METHOD AND APPARATUS FOR
Operator Supervision and Direction of Highly Autonomous Vehicles

BACKGROUND

The success of remotely piloted aircraft (RPA) and remotely piloted vehicles (RPVs) in recent military operations has led to increased interest in their capabilities and application to a variety of military missions (as well as civilian applications). Although the pilot is no longer onboard the platform, there remains a critical need for human involvement in order for RPVs or RPAs to successfully perform missions. This is especially true for the tactical reconnaissance and close air support mission areas where tasks are often time critical, many relevant mission inputs and contextual parameters are not digitized, target/friendly/non-combatant identification is complex and variable, and mission objectives and conditions on the ground vary constantly. RPV operators in these difficult, time-sensitive mission areas will soon be expected to supervise multiple RPVs at the same time, requiring advances in management of mission critical information and aircraft control system.

An illustration depicting predicted noodles, directed noodles, and other symbologies in accordance with an embodiment of the disclosed invention. (Courtesy illustration)
INVENTION SUMMARY

The invention is a system for automating the control of an RPV that includes a computer with a processor and a memory, a display operatively coupled to the computer and configured to display a future operating condition of the RPV and an input device operatively coupled to the computer. A predicted noodle tool is executed by the processor and configured to indicate a predicted future path of the RPV by generating a predicted noodle segment on the display. A directed noodle tool is executed by the processor to indicate a pilot-adjustable proposed future flight path of the RPV by generating a directed noodle segment on the display. Further, an input device mode selector is operatively coupled to the processor and configured to selectively map the input device to either manipulate a control surface of the RPV, or to manipulate the directed noodle segment.

Operational concepts in which a single pilot is responsible for multiple RPVs will necessarily involve supervisory control with requirements for the pilot to frequently shift attention between vehicles. Displays that facilitate rapid retrieval of each RPV’s state and associated tasking are required. Moreover, new control methods will be necessary.

For a better understanding of the invention, please review the entire patent for accompanying drawings, claims and detailed description.

An illustration of input controllers in accordance with an embodiment of the disclosed invention. (Courtesy illustration)