



Megatrends in Digital Rehabilitation

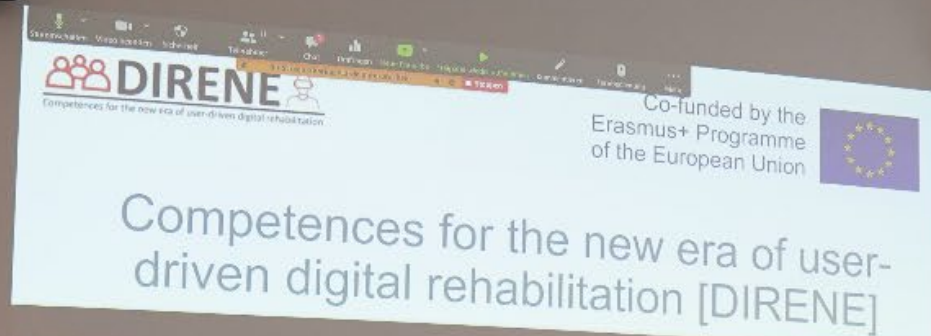
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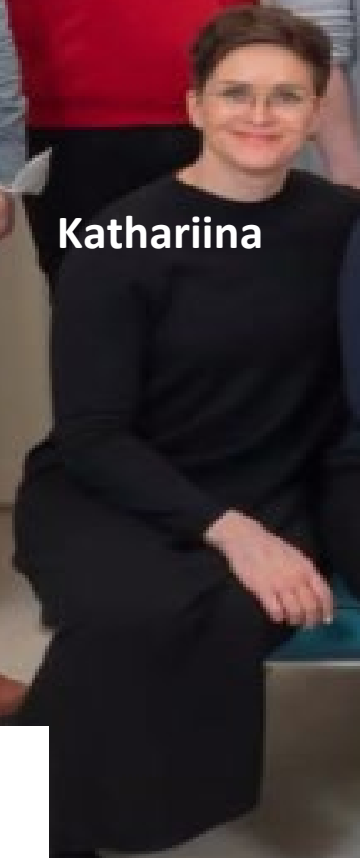
Kathariina

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- Prof. Dr. Christian Grüneberg
- Head of the Physiotherapy Division at Hochschule für Gesundheit, Bochum
- Research Interest: Geriatrics, implementation science, innovationdigital rehabilitation, health literacy



- Angela Arntz (M.Sc.)
- Scientific Co-worker at Hochschule für Gesundheit, Bochum
- Research Interest: Geriatrics, implementation science, digital rehabilitation, health literacy



What are the Megatrends in Digital Rehabilitation?



Digital Rehabilitation

- Digital rehabilitation includes a set of interventions using digital tools, technologies and services to optimize functioning, reduce disabilities and monitor and evaluate the health status of people with health problems [\[WHO, 2021\]](#).
- It is not only the tools that are used in rehabilitation, the **whole process is digitally driven.**



Scoping Review - Methodology [Arksey and O'Malley revised by Levac, 2005]

1. • Identifying research question
2. • Identifying relevant studies
3. • Select relevant studies
4. • Extracting data
5. • Charting data
6. • Consultation with stakeholders



Scoping Review- Research questions [RQs]

RQ1

Which **megatrends** can be identified for digital rehabilitation for the future?

RQ2

What kind of **new and emerging digital technologies** in **home-based rehabilitation** does exist?

RQ3

Which **prototypes** support the use of **new and emerging digital technologies** in **home-based rehabilitation**?

RQ4

How does the **Covid-19 pandemic** influence the process of digital technology for digital rehabilitation?



Scoping Review – Methodology



Scientific database search



Grey literature search in all countries of the consortium



Stakeholdermeeting in Germany, Finland, Austria and Greece



Scoping Review – Methodology

- Scientific data base search in August 2021 | Last update: February 2022
- Search timespan: 2015- current



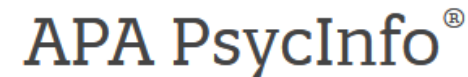
2.216



4.188



2.511



208




520

9.643

- After screening by two reviewers, relevant references: **2.439**



Scoping Review - Scientific database search

- Bibliometric software  **VOSviewer** was used to **visualize** and **analyze** trends in the form of bibliometric maps [\[van Eck & Waltman, 2010\]](#).
- Ability to work efficiently **with large data sets** and provide a **variety of interesting visuals, analyzes and investigations** [\[van Eck & Waltman, 2010\]](#).
- In this research, VOS viewer was used for bibliographic **analyzing of text data.**



Question to the audience

What kind of **technologies** are you using in your **private** life?

