

December 1, 2023

Dear members of the faculty selection committee,

I am writing to apply for your department's assistant professor position. My research experience includes fast algorithms, inverse problems, parallel computing, and programming models. To advance my research, I intend to form a group of graduate students focusing on various aspects of parallel computing, programming models, and large-scale applications.

As a postdoctoral scholar at Stanford University, my research is on developing programming frameworks for optimizing data movement within different heterogeneous systems. My work is about developing higher-level programming interfaces that work across GPU and network architectures from different vendors. Please find my research statement for details.

My motivation is to enable these frameworks for application developers to improve performance portability across systems. Especially, I am interested in solving large-scale inverse problems in machine learning and scientific problems. An exciting existing collaboration is for solving large-scale 3D ptychography problem. I collaborate with X-ray imaging experts to understand summarizing and generalizing the operations in inverse problems so that we can develop language for developing complex inverse solvers and running them on the data to reconstruct 3D images very fast.

I believe your institution will be a good fit for writing interesting grant applications and working with students from different backgrounds for high-end research and teaching. I find ways to funnel each student's interests into the general theme of my research. I am attaching the teaching and diversity statement for elaboration.

Another information that might interest you is that I will relocate with my spouse, Rebecca Hodel, and 5 mo daughter Maya.

Please do not hesitate to send your inquiries directly to me or one of my reference letter providers:

- Alex Aiken (Stanford), postdoctoral advisor.
- Wen-mei Hwu (Nvidia), doctoral advisor.
- William Gropp (Illinois), collaborator.
- Weng Cho Chew (Purdue), early doctoral co-advisor.

Yours sincerely,



<https://merthidayetoglu.github.io/>