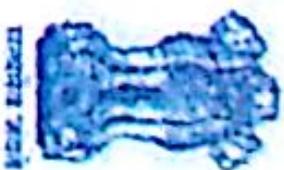Please feel free to contact me if you have any questions.

Sincerely,

Timothy Dye
Payroll Manager
tim.dye@fadv.com

आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

ARUN NARAYANAN KUMAR

NARAYANAN

08/08/1977

Permanent Account Number

AHQPK5300A

Signature

13022016

इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं:

आयकर पैन सेवा इकाई, एन एस डी एल
5 वीं मंजिल, मंत्री स्टर्लिंग,
प्लॉट नं. 341, सर्वे नं. 997/8,
मॉडल कालोनी, दीप बंगला चौक के पास,
पुणे - 411 016.

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e-mail: tininfo@nsdl.co.in

Ontario

Driver's Licence
Permis de conduire

ON CANADA

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ARUN,NARAYANAN

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4d NUMBER/
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5 DD/RÉF.   GP2462434   16 HGT/HAUT.   178 cm

15 SEX/SEXE   M

9 CLASS/
CATÉG.   G

12 REST./
COND.

3 DOB/DDN   1977/08/08

K9237-062267-70808
1977/08/08

9 CLASS/ CATÉGORIE

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Automobiles/ensembles de véhicules
(11000 kg (max.), véhicule remorqué
ne dépassant pas 4600 kg

12 RESTRICTIONS/ CONDITIONS

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