- Go to [mentimeter.com](https://www.mentimeter.com) and enter the code: **18536110**
- Keep it short and simple!
- **Keep in mind: We won't grade you!**



See the results





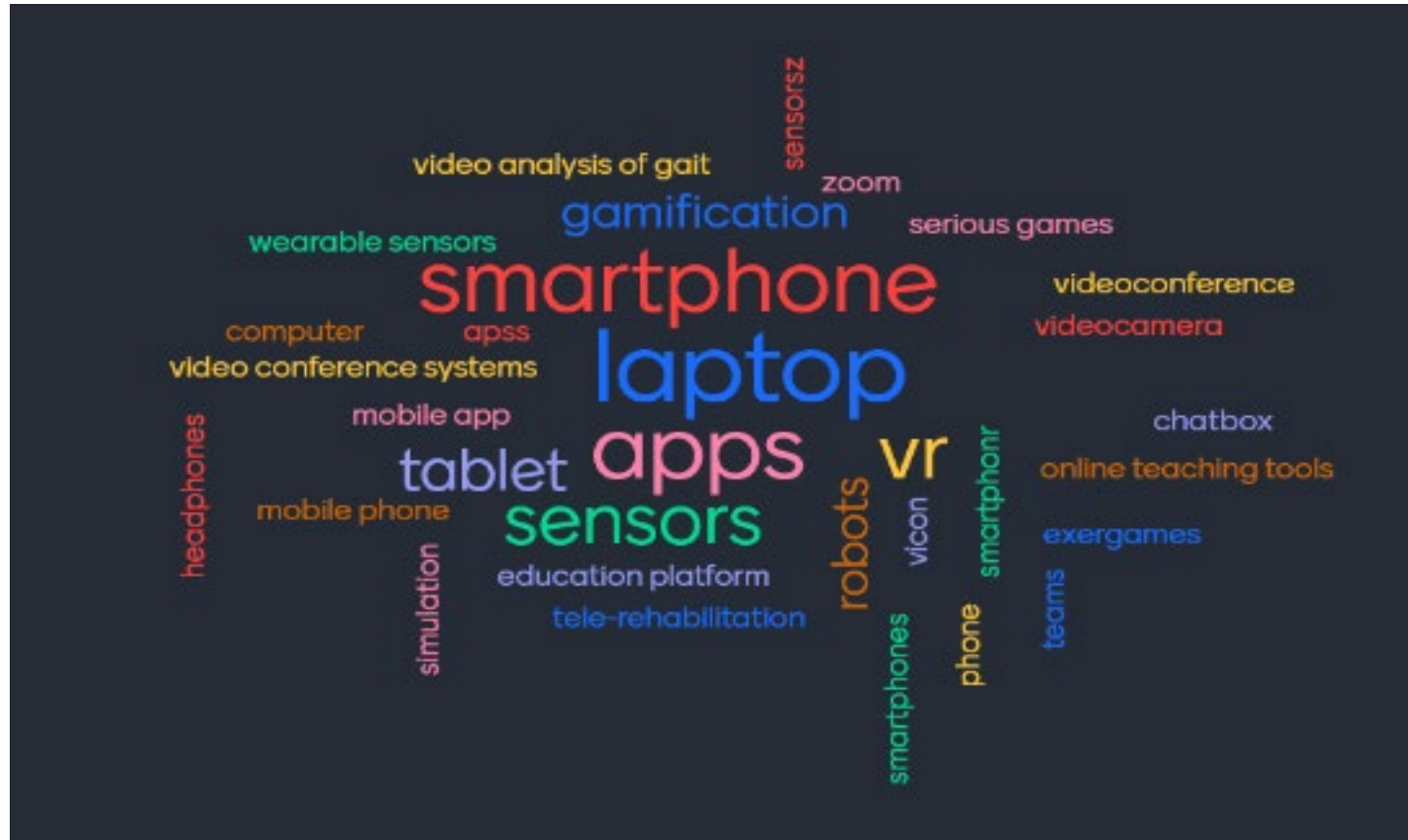
Question to the audience

What kind of **technologies** are you using in your **working** life?

