Development of a design tool to optimise acceptance of exoskeletons by older adults



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Introduction







Introduction



Research Statement

"This research proposes to develop empirical evidence that will lessen negative product related stigma and improve technology acceptance for older adults with reduced mobility that wear a soft robotic biomimetic exoskeleton when conducting everyday tasks and activities".

Research Overview



Innovations #1 – IDAM & Exoscore



Innovations #2 – IDAM Positionning



Innovations #3 – New & Original Constructs

PERCEPTION	EXPERIENCE	PERCEIVED IMPACT
What is this? (exo etc information)	What is this? (Intro, tasks etc)	What is this? (Summarise, self-contextualise)
Constructs	Tasks	Constructs
P.U. Perceived Usefulness	DON. Ease/Efficiency?	A.T.T. Attitude towards Technology
E.E. Effort Expectancy	S.t.S. Ease/Efficiency?	Anx. Anxiety
Anx. Anxiety	Walk. Ease/Distance/Time?	S.E. Self-Efficacy
S.E. Self-Efficacy	Stand. Ease/Time?	B.I. Behavioural Intention
E.P Experiential Perception	DOF. Ease/Efficiency/Time?	P.Ad Perceived Adaptability
	Charge/Store? Ease/Effort/?	S.I. Social Influence
		S.L Self-Liberty
		QoL.E Quality of Life Enhancement
		Trust Trust

Method & Approach

OFFICINE Responsive DIFUSION OF INMOVATORS: P14-* NUMERIC DAFA ALON 5 USCES SHO NOT INFORM DESIGN DECISIONS AND Jos 2018 A SMALL SOMPLE IS HIGHLY "THE MAIN QUESTIONS THAT AN INDIVIDUAL & SAM THOUGHT TYPICALLY ASKS ABOUT A NEW I DEA INCLUDE: WE ARE ALIVE UNTIL WE DIE . TT IS OUL ROLE AS DESIGNERS TO CREATE PRODUCTS AND SELVICE STREAMS THAT EMANGE THE LIVED EXPELIENCE AS HE AGE NHAT IS THE INNOVAR AL? THEY SIMPLY ARE A WAY OF Post TASK PROFESSIONAL WON DOES IT WORK? T.U KEEPING TEACY OF HOW YOU DEAR FEEL ABOUT THE EARCHENCE OF DOING YOUR KODDOLT " 5.0 WHIG DOES IT WORK? 03/03/2018 WHAT ARE THE INNOVATOUS CONSEQUENCES? CODING MAKES YOU BEAMS WOUL EMOTION ARE INVESTED IL YOLE PAINCIPANTS AN WHAT WILL ITS DOVATTACTES AND DISDOVATTAGE SABILITY SCALE (SUS) POR TES ASSESSMEN SABILITY PROFESSIONAL TIME WOLLOS. WAS WORKING TODAY BE IN MY SITUARO?" NEWIEN THAT INVOLVED A COORE , where EASE QUESTIAL (SEQ): POST TASK Sussian The Impact of Alguom THE HUSBALDS BLONDER WAS ASA-TLX- POST TARK LOND THIS TIME THE USER FOUND .. CARNO, CHANTERD, A 18 TECHNOLOGY CUSTERS The INFORTST SERVICE PHYSICAL 4 SYSTEM ARTERS XOSOFT OXFOLD DIC DO RINGINGS COME BOTOR " * HARDU AR 7 A SET OF ALMORPLEY ON WHICH THE REAGING A AN ACTIVITY IS BASED -GRAN ACTIVITY IS BASED -* 'A THEORY OF EDUCATION' mosite 120 TS i.e. APP - 5 PRINCIPLE : COMPUTERS A FUNDAMENTAL TRUTH OF PUDDOSITION THAT GEVES AS THE FOUNDATION FOR A SYSTEM OF BELIEF OF BEHANOUS OF FOR A CHAINS OF - WEAR UNDER NORMAL CLOTIES - SYSTEM AS PER DEVELOPWG MODEL : - STONOING MORE S.C. F? A SIMPLEPIED DESCRIPTION, ESPECIALY A MANEGNATICAL ONE, OC A STOTEM D ASSIST CALCULATIONS AND PREDICTIONS. 4 M STRITSICAL MODEL USER FOR TREDICTING THO SUBMINAL DATES OF SUBMICTERS SECIES 1 YOU JUSE LEARDES Exoscore - WALKING ROMSONA -- IN AND OUT OF CHAIRS BELINVIOLE NED TO CALLY OF 4 PA ALBERT WHAT IS THIS? ROBOTICO THEORY / NODEL / TOOL! DIFFOSION INNOVATION THEORY (ROGERS) NAL SET OF RESOURCES , DENITIES TEVELORED FROM OSES STOCK CHO * PERCEIVES ATTRIBUTES -"DIGENSION IS THE REDGESS BY WHICH (DAL INNOVATOLS ME LOT DU EQUIVAGENT UN, 55 INDVATOR (2)10 COMMUNICATES THROUGH OF ANALYSIS - ADOPROJ CERTAIN CINSANTES & OVER TIME (4) AMONG # EXPOR DESPUSE -> 10th JONE VERS - A FOU YBORS 1.C. DISCUSSED - TRANS- DOES HOT LIKE TO LIEAL BECAUSE REQUIRE GOVE TO THE FOLIDET MEMBERS OF A SOCIAL SYSTEM 1 State Th SEPTBOTS 11 05cn 755 + THEORHI APIS -> K XOSOF WAS A POP SOCK TONON THEOREM A SUSPENDER BENT TO A COMBELBAND (SOFT CUS) -> ATTOCUMB. JEAR for BATTON PACK ETC

