

An Explainable Ethical Framework for AI Systems

Artificial Intelligence plays a crucial role in several applications spread across many domains. The decisions made or recommended by these AI systems should be fair and not have any bias. There is a need to incorporate ethics into the decision making of these AI systems and also to make those ethical decisions explainable. This project explores these topics in order to build an explainable ethical framework with the help of ontologies, knowledge graphs and other logic based mechanisms. Candidates interested in pursuing a PhD on this topic at the KRaCR research lab (<https://kracr.iiitd.edu.in/>), in collaboration with Dr. Manohar Kumar (<https://iiitd.ac.in/manohark>) and Dr. Jainendra Shukla (<https://jainendra.in/>) of IIT-Delhi, are requested to read the articles provided below and submit a brief 2-3 page research statement in the pdf format, along with their other details at <https://forms.gle/FhKauCFiLH2PkTm76>. You can follow a guide available at <https://bit.ly/3fJBOLF>. The deadline to submit your application is June 20, 2021. Candidates are encouraged to contact raghava.mutharaju@iiitd.ac.in for any queries related to the project.

[1] Building Ethics into Artificial Intelligence. <https://arxiv.org/abs/1812.02953>.

[2] Ethics of Artificial Intelligence and Robotics: <https://plato.stanford.edu/entries/ethics-ai/>.

Required qualifications/skills

- A relevant undergraduate (B.Tech, B.Sc + M.Sc, ...) or a graduate degree (M.Tech, M.Sc, ...) with CGPA greater than 7.5.
- Knowledge of C++/Java/Python programming languages and Linux/Windows development tools.
- Experience in building AI systems.
- Ability to communicate proficiently in English (written and spoken).

Desirable

- Experience in using ontologies and knowledge graphs.
- Relevant research or work experience.
- Having prior publication(s) at good venues would be advantageous.

Stipend. It would be as per the JRF norms for the first two years and starting from the third year, it would be as per the SRF norms.

Multimodal Knowledge Graphs

Knowledge Graphs (KG) are graph structures that capture knowledge in the form of entities, relationships between them, properties, and additional information including provenance. Most of the KGs such as DBpedia, YAGO and Wikidata have been built using only text documents. There is important information captured in the form of images, video and audio that complement the knowledge captured from text modality. The goal of this project is to use these other modalities to enrich and support the knowledge captured by the KGs. Candidates interested in pursuing a PhD on this topic at the KRaCR research lab (<https://kracr.iiitd.edu.in/>) under the supervision of Dr. Raghava Mutharaju, in collaboration with Dr. Rajiv Ratn Shah (<http://midas.iiitd.edu.in/>), are requested to read the articles [1, 2] and submit a brief 2-3 page research statement in the pdf format, along with their other details at <https://forms.gle/dmfhhPz5i6HhcwyN8>. You can follow a guide available at <https://bit.ly/3fJB0LF>. The deadline to submit your application is June 20, 2021. Candidates are encouraged to contact raghava.mutharaju@iiitd.ac.in for any queries related to the project.

[1] Richpedia. <https://doi.org/10.1016/j.bdr.2020.100159>.

[2] MMKG: Multi-Modal Knowledge Graphs. <https://bit.ly/3vP4Dk7>.

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- Knowledge of C++/Java/Python programming languages and Linux/Windows development tools.
- Experience in building AI systems.
- Ability to communicate proficiently in English (both written and spoken).

Desirable

- Experience in knowledge graphs.
- Relevant research or work experience.
- Having prior publication(s) at good venues would be advantageous.

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