TOWARDS NEW PERSPECTIVES ON HUMAN-COMPUTER INTERACTION RESEARCH WITH OLDER PEOPLE

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Overview

- A guided introduction to older-adult HCI research
  - Past, present and future
  - A change of perspective is needed

- Selected highlights of my current research (geared towards this new perspective)
  - Gendered identity in digital games
  - Programming and digital making
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Evolution of HCI research
from the viewpoint of waves/paradigm changes

Human Factors (1980s-1990s)
- Task performance
- Information processing
- Usability / Laboratories
- Engineers / experts

Human Actors (1990s-2000)
- Collaboration and coordination
- Activity theory, distributed cognition...
- Contextual inquiry / real-life
- Workers (office settings mostly)

User Experience (2000 – now)
- Beyond ‘getting things done’
- Turn to embodiment, human values...
- Experiences (why – what – how)
- Anyone
Older-adult HCI research

... why should we care?

...and digital technologies (almost) everywhere

Older-adult HCI research is approximately a 30-year-old area

- Two seminal works
  - *The Handbook of Human Factors and the Older Adults* (Fisk and Rogers, 1997)
- Both argued that
  - age-related declines in functional abilities affect performance in a wide range of contexts
  - new interfaces, which make up for these declines, are needed
Older-adult HCI research can be divided into 4 core themes (1990-2018)

- **Compensate** for the impact of age-related declines in functional abilities on user interface design
  - Big icons, big letters…

- **Reduce** social isolation
  - Keep in touch with children and grandchildren

- **Help** older adults to live independently & age-in-place
  - Ambient assisted living, robots…

- **Design technologies specifically** targeted at them
  - Mobile phones, games…
Older-adult HCI research has not kept pace with waves of HCI research.

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**User Experience (2000 – now)**
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- Turn to embodiment, human values...
- Experiences / Empowerment
- Anyone
Older-adult HCI research in the early 21st century?

- Beyond declines
  - Gender
  - Creativity
  - Emotions
  - ...

- Beyond health
  - Volunteering
  - Religion
  - Smart cars
  - ...

- Beyond isolation
  - Programming
  - Digital making
  - Conversational UI
  - ...

- Beyond help
  - Empowerment
  - Co-creation
  - Culture
  - ...

Ageing
Live 3.0
ICTs
Research
Older-adult HCI research
a new perspective

- A *change of perspective* is needed to better understand, design, and evaluate older people’s interactions with digital technologies in the early 21st century.

- This perspective considers the **complexity** and **richness** of older people’s lives, ageing and digital technologies.


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Current research: building upon my previous research

- Almost **15 years** of older-adult HCl research (starting in 2004)

- **Web accessibility** and usability for older people
  - WCAG
  - Accessibility barriers in out-of-laboratory conditions

- **Ethnography of ICT use** by older people
  - Barcelona (3 y.), Dundee (2 y.), Madrid (6 m.)
  - Focused on communication
Current research: …from e-mail to content creation

- E-mail use (IJHCS, 2010)
- E-mail, Skype, blogs (IwC, 2011)
- Social sharing practices in YouTube (British HCI, 2012)
- Production and appropriation of digital videos (BIT, 2017)
Older people and digital games

Quick overview

- **Players or potential players**
  - But their relationship with digital technologies is far more complex

- **Digital games for older people**
  - Cope with age-related changes in functional abilities
  - Improve/enrich grandchildren–grandparent communication
  - Encourage broader social interaction

‘(...) when I was a kid, I played with dolls, alone and with my friends (...). This is what we did at that time, girls played girls’ games, and boys played games for boys (...). I’ve got good memories’ [70 year-old woman]
Older people and digital games: the trigger highlights an interplay of 3 aspects

How do remembered experiences of play of older women shape their attitudes towards playing gendered computer games (i.e., games with content and features biased towards stereotypical male or female characteristics) in their older adulthood?
Older people and digital games: related work focused on gender

- **Digital games and older people**
  - A hot research topic
  - Older players are genderless

- **Gender and games: from girls to adult women... to older women?**
  - First wave: *From Barbie to Mortal Kombat*
  - Second wave: *Beyond Barbie and Mortal Kombat*

- **Gender HCI: where are the older people?**
  - The user has remained genderless for years
  - Growing importance: from usability to user experience
Older people and digital games: 
the study

