

USF is a **TOP 25** public research university

USF Awarded **9,349** Bachelor's Degrees, **3,195** Masters Degrees, and **703** Research and Professional Doctorals in 2015/2016

USF is ranked **9th** in the **NATION** and **21st** **WORLD-WIDE** for granted U.S. patents

The Department of Mechanical Engineering awarded **136** BS Degrees, **20** MS Degrees, and **5** PhDs in 2015

The Department of Mechanical Engineering spent **\$3.6M** in 2013 on research

Vision

To be a leader in global collaborative research, education and service for improving the quality of life of individuals with impairments and functional limitations due to aging and disability.

Mission

To improve the quality of life, and increase independence and community reintegration of individuals with reduced functional capabilities through research, education and service in assistive, rehabilitation, and robotics technologies.

CARRT Sites

Rehabilitation Robotics & Prosthetics Testbed

Motion Analysis Lab

Assistive & Rehabilitation Robotics

Haptics and Circuit Design

Simulation & Virtual Reality

CAREN Virtual Reality System

Design for X Labs

Collaborative, Open Makerspace Lab

Machine Shop

Fully Equipped and Staffed Machine Shop

Collaborators



CARRT
researchers
published **8** peer
reviewed journal
articles in 2016

CARRT
researchers
presented **16**
papers in 2016

CARRT
researchers
submitted **15**
grant proposals
and were
awarded **4** grants
in 2016

In 2016, **\$2.1M** in
research dollars
was generated
from external
funding by
CARRT
researchers

CARRT filed **4**
invention
disclosures,
generated **3**
patents, and
commercialized **1**
product in 2016

Value Proposition

- Assistive technology development and prototyping
- Customer discovery through our Vocational Rehabilitation clients
- Testing of products in virtual and augmented reality

Objectives

- 1** Research: To conduct cutting edge research and development in assistive, rehabilitation, and robotics technologies.
- 2** Education: To develop highly skilled, high wage workforce and provide technology-related mentoring services to K-12 students and teachers.
- 3** Service: To provide technical assistance and offer rehabilitation engineering technology referral and advising services.
- 4** Dissemination and Technology Transfer: To publish technical papers, conduct workshops, seminars and conferences and apply for patents.

Projects and Technology



Computer Assisted Rehabilitation Environment

- Rehabilitation of Human Balance System
- Virtual Reality Environments
- Motion Platform
- Orthopedic, Neurological, & Rehabilitation Use

Wheelchair Mounted Robotic Arm

- 7-Joint Robotic Arm
- Increase Activities of Daily Living
- Task-Oriented Control
- Brain-Computer Interface



Virtual Reality for Vocational Rehabilitation

- Vocational Training and Assessment
- Adaptable and Motivating Environment
- Layered 3D Virtual Reality Simulation
- Job Placement