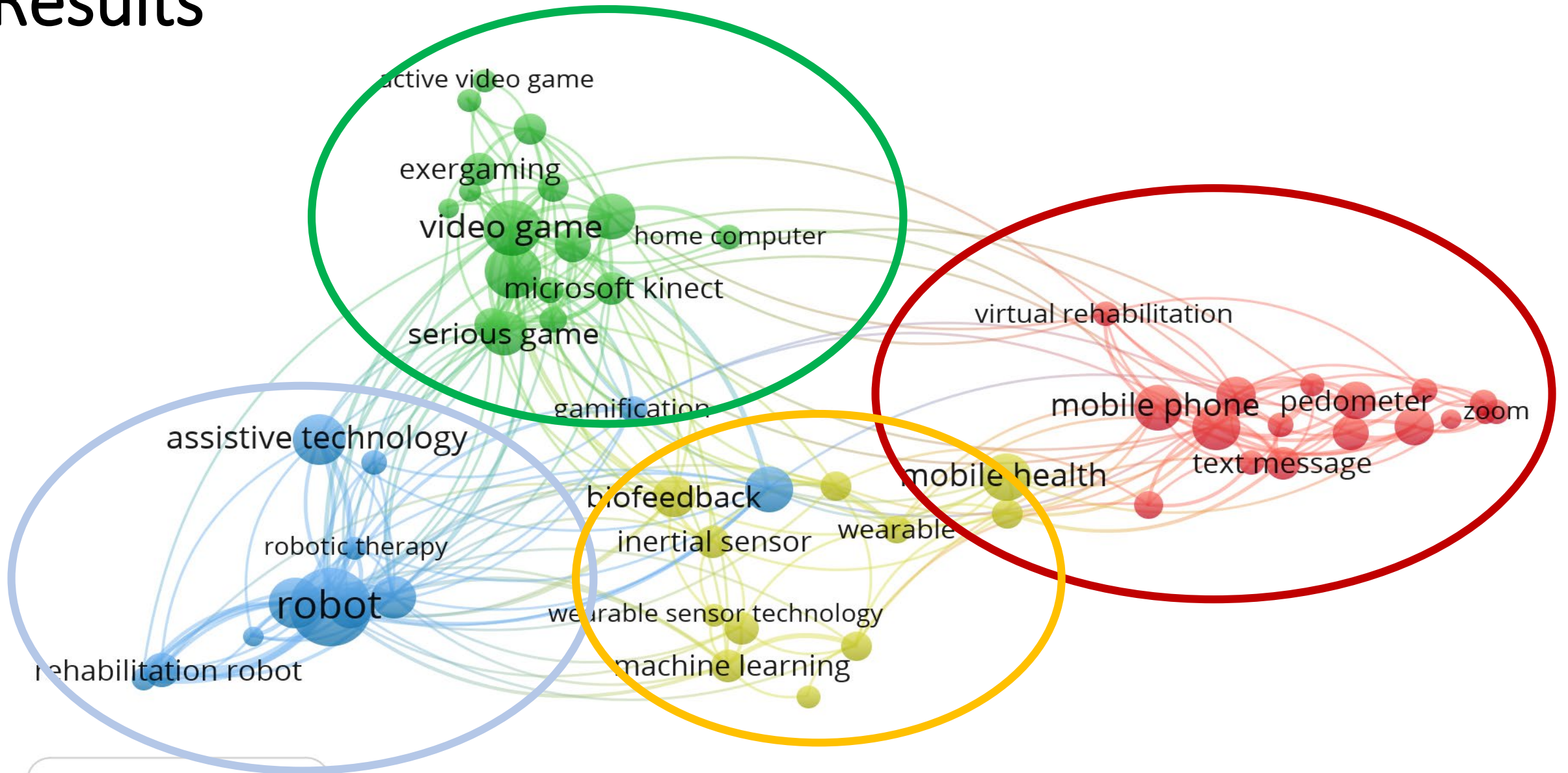
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