- WorthPlay project
- Participant observation
- EspacioCaixa Madrid
- 14 active older women
- Years of experience of using computers
- Variety of online games
Positive memories of playing gendered games

‘(...) when I was a kid, I played with dolls, alone and with my friends (...). This is what we did at that time, girls played girls’ games, and boys played games for boys (...). I’ve got good memories’

“this was the way it was in the Spanish society of the 1940-50s. Boys played boys’ games. No one expected to see a boy playing with dolls, or hopscotch, or skipping”.
Older people and digital games: highlights
Strong negative attitudes towards Barbie Fashion Designer

Why is the game in pink? Is it because it is for girls? And for boys, what, blue? I think this is very old, silly, and promotes stereotypical views of women, rooted in the past.

“We’ve all played with dolls, and we still play with them to some extent. I mean, this is something we, mums and grandmothers, have done at some point in our lives. The stereotypes are the problem. (...) I’m glad to see that these social norms, which belong to different times, are now more relaxed or broken. I like to see my grandson cooking and oldies learning to use computers”.
Older people and digital games: highlights

http://www.juegos-geograficos.com/
Positive attitudes towards games that project their ‘developed’ gendered identity

“How many points do you have? Ten thousand? Jeez, I’d better improve my answers”.

“I learned the rivers at school, and I can tell you that the game is wrong. This river doesn’t start there. I’ll look it up on Google and prove I’m not wrong!”
Older people and digital games: key finding & implications

- ‘Developed’ gendered identity
  - Reminiscences of play + life experiences + what it means for them to be a woman over the age of 60 in today’s society: keeping up with the times, being active and doing useful activities for themselves and others

- Some implications
  - Digital games that project gendered identity of players
  - Who are the older women players?
  - Usefulness, playability, or both?
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Programming and digital making

Two revolutions

- **Programming: two views, same idea**
  - Traditional view: write code
  - Alternative view: think like a programmer
  - A key skill in the 21st century (e.g. EU Code Week)

- **Digital making:**
  - Make what you can’t buy
  - Democratize technology
  - Empower consumers

https://makezine.com/
Programming and digital making

two revolutions that fall short of their ideals

Who are the makers? And the programmers?
- Children
- Undergraduate and graduate students
- Professionals

My motivation: to empower older active computers users with low levels of formal education, ensuring that they do not lag behind emergent computing revolutions
Programming and digital making
let me focus on the former now

- **Entry to making**
  - Writing code and/or thinking like a programmer are needed skills to engage in digital making practices that entail creating or modifying software and tangible digital artifacts

- **Key related reference: a CHI 2017 paper**
  - *Older Adults Learning Computer Programming: Motivations, Frustrations, and Design Opportunities*, by Philip J Guo
  - Highly-educated/professionals older people
Programming and digital making
an in-person programming learning course

- 3 months
- 6 older active computer users with low levels of formal education
- In AGORA, an adult educational center in a working-class neighborhood
- Programming in Java
Programming and digital making

Some highlights

- **Motivation for learning to program**
  - know more about computers (computational literacy)
  - use this knowledge to communicate better when needed
  - create useful or interesting applications for them

- **Main learning frustrations**
  - cognitive (from a task to a program)
  - deal with syntax and run-time error messages

- **Scratch?**
  - No! It clashes with their identity
Programming and digital making

Some highlights

- **Emotional programming**

  “I’m sweating. Geez! This is really annoying. It says there is an error, on that line, but I don’t see it. Where is the damn error? This programming thing is very picky (…)”.

- **Main learning frustrations**
  - cognitive (from a task to a program)
  - deal with syntax and run-time error messages

- **Stack Overflow**
  - Trust and privacy??
Programming and digital making

Some implications

- **Different motivations, similar frustrations**
  - Make up for missed learning opportunity vs. computational literacy

- **Young and older novice programmers might not be so different as we might think**
  - Error messages are an important issue

- **From tools to community**
  - Not only intuitive programming tools...
Programming and digital making

Current work

- **3D printing**
  - TinkerCAD
  - FreeCAD
  - Cura

- **Programming**
  - Arduino
  - Python
  - Computational narratives

https://agora4.org
Some readings related to this second part


Thank you! And keep in touch

- **Thanks**
  - Dr. Carlos Duarte
  - Dr. José Coelho (congrats!)
  - Faculdade de Ciências da Universidade de Lisboa

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