Opportunity Title: Prospects for Machine Learning to Ascribe Motivation
Opportunity Reference Code: ICPD-2022-35

Organization Office of the Director of National Intelligence (ODNI)

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Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at: https://orise.orau.gov/icpostdoc/index.html.

If you have questions, send an email to ICPostdoc@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2022 6:00:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement:**

Significant work has been done on machine learning (ML) for facial recognition to detect emotion. However, can a ML system recognize emotional markers in text, particularly in order to distinguish sensational or provocative text from other styles of writing? Can types of language reliably indicate textual intensities such that ML systems can be developed to grasp the connotative effects of language?

What are the prospects for ML to use abductive methods (theorized by Charles Sanders Pierce, in Artificial Intelligence I contexts by Reza Negarestani) or extrapolated volition (e.g. Eliezer Yudkowsky's theories) to offer insights about persuasive narratives? Abduction is useful because it has the capacity to extend reasoning not only through deviations from norms, but also through deviations from expectations, e.g. a text may deviate from a truthful stylistic paradigm, but this in no way contradicts the expectation of that text, for instance, if we know it comes from a satirical website. Approaches to detect deceit could potentially inform understanding and characterization of motivations behind observed effects.

Example Approaches:

This project explores humanities fields, models and theories with respect to ML capabilities and potentials. Possible approaches include:

- Consider textual markers of narrative crisis and whether ML can use values to explore factual or probable conclusions.
- A key ML research challenge is getting a system to learn what you mean rather than exactly to what you say. What are the prospects for ML systems to use abductive methods or emerging work on volition and alignment to offer insights about persuasive narratives?
- What disciplinary constellations might ML utilize to grasp motivation, for

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persuasive narrative or deceit detection?
- How might advances in alignment theory contribute to the way ML might discover expectations in texts?
- Is there a prospect for an approach that would enable ML to designate possible value systems informing text or texts, or linking texts or media?
- Could a motivation sensitive ML system detect actors in concert or recognize commonly motivated patterns?

(Subsequent research might build and test potential ML applications based on the outcomes of this topic, i.e. ML development is not within scope of this topic.)

Relevance to the Intelligence Community:

Making sense of enormous datasets is a fundamental IC challenge. Industry funded machine learning (majority of R&D expenditure in this field) is driven by the need for incremental improvement in commercial applications and to a lesser extent, potentially, new commercial products and services. Deeper theoretical (humanities) understanding of language, with respect to motivational characteristics that can be harnessed by machine learning, may enable machine learning tools to be developed to interrogate bulk text or media pursuant to Intelligence Community interests. The ability to detect and describe apparent motivation behind text or potentially related texts, at machine speed, could provide valuable insight.

Potential applications range from deep analysis of single author communications, to assessments of bulk social media traffic with respect to net strategic motivation / intent.

Key Words: Literary Studies, Motivation, Narrative Constructs, Machine Learning, Deceit, ML

Qualifications

Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the application deadline
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (2 👁)
  - **Computer, Information, and Data Sciences** (16 👁)

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- **Earth and Geosciences** (21 👁)
- **Engineering** (27 👁)
- **Environmental and Marine Sciences** (14 👁)
- **Life Health and Medical Sciences** (45 👁)
- **Mathematics and Statistics** (10 👁)
- **Other Non-Science & Engineering** (2 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)
- **Social and Behavioral Sciences** (27 👁)