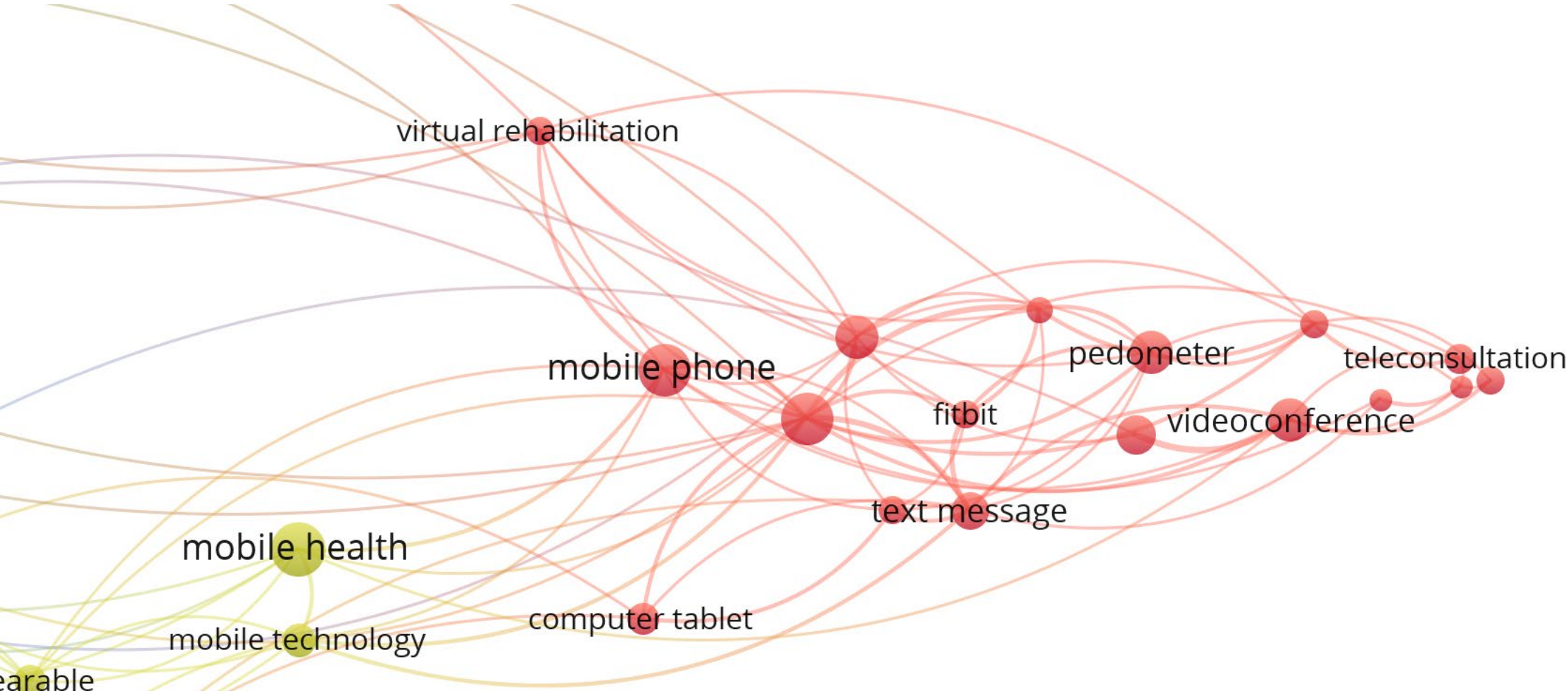
See the results



