

# Abstract

The objective of this research is to design and model a navigation, guidance and control system to be used for unmanned air vehicles, remotely operated underwater vehicles, and unmanned ground vehicles. In the future and with development the system be used as autopilot for missiles targeting global positioning system positions.

The control and processing unit used in the study is based on Arduino microcontroller platform. The Sensors used to estimate the 3 Dimensional position of the vehicle in space (attitude estimation) is based on micro-electro-mechanical-systems technology sensors. In this study the control system is used to navigate, guide and control an airplane made of foam and carbon fiber. The control algorithms are constructed around proportional integral differential control loops and simple navigation approaches and methods. The system is built from inexpensive components matching small scale systems.