Context & Application



Context & Application



Highlights



Highlights



Key Outcomes







Adam de Eyto / Tjaša Kermavnar. Design Factors, University of Limerick

Challenges



Currently....



TRANSGENERATIONAL TECHNOLOGY AND INTERACTIONS FOR THE 21ST CENTURY

Perspectives and Narratives

Hannah R. Marston • Linda Shore • Laura Stoops • Robbie S. Turner

Transgenerational Technology (TT)

Optimises use, adoption, autonomy, and acceptance of technology to assist and enhance the lived experience across the generations



Marston, Shore, Stoops & Turner, 2022

Transgenerational Assistive/Accessible Technology (TAT)

Refers to Assistive Technologies designed to be adaptive and supportive to people across the generations who experience physical and/or cognitive limitation

Transgenerational Assistive Robotic Technology (TART)

Refers to powered robotic orthosis/prosthetics that enhance, augment ability and body connective awareness - embodiment which are adaptive across the life course and to user needs requirements

Marston, Shore, Stoops & Turner, 2022



Transgenerational Living Communities & Cities (TLCC)

Posits that all generations in a community experience and feel part of inclusive and autonomous ecosystems

Transgenerational Gaming (TG)

Encourages optimized digital game experiences irrespective of the age or ability of the player



Marston, Shore, Stoops & Turner, 2022

Transgenerational Technology: Well-Being & Innovation Opportunity for the 21st Century - A Manifesto

We are an Interdisciplinary team that share a common focus – the value and quality of peoples' interactions and experiences with technologies should be enhanced, supported and unhindered. Commercial gain, hurried assumptions or lack of enquiry to human concern should remain secondary to the primary intent and value of defining the user needs requirements identified during research. Empathic and purposeful design approaches offers inclusive and human centred focus defining the 'how' and positive augmentation of abilities, experience and activity of not just the person & context of use, but also of their network of stakeholders.

1) We believe that chronological age should not determine vulnerability, for we are aware, vulnerability and age/longevity is not always mutually exclusive.

2) People should not be discriminated upon because of their beliefs, who they are, identify as, or what role they partake in society, and their voices should be expressed freely and listened to.

3) As a follow to Point 2, the expressive commentary voiced and expressed freely should not harm or hurt others by malicious criticism or attack.

4) Research and recruitment of participants who are perceived to be and/or are marginalized in society should not result in discrimination or biased research outputs.

5) We believe that a citizen continues to learn and gain life experiences and can offer contribution to society across their lifespan.

6) Innovation and research practices must consider democratised voices and user experiences as valuable catalysts to creativity and technology well-being for all.

7) Interdisciplinary research must be recognised across all disciplines as a vital contributor to societal growth and documented interactions

8) Inter & multi-disciplinary and unique language and terminology is recognised across disciplines through collaborative research providing a rich embrace and appreciation as we co-design, innovative research approaches and create new technologies, services and systems that benefit all.

9) We believe cognitive and physical limitations can be supported, and dignity is always offered and placed central to the person.

10) To reflect on digital legacies, emerging and future technologies should not harm or injure and should obey the instruction as directed by the human.

11) At all times the intervention of future technologies should not place any person in a position of feeling stigmatised or excluded by society.

12) The data that effectively is created and stored by actors (e.g., stakeholders) will be done collectively and offers the person (including guardian, next of kin) autonomy in voicing their agreement or dissatisfaction to this activity.

Signed......Hannah R. Marston, Linda Shore, Laura Stoops, Robbie S. Turner I 2022 ©



Current work....

The future of healthcare is NOT in clinical settings

Menopause – a pathway to successful ageing, or not? Menopause & the sound effect

References:



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Thank you

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