

Autonomous Systems

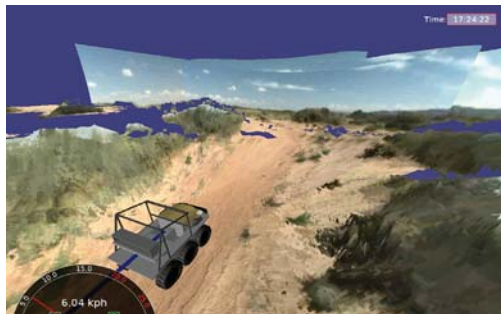
World's Best UGV Autonomy

- Tested at military sites across the U.S.
- Assisted driving to full autonomy
- Operator stays in control at all times



Robotic Wingman: BAE Black Knight

- Controlled from Bradley Fighting Vehicle
- 24/7 RSTA support
- Assisted autonomy and safeguarding



Situational Awareness: SACR

- Faster, easier teleoperation & indirect driving
- Photo-realistic, real time 3D video
- View from different perspectives around vehicle
- Supports large & small vehicles



Lighten the Load: R-Gator

- John Deere R-Gator with NREC perception and obstacle detection
- Full autonomy and safeguarded teleoperation



Off-Road Autonomy: UPI

- Advanced perception and learning-based autonomy
- Highly mobile, rugged Crusher UGVs drove thousands of kilometers in the field
- Successfully navigated desert, mountain, densely forested, wetland & urban terrain



On-Road Autonomy: 2007 DARPA Urban Challenge Winner

- Fully autonomous navigation over 60 mile urban course
- Obeyed rules of the road
- Reacted to changing traffic conditions

Carnegie Mellon. **NREC**
ENGINEERING THE FUTURE OF ROBOTICS **ENGINEERING CENTER**

National Robotics Engineering Center
Ten 40th Street • Pittsburgh, Pennsylvania 15201
412.681.6900 • Fax 412.681.6961 • www.NREC.RI.CMU.edu