Blake Shepard, Ph.D.

Senior Ontology Engineer

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Dear Hiring Team,

I am very excited to apply for the Enterprise Data Modeling and Ontologies Data Scientist position at Amentum. With over two decades of experience in ontology design, knowledge representation, and AI-driven systems, I am eager to work on expanding the healthcare technology development support capabilities at ARPA-H.

As the Ontology Lead at Cycorp, Inc, I coordinate and participate in the work of a team of 20-25 PhD-level developers to consistently extend the broad and deep ontology (20+ million logical axioms) of Cycorp's knowledge-based machine reasoning AI platform. I work with multiple cross-functional sub-teams to design and implement the integration of external standard ontologies and data sources, to support cutting-edge research, and to ensure Cycorp's core technology can support a wide range of deployed commercial products. I have extensive experience with standard Semantic Web technologies (RDF, OWL, SPARQL) and ontologies (BFO, Common Core, OBO, SNOMED-CT, ICD-10, and LOINC) and I have proficiency with ontology tools such as Protégé and the RDFLib Python library.

One of the most rewarding ontology projects I led at Cycorp was the semi-automated mapping of ICD-10, LOINC and SNOMED-CT taxonomies to concepts in the expressively represented Cyc ontology. This process involved, for example, analyzing complex compound concepts in the ICD-10 taxonomy and associating them via relations to atomic concepts in the Cyc ontology. For example, it involved ensuring that the ICD-10 code "B160" – for "acute hepatitis B with delta-agent and hepatic coma" – is independently properly related to the Cyc concepts for "acute condition", "hepatitis B", "hepatitis delta virus", "coma" and "hepatic encephalopathy", via, where appropriate, relations such as "subClassOf", "causedBy", and "symptomOf".

At Cycorp, I also developed an ontology-based system for the Cleveland Clinic to semi-automatically translate English cardiac surgery research queries into SPARQL queries against hospital data, reducing researchers' cohort identification time by over 90%.

Beyond technical contributions, I have broad experience communicating technical capabilities to audiences with diverse backgrounds. I have served as Training Manager for new ontologists and I've presented at large conferences and participated in panels to advocate for the potential of semantic technology.

I am eager to discuss how my skills and experience align with the needs of Amentum for ARPA-H support.

Sincerely,
Blake Shepard