Prolonging and preserving quality of life are new challenges for individuals, families, and societies. As the number of people in need of assistance increases every year, Quality of Life Technology (QoLT) will transform lives in a large and growing segment of the population: people with reduced function due to aging or disability.

Technologies developed by the QoLT Center will enable people to live more independently, pursue individual goals and more fully participate in society. Future compassionate and intelligent QoLT systems range from individual devices to technology-rich environments that will monitor and communicate with people, understand their needs and provide safe, reliable and welcome assistance by compensating or substituting for diminished natural human capabilities. In addition, increasing gainful employment of people with disabilities and reducing the need for managed care of seniors will have profound impacts on personal finances and national, state and local economies.

Research
Under the emerging QoLT discipline, technical discoveries in sensing, perception, robotics, machine learning, communications and miniaturization are matched with the latest advances in rehabilitation and geriatrics to develop new capabilities for improving lives. A new scientific and engineering knowledge base results - enabling the systematic development of human-centered intelligent systems.

The QoLT Center team has world-class strengths in robotics, rehabilitation engineering and related clinical areas. But we also pursue authentic ground truths in real environments. Our prototypes and hypotheses are evaluated with the help of strategic partners in independent living programs, nursing homes, vocational rehabilitation centers and other real-world testbeds to understand the full impact of quality of life technologies on individuals, healthcare enterprises and society as a whole.

Education
Our goal is to create a growing community of engineers, scientists, practitioners and consumers who are intellectually prepared and motivated to create, assess and apply technology that benefits people with disabilities and older adults. Our education activities target virtually everyone: K-12, undergraduate, graduate, postgraduate, industry, end-users and the general public.

We participate in and produce workshops, symposia and conferences on QoLT-related themes for a wide audience, particularly prospective end users and support providers. These activities serve to increase awareness of quality of life technologies among those stakeholders and to inform our research about their needs and requirements.

Partnerships
We have formed a consortium of companies, practitioners and other universities who share in our vision. Members represent such diverse interests as assistive technology, medical goods and devices, information technology, robotics, consumer electronics, and health services and work together to solve the difficult challenges ahead.

Consortium members actively participate in the Center and shape our long- and near-term research agendas. They enjoy facilitated access to the Center’s faculty, students, test sites, and end-users. Through unique licensing programs, members can quickly translate the Center’s research results into product or practice.
**Research Thrusts**
Interrelated projects advancing engineering knowledge in human activity measurement, machine cognition, and man-machine symbiosis

**Person & Society**
Ensures contextual dimensions are considered throughout device conception, design, development and commercialization

- End User Consultation
- QoLT Policy & Adoption Studies
- Cost Benefit Analyses
- Trust in Remotely Acquired Data

**Perception & Awareness**
Gives QoLT systems the intelligence to be responsive to users and their environments

- Learning
- Sensing
- Recognition
- Embedded Functional Assessment

**Mobility & Manipulation**
Affords end users greater safety and control in physical assistance

- Soft Robots
- Intuitive Interaction
- Mobile Manipulation
- Understanding Humans

**Human System Interaction**
Makes QoLT respond dynamically to humans, environments and circumstances

- User Engagement
- Emotion Recognition
- Personalized Social Coaching
- Interaction Prediction

**Testbed Systems**
Integrated prototypes that are deployed and tested in real-world settings

**Virtual Coach**
Cognitive assistance based on the awareness of a person’s activities and abilities

**Home & Community**
**Health & Wellness**
Perceptive environments that support physical, mental and emotional state

**QoLTbots**
Next generation robotic devices for human assistance and extension

**Safe Driving**
Technologies to assess and enhance operation of motor vehicles

**Cross-Cutting Efforts**

**Grand Challenge Dataset**
A growing database of sensor data and learning algorithms to measure human activity

**Natural Environment Proving Grounds**
Acquisition of human activity data and field testing of QoLT prototypes in real-world residential settings