Today’s Class

- Gerontechnology Overview
- Class and Syllabus Details
- Service Learning Details
Introduction to Gerontechnology
Did you know...

• Everyday in the United States
  • 6,000 Americans celebrate their 65th birthday
  • 3,800 Americans celebrate their 85th birthday

• American seniors now outnumber the entire population of Canada: currently at 35 million people
By 2030, 1 in 5 Americans will be age 65 or older; with average life expectancy of 81 years.
# The Changing Nature of Population Pyramids

The demographic transition of developing nations

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
<th>Stage 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>High death rate.</td>
<td>Falling death rate.</td>
<td>Low death rate.</td>
<td>Low death rate.</td>
</tr>
<tr>
<td>Rapid fall in each upward age group due to high DR.</td>
<td>Fall in DR so more people living into middle age.</td>
<td>An increasing proportion of the population is in the 65+ age group.</td>
<td>Higher dependency ratio.</td>
</tr>
</tbody>
</table>

**Niger** | **Haiti** | **Morocco** | **Australia**
Pillars of Successful or: “Good” Aging

- Healthy nutrition
- Daily physical exercise
- Regular cognitive and mental activities
- Maintaining social contacts inside and outside the family
- Keeping an active interest in society
# Age-related Changes

- Smell & Taste
- Vision & Hearing
- Muscle Mass, Strength & Mobility
- Cognition
- Functional abilities
- Age-related Diseases

<table>
<thead>
<tr>
<th></th>
<th>Middle-Aged</th>
<th>Young-Old</th>
<th>Old-Old</th>
<th>MCI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>54.55</td>
<td>67.14</td>
<td>80.00</td>
<td>70.86</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>16.95</td>
<td>16.91</td>
<td>16.77</td>
<td>15.56</td>
</tr>
<tr>
<td><strong>Activities Score</strong></td>
<td>11.18</td>
<td>13.55</td>
<td>16.45</td>
<td>18.04</td>
</tr>
</tbody>
</table>

8 scripted tasks:
- Fill medicine dispenser
- Watch a DVD
- Water plants
- Talk on phone
- Write birthday card
- Prepare a meal
- Sweep and dust
- Select an outfit
Let's try this
Nearly 45% of individuals age 85 and older are estimated to have Alzheimer’s disease.

At least 800,000 of the 5.4 million people in the US that have AD live alone in the community.
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At least 800,000 of the 5.4 million people in the US that have AD live alone in the community.
Care-partners of individuals with AD experience higher levels of emotional distress and physical health problems than other care-partners and non care-partners.
All stakeholders in the Circle need new tools.
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Consider needs of all members of the aging population: the sick, the frail, the healthy, the professional caregivers, the informal caregivers.
Gerontechnology

- Interdisciplinary academic and professional field
  - Gerontology
  - Technology

- Use technology to study aging
- Design technology to provide solutions to deal with the challenges of aging

- Relatively young field, emerged in 1990s

- Very multidisciplinary!
WSU History of Gerontechnology

Gerontology
- Neuropsychological tests
- Memory notebook

Technology
- Smart Home in a Box
- Activity recognition / prediction

Gerontechnology
since 2007…
- Automated health diagnosis
- Automated intervention
- Automated impact analysis for different technologies
What we offer you in this class

• **Classroom training**

  • Research methods
  • Smart environments
  • Sensors
  • Machine learning
  • Activity recognition
  • Ethics
  • Aging and senses
  • Aging, mobility, and exercise
  • Aging, cognition, and everyday function
What we offer you in this class

• Guest speakers

• Intervention compliance
• Technology acceptance
• Clinician in the loop smart homes
• Memory and thinking
• Iterative design
• Working with rural communities and Indian reservations
• Designing training interfaces for individuals with disabilities
• Sleep, circadian rhythms, learning, and memory
What we offer you in this class

• Other unique components

  • Service learning
  • Multidisciplinary team projects
  • Working with smart watches and machine learning toolset
• Service learning project
• Critical questions
• Summaries of guest speakers
• Homework assignment
• Research project
• Participate in class!
Gerontechnology I
Fall 2017
Tuesdays / Thursdays 9:10 – 10:20

Course Instructors

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Course Web Page

The class web page is available at http://eecs.wsu.edu/~cook/gt1. Most of the class materials are available online, including the syllabus, homework assignments, papers, and lecture materials. Instructional materials can be accessed at this web page.

Catalog Course Description

Psych 485 / CptS 485 Gerontechnology I 3 Course Prerequisite: Certified in major or consent of instructor.

Required Instructional Material

Given that this is an emerging area of study, there are no available textbooks that fully cover the integrated aspects of the course material. Instead, students will be reading original research articles as well as book chapters to develop both breadth and depth in the subject matter of Gerontechnology. A list of reading materials that may be updated to include additional readings can be found at the end of the course syllabus. There are a few Gerontechnology books that are available as optional resources, these are listed at the end of the syllabus as well.

Course Overview

In this class, we will introduce the principles of Gerontechnology, an interdisciplinary field that combines gerontology and technology. The class will consist of lectures, group discussion, guest presentations, an experiential component working with older adults, and a multi-disciplinary research project. It is assumed that students enrolled in Gerontechnology I will also register and complete the follow-on class in the spring, Gerontechnology II. Following completion of this course, students should (1) have an understanding of the major topics of research in Gerontechnology, (2) have a basic understanding of the aging process and research methodology in aging, which will provide the foundation for development of assistive technologies, (3) have a working knowledge of basic technologies that are used to monitor, assess and assist the health of older adults, and (4) have gained experience working with older adults and in multi-disciplinary research teams.
Grade = 0
Dr. Cook talked today in class. She gave an overview of Gerontechnology. Her talk was very informative.
Dr. Cook talked today in class and gave an overview of Gerontechnology. This overview included a motivation of why it is important to design and study technologies to assist with aging. (detail about relationship with other class discussions here)
Dr. Cook talked today in class and gave an overview of Gerontechnology. This overview included a motivation of why it is important to design and study technologies to assist with the challenges of aging. (detail about relationship with other class discussions here)

This discussion raises questions on the extent to which technology can address aging challenges. Can technology allow individuals to remain functionally independent in the face of debilitating diseases such as Alzheimer’s? What is the limit of the benefits for current technology?

One point that was not discussed in the lecture was what types of devices are considered technology. For example, eyeglasses, wheelchairs, grab bars, and bath mats currently help older adults. The boundaries of assistive technology may very well move over time.
Dr. Fritz’s paper described a method for identifying health events from smart home sensor data. What types of health events cannot be detected from this type of data?
Submission through Blackboard