

## COVER LETTER

Date: June 24, 2025

To whom this may concern,

I am writing to introduce myself and express my interest in the research assistantship position with job number 505331. I am Ismail Kuru and have just finished my PhD at Drexel University, where I worked with Colin S. Gordon and studied programming language techniques and the application of these techniques on low-level systems. I defended my thesis, "Modal Abstractions for Operating System Kernels," in March 2025 and am aiming to improve my skills. The position announced would allow me to gain practical experience while also enabling me to contribute my writing, organization, and strategic planning skills.

One of the main constructions of my doctoral research is the application of hybrid logic-style reasoning in memory address virtualization inside operating system kernels. In the second main contribution of the thesis, I present a bisimulation technique between Kripke structures that model state machine (STS)-based specifications. This technique allows extending the notion of entailment for STS-based logics to incorporate a form of bisimulation (as on Kripke structures) between STS systems into an extended rule of consequence so that one can show that a code verified against one particular STS makes it unusable with other similar transition systems, even when one is contained in the other.

I think I could potentially be a great fit for the position. For your consideration and for more information, I include the link to my academic website.

Yours Faithfully  
Ismail Kuru  
(267)-694-2821  
ik335@drexel.edu