



**MINESWEEPERS**  
TOWARDS A LANDMINE-FREE WORLD



# MINESWEEPERS

## TOWARDS A LANDMINE-FREE WORLD

INDOOR VERSION

 **The 2019 IEEE/RSJ International Conference  
on Intelligent Robots and Systems (IROS 2019)**

 **November 4 - 5, 2019**

THE VENETIAN MACAO, MACAU, CHINA



[LANDMINEFREE.ORG/INDOOR](http://LANDMINEFREE.ORG/INDOOR)

# ABOUT MINESWEEPERS

Explosive remnants of war (ERW) are victim-operated weapons of mass destruction in slow motion that make no distinction between friendly or enemy, children or animals. Humanitarian demining or civilian-purpose demining includes performing two main processes, namely, ERW reconnaissance and mapping and ERW clearance or disposal. Minesweepers: Towards a Landmine-free World is the first international robotic competition on humanitarian demining established in 2012. This competition aims at raising public awareness of the seriousness of landmines and Unexploded Ordnances (UXOs) contamination and fostering robotics research and its applications in the area of humanitarian demining in the world.

In this competition, each participating team builds/uses a tele-operated/autonomous unmanned ground/aerial vehicle to perform the two processes of humanitarian demining: detection and disposal. The robot must be able to search for buried and surface-laid anti-personnel landmines and UXOs. The position and the type of each detected object are visualized and overlaid on a minefield map. The detected surface landmines have to be safely displaced to a built-in container or to a designated area. The robot must be able to navigate through simulated rough terrain in an indoor arena that mimics a real minefield.

**61** COUNTRIES  
Affected by antipersonnel mines

**2000** TYPES OF MINES  
**650** OF AP MINES

**5000** VICTIMS  
**46%** ARE CHILDREN

**\$3-\$30** | MINES COST  
**\$300-\$1000** COST OF REMOVING MINES

EVERY **5000** | MINES REMOVED  
ONE DEMINER & 2 INJURED **KILLED**

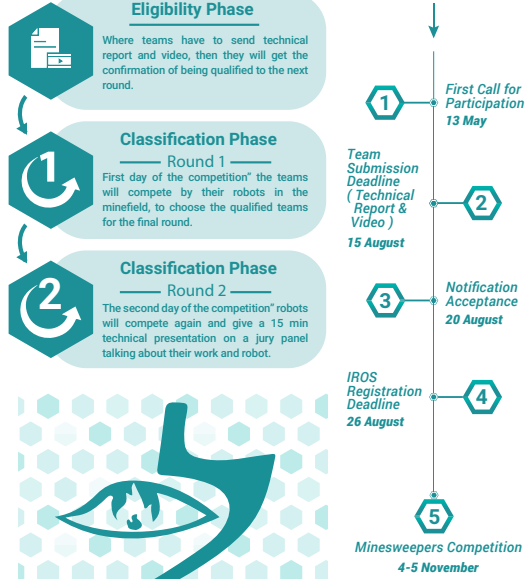
## CATEGORIES

**INDUSTRY**  
for professional companies where metallic and non-metallic objects with different dimensions and profiles are available in the competition arena and landmine detection, landmine imaging, minefield mapping and landmine disposal are required.

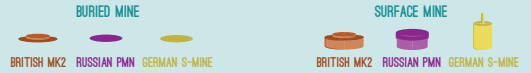
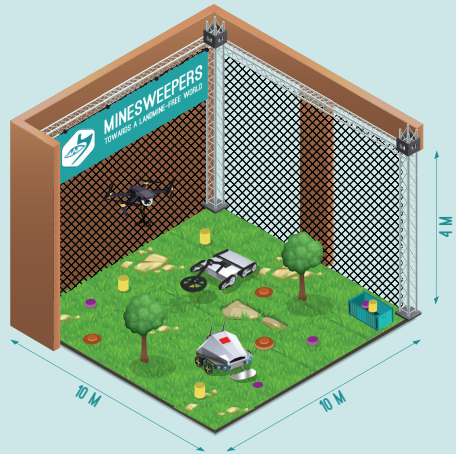
**ACADEMIA**  
for undergraduate and postgraduate university students where only metallic objects are available in the competition arena and landmine detection, minefield mapping and landmine disposal are required.

**JUNIORS**  
for elementary and high school students where only metallic objects are available in the competition arena and only landmine detection and landmine disposal are required.

# PHASES & TIMELINE



# COMPETITION ARENA



# COMPETITION HISTORY

In the last 7 editions of Minesweepers competition:

