Please read the following text carefully.

Afterwards we will ask you to draw a CAM around the predefined knotpoint:
"Which risks and benefits come to your mind when considering the use of socially assistive robots (SAR) for therapy, elderly care, education or as social companions?"

——————————— First Page in Experiment ———————————

Socially assistive robots (SAR) are increasingly used in social assistive tasks, such as therapy, elderly care, education and as social companions. Socially assistive robots (SAR) are designed to provide assistance to human users through social interaction. Their purpose is to create close and effective connections and interactions with human users in order to support rehabilitation, enhance learning, or offer companionship to those who are isolated.

While socially assistive robots (SAR) are still in the development phase, it is important to consider the ethical aspects (risks and benefits) of these technologies.

——————————— Second Page in Experiment ———————————

Socially Assistive Robots (SAR)

Benefits of socially assistive robots (SAR) might be:

- Serve as companions for individuals who are socially isolated or have limited social interaction, such as the elderly or those living in remote areas
- Increase social interaction, for example by serving as a social companion for individuals with autism, assisting them to recognize and understand emotions in others, which can enhance interpersonal communication skills
- Support educational activities and learning, particularly for children with special needs or learning difficulties

Possible risks of socially assistive robots (SAR) might be:

- Users may develop a dependency on the robot, particularly if it provides significant support or assistance with daily activities
- The use of socially assistive robots (SAR) might lead to unemployment, as robots might replace humans at the workplace (for example as therapists)
- Human-robot interactions may influence human-human interactions, as they can shape our expectations, behaviors, and perceptions in social settings

——————————— Third Page in Experiment ———————————

Currently, the development of socially assistive robots (SAR) is still in the development phase. You can contribute to the development of ethically safe socially assistive robots (SAR). As we proceed, we will ask you to consider risks and benefits regarding socially assistive robots (SAR) and to draw a CAM around the knot point: *"Which risks & benefits come to your mind when considering the use of socially assistive robots (SAR) for therapy, elderly care, education or as social companions?"*

Please read the following information on soft robots carefully.

Afterwards we will ask you to adjust your CAM.

——————————— First Page in Experiment ———————————

Currently, there is a trend towards using a new type of so-called soft robots as socially assistive robots for therapy, elderly care, education or as social companions. Soft robots are designed to mimic the properties of living entities such as animals. Unlike rigid robots, which are typically composed of hard materials like metal or hard plastic, soft robots do not have electronic devices in themselves and are made of flexible soft materials like silicone, making them more adaptable and lifelike. They often have natural shapes and can bend, twist, and stretch like living organisms, such as snakes or octopi. Designed with inspiration from living entities, these soft robots often look and feel more lifelike than rigid robots.

Furthermore, soft robots have the ability to express and perceive human emotions, communicate through expressions such as gaze and gestures, and offer a life-like experience due to their softness and flexibility. For example, Paro, a robot for animal therapy in nursing homes, looks like a baby harp seal and has soft white artificial fur, responds to stroking or even harsh petting by moving its tail and opening/closing its eyes.

——————————— Second Page in Experiment ———————————

Socially Assistive Soft Robots (SASR)

Benefits of socially assistive soft robots (SASR) might be:

- Support educational activities and learning, particularly for children with special needs or learning difficulties
- Increase social interaction, for example by serving as a social companion for individuals with autism, assisting them to recognize and understand emotions in others, which can enhance interpersonal communication skills
- Less likely to cause injury during physical interactions because of their softness

Possible risks of socially assistive soft robots (SASR) might be:

- Users may become overly reliant on the robot for emotional support or companionship, potentially reducing their engagement with human social networks
- Human-robot interactions may influence human-human interactions, as they can shape our expectations, behaviors, and perceptions in social settings
- The use of socially assistive soft robots (SASR) might lead to unemployment, as robots might replace humans at the workplace (for example as therapists)

Given the information on soft robots, we invite you to **adjust** your CAM regarding the risks and benefits of utilizing socially assistive soft robots (SASR). We are interested in knowing if the softness or rigidity of a robot influences your evaluation of its suitability for socially assistive tasks, based on the information available on soft robots.

Please read the following text carefully.

