MASTER'S THESIS INTERNSHIP OFFER

DESCRIPTION

Title: Meta-features study: On which properties quality explanation of graph neural networks rely on?

Hosting organization: XLIM POITIERS

Lab: XLIM
Research Team: ICONES
Scientific pole: Explaining Artificial Intelligence
Starting date (month/date): Jan. 23

Short description of the internship offer (up to 5 sentences):

Nowadays, Artificial Intelligence (AI), especially deep learning approaches stand as state-of-the-art methods for solving many academic and industrial problems. Nonetheless, deep learning models have proved to be quite opaque while building their internal decision-making processes. We need to have a serious understanding of those processes for deploying as safe as possible such models especially in critical context (healthcare, autonomous navigation, law, etc.). Graph Neural Network (GNN) are deep-based model able to deal efficiently with graphs. Consequently, they are also suffering from the same "black-box" concern.

Objectives (up to 5 sentences):

Several methods have been proposed by the community in order to explain GNNs behavior for graph classification problems. One manner to explain GNNs is finding relevant subgraphs within an input graph that preserves classifier performance. But how to deal with the combinatorial aspect of this sampling procedure? How to assess subgraphs relevance for explaining purposes? Since explanation process is a human-dependent, first we will lead an extended study based on in order to measure if state-of-the-art methods fulfill desirable properties described in neuropsychological literature. Then we will design a new assessing framework that integrates those properties in the context of GNNs explanations.

Description of the internship offer:

6 months/In person (at Poitiers Futuroscope campus)/Funded

Photo (optional)
Description of the research team:

ICONES team is part of ASALI consortium. Historically focused on image processing, then have now extended their focus towards general AI problematics including AI-processed medical imaging, etc.

Skills

Expected skills of the applicant:

Python, git, LaTex, some knowledges in machine learning/maths

PhD Thesis Opportunities

PhD thesis opportunity after the Master course:

☐ Yes  x No

If yes, financing already obtained:

x Yes  ☐ No

If yes, what kind of funds: From XLIM

Contact & Application
Surname and first name of the internship supervisor(s): Adrien RAISON (see adriorsn.eu)

Email of the supervisor(s): {adrien.raison,david.helbert}@univ-poitiers.fr

Phone number of the supervisor(s): -

The application shall be sent to the email: {adrien.raison,david.helbert}@univ-poitiers.fr

Closing date for applications: Dec. 31 2022