Caleb Schultz Kisby

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Position: 2023 PhD Residency - Artificial Intelligence

Dear X hiring team,

Hi, I'm Caleb, a 5th year PhD candidate at Indiana University. I specialize in Neuro-Symbolic AI, i.e. I integrate deep learning with symbolic reasoning. I'm excited to see that you are looking for PhD students to do research at X, and I'm here to apply.

I have 6 years of experience (4 PhD + 2 undergrad) working on research projects and proof-of-concept prototypes. I've published and presented 3 papers in established AI conferences (one in AAAI!). During my PhD, I've designed several neural network architectures that incorporate symbolic reasoning in some way — see the open-source projects listed on my resume. Most recently, I have been independently developing a suite (in Python, via Tensorflow) to both *verify* if a neural network satisfies P and to *build* neural networks satisfying P. (See the project "à la Mode" on my resume and Github.)

I also have a long-standing interest in natural language processing. I've taken graduate courses on classical (compositional) semantics, as well as distributional (vector) semantics, and I have experience with the NLTK and Word2Vec Python packages.

Unlike most machine learning researchers, I have a particularly strong background in formal logic and symbolic reasoning. In fact, I've spent much of my PhD proving soundness and completeness for both a natural language-inspired logic, and also a formal neuro-symbolic translation. (See the FLAIRS and AAAI papers linked from my resume.) I also have experience in formal verification (I like Agda & Lean), which I hope to apply to formally verifying properties of neural nets.

I should add: I definitely have the calculus, linear algebra, and probability background that you ask for in the posting — I did my undergrad degree in math (alongside CS)!

If you are interested, I'm available for a phone or Zoom interview during normal business hours (8am–6pm, EST) — please email me at the address above to schedule a time.

Thank you for your consideration,

Caleb Schultz Kisby