CLAIMS

What is claimed is:

1. A craft comprising:

a hull;

a wing coupled to the hull;

one or more first sensors, wherein at least one of the one or more first sensors is affixed to the craft at a position forward of the wing, and at least one the one or more first sensors is affixed to the wing;

one or more second sensors, wherein at least one of the one or more second sensors is affixed to a bottom surface of the wing;

one or more hydrofoil assemblies that extend from a lower surface of the hull and that facilitate hydrofoil-borne operation of the craft; and

data storage having instruction code stored thereon that, when executed by one or more processors of the craft, causes the craft to:

travel according to a predetermined path relative to a water surface;

receive (1) first sensor data via one or more first sensors and (2) second sensor data via the one or more second sensors;

determine, based at least in part on the first sensor data, a respective location and a respective trajectory of each of one or more above-water objects;

determine, based at least in part on the second sensor data, a height of the craft above a nominal level of the water surface, wherein (i) when the craft is airborne, determining the height of the craft above the nominal level of the water surface comprises determining a distance between the craft and the water surface based on second sensor data associated with a first subset of the one or more second sensors, and forgoing determining the distance between the craft and the water surface based on second sensor data associated with a second subset of the one or more second sensors, and (ii) when the craft is hydrofoil-borne, determining the height of the craft above the nominal level of the water surface comprises determining the distance between the craft and the water surface based on second sensor data associated with the second subset of the one or more second sensors, and forgoing determining the distance between the craft and the

water surface based on second sensor data associated with the first subset of the one or more second sensors;

determine, based on (1) the determined respective location and trajectory of each of the one or more above-water objects, (2) the determined height of the craft above the water surface, (3) the predetermined path, and (4) a location of the craft, whether at least one of the one or more above-water objects will come within a threshold distance of the craft; [[and]]

when it is determined that at least one of the one or more above-water objects will come within the threshold distance of the craft, (1) determine a modified path and (2) cause the craft to travel according to the modified path; and

when it is determined that none of the one or more above-water objects will come within the threshold distance of the craft, cause the craft to continue to travel according to the predetermined path.

2. The craft of claim 1, wherein the first subset of the one or more second sensors correspond to radar altimeters, and the second subset of the one or more second sensors correspond to ultrasonic sensors.

3. The craft of claim 2, wherein at least a subset of the one or more of the second sensors are positioned so that the one or more hydrofoil assemblies are not in respective fields of view of the subset of the one or more of the second sensors.

4. The craft of claim 2, wherein the one or more first sensors correspond to one or more of: electro-optical (EO) color cameras, infrared (IR) cameras, radar systems, light detection and ranging (LIDAR) systems, ultrasonic transducers, passive RF systems, and acoustic systems.

5. The craft of claim 1, wherein the one or more first sensors comprise a first sensor at a nose of the craft having a field of view (FOV) of a scene in front of the craft, a second sensor positioned towards a rear end of the craft having an FOV of a scene behind the craft, and third and fourth sensors positioned on respective port and starboard sides of the craft having FOVs of scenes left and right of the craft, respectively, to provide a 360° FOV around the craft.

6. The craft of claim 1, further comprising one or more third sensors affixed to a lower section of the craft, wherein the instruction code causes the craft to receive third sensor data via the one or more third sensors and to determine, based at least in part on the third sensor data, respective locations of one or more below-water objects.

7. The craft of claim 6, wherein the instruction code causes the craft to determine, based on the first sensor data and the third sensor data, that a particular above-water object and a particular below-water object correspond to a same object.

8. The craft of claim 6, wherein at least one of the one or more third sensors is affixed to a bottom of the hull.

9. The craft of claim 6, further comprising one or more third sensors, wherein the instruction code causes the craft to detect, based on third sensor data received via the one or more third sensors, an operating state of the one or more hydrofoil assemblies, and to transition the one or more hydrofoil assemblies from a first operating state to a second operating state.

10. The craft of claim 1, wherein a particular first sensor of the one or more first sensors is configured to selectively extend from and retract into an upper surface of the craft, and wherein the instruction code causes the craft to: while the craft is airborne, maintain the particular first sensor in a retracted state; determine that the craft has contacted water; and after determining that the craft has contacted the water, cause the particular first sensor to extend from the craft.

11. The craft of claim 1, further comprising a plurality of propellers distributed across the wing, wherein a particular first sensor of the one or more first sensors is a forward sensing sensor positioned behind a particular propeller of the plurality of propellers, and wherein the instruction code causes the craft to filter first sensor data associated with the particular first sensor so that propeller blades of the particular propeller are not sensed as above-water objects.

12. The craft of claim 1, wherein the predetermined path and the modified path correspond to paths that the craft follows when the craft is airborne.

13. The craft of claim 1, wherein determining the modified path and causing the craft to travel according to the modified path comprises generating a conflict risk map that specifies potential collision zones between the craft and the one or more above-water objects, generating a conflict avoidance path for avoiding the potential collision zones, and setting the modified path to the conflict avoidance path.

14. The craft of claim 1, wherein the instruction code causes the craft to time-synchronize sensor data generated by the one or more first sensors and the one or more second sensors, normalize values specified in the time-synchronized sensor data, and filter the normalized values to remove values that exceed one or more thresholds.