

Opportunity Title: Empowering Intelligence Analysts with AI Fellowship

Opportunity Reference Code: ICPD-2024-29

Organization Office of the Director of National Intelligence (ODNI)

Reference Code ICPD-2024-29

How to Apply **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 3 pages.**

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 2/28/2024 6:00:00 PM Eastern Time Zone

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

The increasing volume and complexity of data available to intelligence analysts can lead to information overload, making it difficult to identify and collate critical information. Current methods reliant on manual steps and basic analysis can be time-consuming and prone to errors. This research topic aims to explore AI agent development using the latest and soon to emerge AI tools that could assist intelligence analysts with their tasks, automate the process of searching for and filtering relevant information from multiple sources.

The goal of this topic is to explore AI-powered agent-based systems that can efficiently and effectively monitor and analyze various data streams, identify patterns and anomalies, and alert the analyst when relevant information becomes available. The AI agent could take the analysts requirements and push information to the analyst for consideration when certain requirements are met. The research would focus on developing algorithms and techniques for AI agent teams, and data fusion, ensuring that the AI agents can adapt to changing information environments and learn from experience. The project should also look at how human analyst - AI agent collaborations can be constructed to ensure due oversight, control and process transparency.

Example Approaches:

Approaches like *autogen1* and *metagpt2* show the potential of LLM based AI agents to undertake multistep analytic tasks. Approaches like *gorilla3* and *toolformer4* show that LLMs can be fine-tuned to understand and use information sources exposed as APIs in an environment. Finally, approaches like *outlines5* show how to force LLMs to produce defined output formats enabling them to interface with each other and other systems. Combining approaches like these can be investigated for



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powering LLM-based agent teams to support intelligence analysts achieve their goals and make best use of the information they have available to them by converting their intentions into outputs which make use of the available information.

Relevance to the Intelligence Community:

The application of AI technologies to support intelligence analysis has the potential to revolutionize the way analysts work. By automating routine tasks and identifying patterns that may escape human attention, AI agents can augment human analytical capabilities and increase the speed, accuracy, thoroughness and oversight of assessment-making.

References:

- Wu, Q., Bansal, G., Zhang, J., Wu, Y., Zhang, S., Zhu, E., et al. (2023) 'Autogen: Enabling next-gen llm applications via multi-agent conversation framework', arXiv preprint arXiv:2308.08155, <https://arxiv.org/abs/230808155>.
- Hong, S., Zheng, X., Chen, J., Cheng, Y., Zhang, C , Wang, Z., et al. (2023) 'Metagpt: Meta programming for multi-agent collaborative framework', arXiv preprint arXiv:2308.00352, <https://arxiv.org/abs/2308.00352>.
- Patil, S. G., Zhang, T., Wang, X., & Gonzalez, J. E. (2023) 'Gorilla: Large language model connected with massive apis', arXiv preprint arXiv:2305.15334, <https://arxiv.org/abs/2305.15334>.
- Schick, T., Dwivedi-Yu, J., Dessi, R., Raileanu, R., Lomeli, M , Zettlemoyer, L.,et al. (2023) 'Toolformer Language models can teach themselves to use tools', arXiv preprint arXiv:2302.04761, <https://arxiv.org/abs/2302.04761>.
- Willard, B. T., & Louf, R. (2023) 'Efficient Guided Generation for LLMs', arXiv preprint arXiv:2307.09702, <https://arxiv.org/abs/2307.09702>.

Key Words: AI agents, Large Language Models (LLM), AI Analysis, intelligence assessments, AI/ML, Big Data, machine learning

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 appointment start date
- 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

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- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))
 - **Communications and Graphics Design** ([3](#))
 - **Computer, Information, and Data Sciences** ([17](#))
 - **Earth and Geosciences** ([21](#))
 - **Engineering** ([27](#))
 - **Environmental and Marine Sciences** ([14](#))
 - **Life Health and Medical Sciences** ([45](#))
 - **Mathematics and Statistics** ([11](#))
 - **Other Non-Science & Engineering** ([2](#))
 - **Physics** ([16](#))
 - **Science & Engineering-related** ([1](#))
 - **Social and Behavioral Sciences** ([30](#))