**Winners of the 8th Annual ION**
**Autonomous Snowplow Competition**

The (US) Institute of Navigation Satellite Division announced the winners of the 8th Annual ION Autonomous Snowplow Competition during the Saint Paul Winter Carnival.

This was reported from Manassas, Virginia, on 6 February by the Institute of Navigation which had held its 8th Annual Autonomous Snowplow Competition from 25 to 28 January at Rice Park in downtown Saint Paul, Minnesota in conjunction with the 132nd Saint Paul Winter Carnival.

Sponsored by the ION Satellite Division, and held in cooperation with the ION North Star Section, the ION Annual Autonomous Snowplow Competition is an international event open to college and university students, as well as the general public.

This competition challenges teams to design, build, and operate a fully autonomous snowplow using state of the art navigation and control technologies to rapidly, accurately, and safely clear a designated path of snow.

It was reported that eleven teams entered the competition.

Eight teams successfully completing all the phases of the competition and participated in cool, but not frigid, temperatures during the four-day competition. Each team used state-of-the-art navigation systems such as LIDAR, optical navigation systems, inertial instruments, magnetic sensors, ultra wide-band radio reflectors, visual odometry, GNSS, and differential GPS.

Vehicle and navigation designs have progressed towards more marketable techniques, with the goal of someday becoming a commercial snowplow product.

Three teams were unable to compete in the final events due to various mechanical and electrical issues, which challenge teams every year of the competition. Teams were judged based upon their cumulative scores earned throughout the multiple competition phases, including presentations and dynamic vehicle events.

Teams included students, partners from private industry, and faculty advisors from Case Western Reserve University; Dunwoody College of Technology; Iowa State University, Marquette University, The New Jersey Institute of Technology, North Dakota State University, The University of Minnesota, The

University of Michigan Dearborn, and a public team associated with the University of St Thomas of Minnesota. Dunwoody College of Technology and Case Western Reserve University participated with two teams that included two unique robots.

First place was awarded to the University of Minnesota's *Snow Squirrel*. The first place prize included $7,000 and a Golden Snow Globe Award.

Second place was awarded to Dunwoody College of Technology's *Wendigo 2018*. The second place prize included $4,000 and a Silver Snow Globe Award.

Third place was awarded to North Dakota State University's *Thundar 3.0*. The third place prize included $2,000 and a Bronze Snow Globe Award.

In addition, the first place team, University of Minnesota's *Snow Squirrel* is invited by the ION Satellite Division to present during the ION GNSS+ 2018 conference (24-28 September in Miami, Florida) and display their winning snowplow during the ION GNSS+ 2018 exhibition. This invitation includes a $3,000 travel subsidy.

Sponsors of the 8th Annual ION Autonomous Snowplow Competition included Honeywell International, Inc., ASTER Labs, Inc., Orbital ATK, Inc., Oshkosh Airport Products, The Toro Company, SICK, Inc., US Bancorp, Douglas Dynamics/Western Snow and Ice Control, Left Hand Robotics, ANSYS, Servo Magazine, the Twin Cities Chapter of the AIAA, and the ARCS Foundation.

For more information readers are invited to visit www.autosnowplow.com

Additional information about the ION can be found at http://www.ion.org