New England Robotics Validation and Experimentation (NERVE) Center

**Improve sales**
Bring potential customers or sponsors to the NERVE Center to demonstrate your robot performing many different tasks, all in the same space.

**Train your customers**
The NERVE Center offers conference areas and robot courses that you can use to teach customers how to use your system.

**Push the limits**
Whether during your development phase or for final validation, the courses at the NERVE Center can be used to measure the capabilities of your robots.

**Network and expand your knowledge**
Meet with other robotics engineers and researchers at NERVE Center events like our speaker series, short courses, and open houses.

**Prototype new systems**
Develop parts for your robot system using the NERVE Center’s 3D printer and laser cutter.

**Collaborate**
Help to develop the next generation of test courses and methods for robot systems.

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**What is the NERVE Center?**

The NERVE Center at the University of Massachusetts Lowell is a dedicated research, training, and testing facility, directed by Professor Holly Yanco. Our mission is to improve the development of robotic systems by academia, corporations, and government agencies by facilitating evaluation throughout the design cycle. The NERVE Center’s research includes the development of metrics and standards for robot evaluation. We also aim to foster a community interested in the improved development of the next generation of robot systems.

The NERVE Center is the only comprehensive indoor site for robot experimentation and validation in New England, within an hour’s drive of more than 80 robotics companies and 10 universities that conduct robotics research. The NERVE Center’s 10,000 square foot testing space houses a variety of robot courses, including replicas of the National Institute of Standards and Technology’s (NIST) Standard Test Methods for Robots, water courses designed in collaboration with the Army, and a variety of indoor and outdoor terrains. The courses in the NERVE Center push the limits of mobility, manipulation, and autonomy across a host of application domains, including manufacturing, military, and disaster response. The facility is outfitted with a video camera system for recording and NERVE staff members are available to collect data during testing and training sessions.
How to Use the NERVE Center

The NERVE Center’s services can be reserved through the UMass Lowell Core Research Facility (CRF) system. As a user you will also have access to all other CRFs at UMass Lowell. Register for an account at nerve.uml.edu/crf

Testing Services

Reservation of test courses is available in full or half day sessions for exclusive usage of the entire facility or by the hour for shared use.

- During Exclusive usage, the entire facility is available for use, protecting your intellectual property and keeping your product performance private. Quad-screen video recording and data collection is included in Exclusive Use.
- During Shared usage, there may be up to four simultaneous users in the space and apparatuses are reserved by test suite: Mobility Terrain, Mobility Obstacles, Manipulation, or Water. Quad-screen video recording and data collection by NERVE staff is only available during Assisted Use.

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For more information on the test apparatuses available at the NERVE Center, see nerve.uml.edu/test-courses

Prototyping Services

The NERVE Center houses a 3D printer and laser cutter that can be used to develop and prototype custom parts.

- **Stratasys Eden 260V**
  - 10" x 9.9" x 7.9" build
  - 16 micron layer thickness
  - Prints rigid plastic-like and soft rubber-like materials
  - Costs determined per gram

- **Universal Laser PLS6.150D**
  - 32" x 18" cutting bed
  - Dual 60 watt lasers
  - Cuts and etches acrylic plexiglass
  - Costs determined by time to cut and object dimensions

To inquire about cost estimates on 3D printing and laser cutting, government and academic rates, becoming a member, or for more information contact Adam Norton, NERVE Center Manager, at NERVE@cs.uml.edu or 978-934-6600.

Mission-based scenarios for testing and training

The courses at the NERVE Center can be used in a variety of ways for your testing or training needs. Different terrains and environments can be used in succession to emulate real-life scenarios. A series of false walls are also available to divide the space into multiple rooms, hallways, and doorways, which can be used for mapping, autonomous navigation, and search-based mission simulations.

Below are some example configurations for mission-based scenarios. We can also customize the space to fit your needs.

NERVE Center Membership

**Principal** membership costs $5,000 annually and includes:

- Testing and prototyping services at the discounted member rate
- One representative on the Industrial Advisory Board
- Two admission tickets to all NERVE Center events, including lectures, courses, and the semi-annual research meeting
- Access to metrics and test courses developed at the NERVE Center prior to their finalization, with the ability to provide feedback
- Ability to host functions at the NERVE Center, contingent on availability (member must cover cost of function)
- Name and/or company logo on the membership page of the NERVE Center website

**Associate** membership is available for companies with 50 or fewer employees, costs $1,000 annually, and includes:

- Prototyping services at the discounted member rate
- One admission ticket to all NERVE Center events and meetings, including the semi-annual research meeting
- Name and/or company logo on the membership page of the NERVE Center website

For a current list of members and users: nerve.uml.edu/affiliates

Real robots, validated and tested in real environments by people who are not trying to make your robot work, but who are trying to challenge the designers to make the robot better, is what this industry needs.

— Colin Angle, CEO and Co-Founder, iRobot

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