Richard Ross Gruetzemacher

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Capabilities Statement

My fit for a team in the REASON program:

- I am interested in developing causal reasoning capabilities for language models that can be incorporated in intelligence analysis tools, and I think this could be a valuable contribution to a REASON team
    - I propose doing this by using advanced deep transfer learning approaches in combination with reinforcement learning from human preferences (used to train ChatGPT)
    - My proposed approach has been encouraged by a former IARPA Program Manager, academics at Oxford and Cambridge, and researchers at DeepMind and OpenAI

My relevant areas of expertise per my proposed role:

- Natural language processing—specifically language models
    - Deep transfer learning (for text generation and natural language understanding)
    - Reinforcement learning from human preferences (used to train ChatGPT)
    - Generating Bayesian networks from natural language prompts via language models
- Bayesian networks
    - Their use as a tool for improving probabilistic judgments

My relevant experience per my proposed role:

- I just received $160,000 to conduct a pilot evaluating the effectiveness of Bayesian networks for improving the accuracy of probabilistic judgments and the logical coherence of judgments' rationales in forecasting tournaments.
- In the fall I was awarded a $495,000 grant to study:
    - The use of language models to generate Bayesian networks and causal maps from text prompts
        - This function can be used for Monte Carlo simulation of decision processes or future scenarios, similar to scenario generation techniques, to explore large decision spaces and scenario spaces to identify optimal decisions or the most probable future scenarios
    - The use of Bayesian networks to improve probabilistic judgments and the rationales supporting those judgments
    - This funding has been halted due to legal issues surrounding the collapse of FTX

If my vision, experience, and capabilities are a good fit for your team, please reach out. Thank you for your interest.

Best,

Ross Gruetzemacher