Afterwards we will ask you to draw a CAM around the predefined knotpoint:
"Which risks and benefits come to your mind when considering the use of robots in search and rescue missions?"

——————————— First Page in Experiment ———————————

Rescue robots are a relatively new field of technology designed to search and rescue human beings in disaster situations (earthquakes, collapsed buildings, contaminated areas, etc.). Rescue robots, including drones and ground robots, can operate in dangerous and contaminated areas that are otherwise inaccessible to human rescuers. By performing tasks such as visually inspecting damaged structures, searching for victims, creating maps of the affected area, clearing debris, delivering essential supplies, and autonomously assisting in the rescue of victims, these robots can enhance the efficiency and effectiveness of rescue operations.

While robots for search and rescue are still in the development phase, it is important to consider the ethical aspects (risks and benefits) of these technologies.

Robots for Search and Rescue Missions

Benefits of robots for search and rescue missions might be:

- Access to areas unreachable or too dangerous for human rescuers
- Consistent and reliable performance, especially for tasks that require precision and accuracy
- Autonomous rescue capabilities, allowing robots to carry and transport victims to safety

Possible risks of soft robots for search and rescue missions might be:

- Algorithms guiding soft robots may be biased, leading to unfair or discriminatory outcomes, regarding (i) where to concentrate rescue efforts, (ii) whom to search for first, (iii) who should be given priority treatment, (iv) who must be left to wait
- The level of autonomy in SAR operations might raise the question, if remote control of robotic operations is preferable to full autonomy in precarious situations
- Rescue robots could be misused, particularly in conflict zones for activities such as bomb deployment.

Currently, the development of robots for search and rescue missions is still in the development phase. You can contribute to the development of ethically safe robots for search and rescue missions. As we proceed, we will ask you to consider risks and benefits regarding robots for search and rescue missions and to draw a CAM around the knot point: *"Which risks & benefits come to your mind when considering the use of robots in search and rescue missions?"*

Please read the following information on soft robots carefully.

Afterwards we will ask you to adjust your CAM.

——————————— First Page in Experiment ———————————

Currently, there is a trend towards using a new type of so-called soft robots for search and rescue missions. Soft robots are a new kind of robot which are designed to mimic the properties of living entities such as animals. Unlike normal robots, which are typically composed of hard materials like metal or hard-plastic, soft robots do not have electronic devices in them and are made of flexible, soft materials like silicone. They often have natural shapes and can bend, twist, and stretch like living organisms, such as snakes or octopi. Designed with inspiration from living entities, these soft robots often look and feel more lifelike than rigid robots.

One notable hybrid soft robot for search and rescue missions is the 20m long RoBoa from ETH Zürich. This robot is a hybrid, combining a soft body with a head-mounted camera for enhanced capabilities. Its snake-like design allows it to glide through narrow spaces and navigate unstable ruins. RoBoa can detect victims and deliver water and liquid nutrition through a pumping system. Though it could be equipped with artificial intelligence for autonomous navigation, it currently relies on a camera embedded in its head to transmit visuals to a tablet, allowing rescue workers to control the robot remotely.

——————————Second Page in Experiment——————————

Soft Robots for Search and Rescue Missions

Benefits of soft robots for search and rescue missions might be:

- Access to areas unreachable or too dangerous for human rescuers
- Delivery of essential supplies (water, food, medicine) until victims are safely extracted
- Reduced risk of injury to victims due to their flexibility and adaptability

Possible risks of soft robots for search and rescue missions might be:

- Algorithms guiding soft robots may be biased, leading to unfair or discriminatory outcomes, regarding (i) where to concentrate rescue efforts, (ii) whom to search for first, (iii) who should be given priority treatment, (iv) who must be left to wait
- The soft and adaptable nature of soft robots could potentially create challenges in ensuring the safety and reliability of the robot in hazardous environments
- Rescue robots could be misused, particularly in conflict zones for activities such as bomb deployment

——————————— Third Page in Experiment ———————————

Given the information on soft robots, we invite you to **adjust** your CAM regarding the risks and benefits of utilizing soft robots for search and rescue missions. We are interested in knowing if the softness or rigidity of a robot influences your evaluation of its suitability for search and rescue missions, based on the information available on soft robots.