Relevant Programming Experience

James Harbour

Application to *Indiana* REU

I am competent with both SageMath and Python, as well as Mathematica and Java. During the my modern geometry course, I used SageMath and Mathematica combined with Pontryagin's maximum principle to study the geodesics of the Heisenberg group, the Grushin plane, and the Engel group as sub-Riemannian manifolds, so I have experience with solving genuine problems utilizing these computer algebra systems. For formal training, I have taken multiple computer science courses utilizing Java and python. In regards to self-motivated programming projects, I have implemented some basic reinforcement-learning algorithms in python. Additionally, I followed Kenneth Stanley's classic paper *Evolving Neural Networks through Augmenting Topologies* to implement my own rendition of his NEAT algorithm in Java.

Regards,

James Harbour