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NPS-MV-⁰²

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II.

B. BACKGROUND

Based on the evidence of the first 16 years of the 21st

The Defense Science Board recently completed a study on autonomy with the expressed purpose of widening “the use of autonomy, ... strengthening the operational pull for autonomous systems,” and “accelerating the advancement of the technology for autonomy applications and capabilities” (Defense Science Board 2016, i), focusing also on the issue of trust in accepting the contribution of autonomous systems in military operations (recall from Section I.A that increasing warfighter trust in these systems is a fundamental objective of JGRE’s effort to improve representation of these systems in combat simulations). The study concluded that “DoD must take immediate action to accelerate its exploitation of autonomy while also preparing to counter autonomy employed by adver-

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increasing levels of autonomy are truly game-changers, do we have the analytical means to substantiate Gen. Welsh's statement or the many other claims? Can we quantify this change in warfighting capability through our principal simulations used to conduct major

(NSS; see <http://www.metsci.com/Division/ORCA/Naval-Simulation-System-NSS-2>),

3. Identifying Distinctions in Human and Unmanned Systems

As we move forward, it is necessary to find ways

Factor

III.

those approaches. Obtaining the software serves an additional purpose of providing GOTS products for use in robotics education at NPS as instruction in real-world robotics

Figure 3.

in addition to its own native interface,” and “controllers written for the Stage simulator can generally be used with Gazebo without modification (and vice versa).”

Several activities described in the MESAS workshops involve these products, such as (Hoffman, et al. 2014). (Kulich, Vonasek and Preucil 2014), and the Simulated Interactive Robotics Initiative (SIRI) project (Fedi and Nasca 2015).

F. SOFTWARE PACKAGE: ROBOT OPERATING SYSTEM

The Robot Operating System (ROS; see <http://www.ros.org>) is a free, open-source set of software libraries and tools for building robot applications. The software includes drivers, state-of-the-art algorithms, visualizers, and powerful developer tools. Several projects described in the MESAS

G. SOFTWARE PACKAGE: AUTONOMOUS UNMANNED VEHICLE

unmanned vehicle missions in all domains (underwater, surface, ground, and aerial veh

Physiology package as a place to implement other physiological considerations, such

and, if not, that appropriate action can be taken.

V. SUMMARY AND RECOMMENDATIONS

A. SUMMARY OF PROJECT ACTIVITIES

The following

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APPENDIX A. GLOSSARY OF TERMS AND ACRONYMS

2D/3D	Two-dimensional / 3-dimensional
ACT-R	

LIST OF REFERENCES

Alejo, C., I. Alejo, Y. Rodriguez, and A. Viguria. "Simulation engineering tools for

SAE International. "AS-

INITIAL DISTRIBUTION LIST

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