

**ZMATH 2010e.00614**

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**Searching algorithm using Bayesian updates.**

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Summary: In late October 1967, the USS Scorpion was lost at sea, somewhere between the Azores and Norfolk Virginia. Dr. Craven of the U.S. Navy's Special Projects Division is credited with using Bayesian Search Theory to locate the submarine. Bayesian Search Theory is a straightforward and interesting application of Bayes' theorem which involves searching for a lost object in one of several predefined search areas. Naval applications include, but are not limited to, searching for submarines, searching for someone who has fallen overboard, or searching for a pilot that has ejected from their aircraft. This procedure can provide "real world" meaning to probability theory and can be also be used to teach basic simulation techniques to students in the context of a basic probability course.

*Classification:* K74 K75 M94 M95

*Keywords:* Bayesian search algorithm; conditional probability; mathematical applications