HFC

HYBRID FORECASTING COMPETITION

INTELLIGENCE VALUE

The HFC program developed and tested hybrid geopolitical forecasting systems, which integrated human and machine forecasting components to create accurate, flexible, and scalable forecasting capabilities.

Intelligence analysts are faced with the daunting task of developing intellectually rigorous, well-supported assessments of geopolitical events using volumes of data that are often beyond their capability to fully ingest. Machine-driven analytical systems can process large amounts of data quickly and efficiently but lack the nuanced cognitive capabilities of human analysts. The goal of HFC was to integrate the strengths of human cognitive and reasoning abilities with those of machine-driven systems to produce maximally accurate forecasts of geopolitical and economic events. HFC-defined success outcomes include training methods for human forecasters to weigh human and machine judgments, predictive models that incorporate machine and human judgments, and crowdsourcing platforms that enable human and machine forecasters to interact effectively.

HFC completed nearly three years of research in May 2020. The program's accomplishments include:

- Beat the state of the art for human-only forecast systems with a 10 percent increase in accuracy over baseline
- Developed platforms to integrate human and machine forecasts
- Created and evaluated hybrid forecasting training materials
- Conducted foundational research on human trust of machine models
- Tested novel approaches for combining human and machine inputs
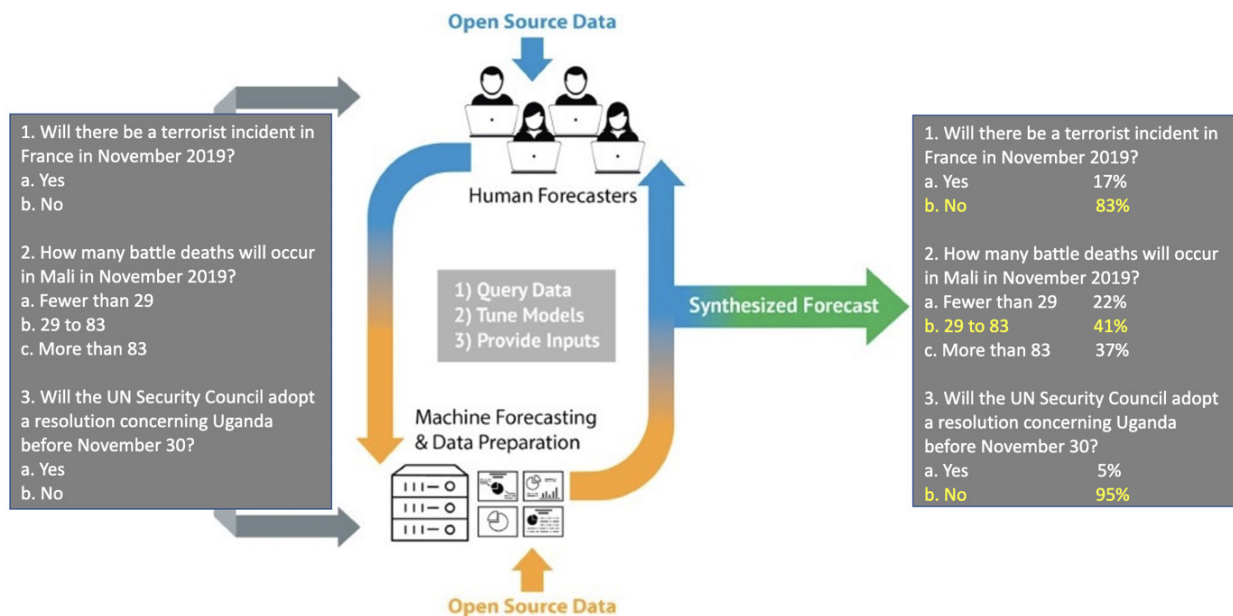- Conducted evaluation in real-world forecasting tournaments

PRIME PERFORMERS

- Raytheon BBN
- University of Southern California Information Sciences Institute

TESTING AND EVALUATION PARTNER

- MITRE

KEYWORDS

- Forecasting
- Machine Learning
- Human Machine Synthesis
- Analytic Triage

Hybrid forecasting systems leverage the strengths of humans and machines to produce more-accurate forecasts than either alone.

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