The need for autonomous navigation and intelligent control of unmanned sea surface vehicles requires a mechanically robust sensing architecture that is water-tight, durable, and insensitive to vibration and shock loading. The sensing system developed here comprises four black and white cameras and a single color camera. The cameras are rigidly mounted to a camera bar that can be reconfigured to mount multiple vehicles, and act as both navigational cameras and application cameras. The cameras are housed in watertight casings to protect them and their electronics from moisture and wave splashes.

Two of the black and white cameras are positioned to provide lateral vision. They are angled away from the front of the vehicle at horizontal angles to provide ideal fields of view for mapping and autonomous navigation. The other two black and white cameras are positioned at an angle into the color camera's field of view to support vehicle applications. These two cameras provide an overlap, as well as a backup to the front camera. The color camera is positioned directly in the middle of the bar, aimed straight ahead. This system is applicable to any sea-going vehicle, both on Earth and in space.

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