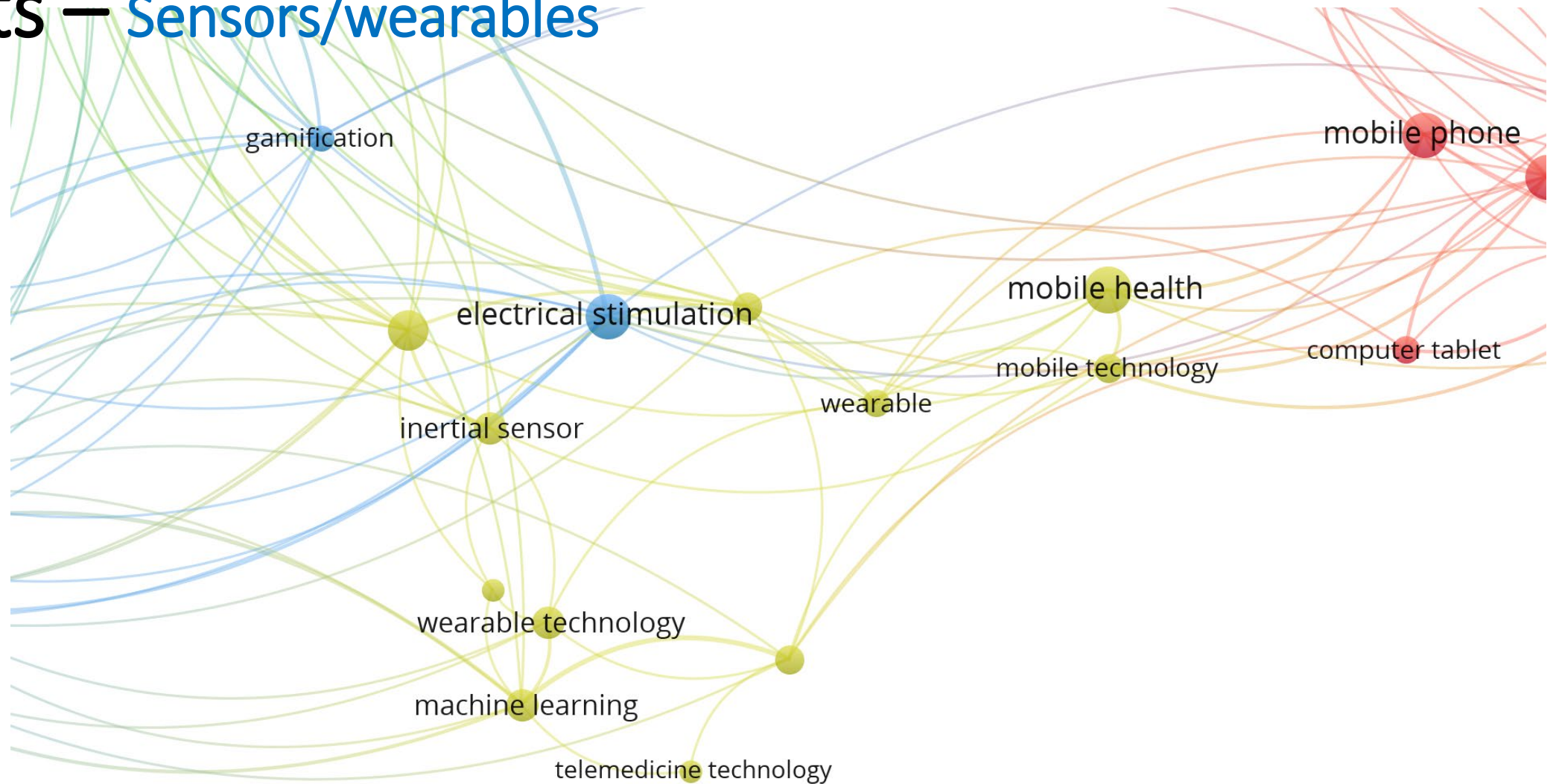
Results



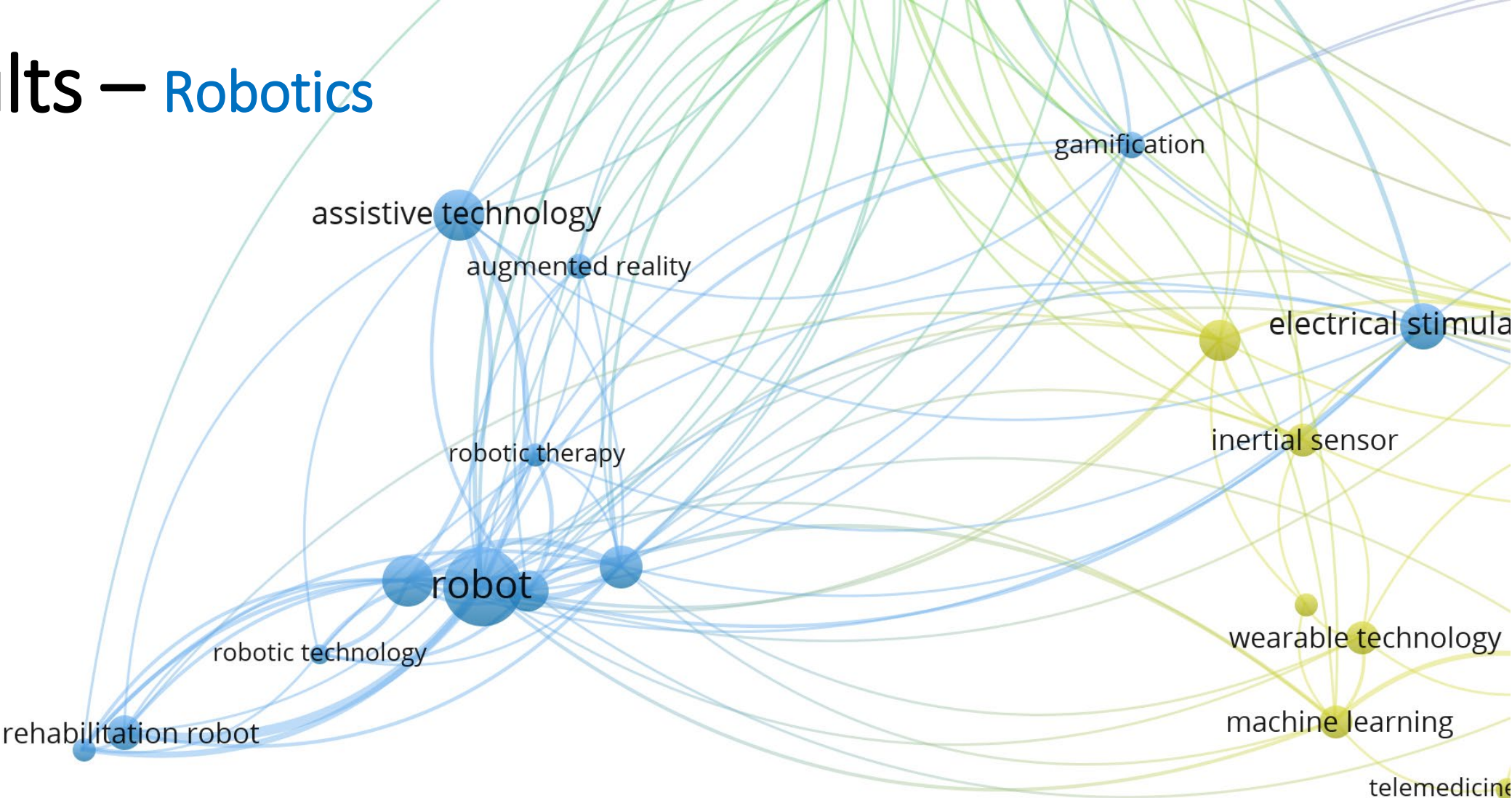
Results – Mobile applications



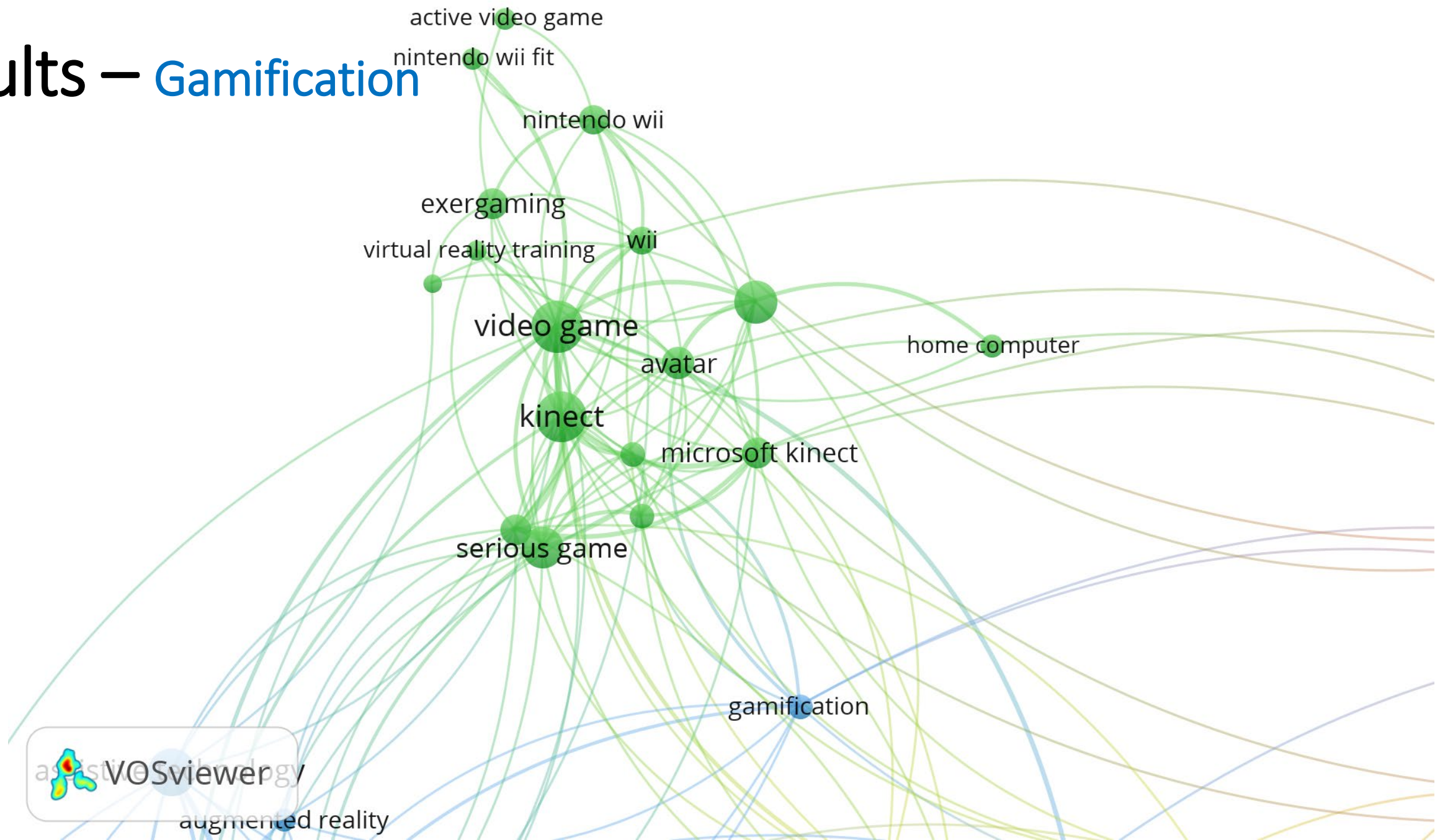
Results – Sensors/wearables



Results – Robotics



Results – Gamification





Results – Grey Literature/Stakeholdermeeting

Big Data

Mobile applications

Sensors

Robotics

Chatbots

Artificial intelligence

Wearables

**3-D-
printing**

Brain-computer-
interfaces

Metaverse

Serious Gaming/
Gamification

Virtual/Augmented/
Mixed Reality

Internet of
Things





Discussion

1. What is the most relevant megatrend in digital rehabilitation **in your opinion?**
2. What kind of the **presented megatrends** would you embed in **your working life in future?**
3. How can you **overcome barriers** in using some of the presented technologies in your working life?