DARPA-SN-17-57 (SCORE) Proposal (Round 2)

Abstract: This paper proposes **Ockham.io**, an open-source, web-platform, to automate in whole or part the algorithmic verification of scientific theories, hypotheses, and/or studies within the social and behavioral sciences per **TA3** - **DARPA-SN-17-57**.

Briefly, Ockham.io involves:

(1) Explicitly **formalizing** embedded algebraic structures for computer verification,
(2) **Soft verification** through *corroborating reputability* of researchers, institutions, journals, and citations;
(3) **Natural language processing** to identify key terms, experimental variables, and concepts under study;
(4) Verifying **sound experimental design** and checking for **logical consistency**, **numeric error**, **bias**, and mathematical rigor; and
(5) Identifying how well the results, hypotheses, data, or conclusions **cohere** or are compatible with other high-credence theories.

1-5 specify the core requirements for **TA3**. **Ockham.io** will wrap these features with open-source public API's to consume and distribute processed data; continuously verify the credibility of research; maintain audit logs; provide an archive of relevant mathematical systems to supplement the few existing web resources for such material; and monetize continued development, improved credence flagging and participation through an eventual cryptocurrency.

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