

STATEMENT OF PURPOSE

GEM

My identity and intellectual curiosity have been shaped by a life lived between worlds. Growing up as an American-born Chinese, I spent much of my childhood moving between my family’s rural hometown in Fenyang, Shanxi province—a village with limited educational resources—and modern schools in Beijing, Shanghai, and the United States. Navigating these starkly different environments taught me resilience and adaptability. It also gave me a unique perspective, blending the structured, technical rigor of China’s STEM curriculum with the creative, problem-solving focus fostered in the U.S. This bicultural experience sparked my fascination with artificial intelligence—specifically, how machines can learn to interpret and reproduce the rich visual complexity of our world, a challenge I am eager to pursue as a Ph.D. student at the University of Illinois Urbana-Champaign (UIUC) and as a prospective GEM Fellow.

My research focuses on enabling vision models to understand complex distributions and dynamics through data-centric approaches. A critical limitation in current AI is that while models excel at static image tasks, they struggle to capture the physics and motion of dynamic scenes. I believe the scarcity of high-quality, large-scale annotated data is a primary barrier. My research journey has therefore been a progressive effort to bridge this data gap, beginning with foundational projects during the pandemic with professors at Tongji University. There, I built a strong technical foundation in computer vision by collecting, processing, and organizing datasets for tasks like camera calibration and image super-resolution—an experience that deepened my passion for building efficient and scalable vision systems.

At USC, I joined Professor Laurent Itti’s iLab, where I delved into data-centric generative AI. As a core contributor to projects on synthetic dataset generation, I designed a novel workflow using text-to-image models and a new filtering algorithm to produce infinite-scale synthetic data, significantly improving object detection and segmentation metrics. This work, which has since garnered over 50 citations, affirmed my commitment to research. My interest in generative models deepened during my Master’s studies, leading me to develop DreamDistribution, a method for personalized image and 3D generation that models the full distribution of an object’s visual attributes rather than a single instance. This work, resulting in a first-author ICLR publication, reinforced my conviction that understanding and modeling data distributions is key to advancing AI.

My pursuit of impactful research led me to an internship at Microsoft Research Asia, where I led an interdisciplinary project to create a million-scale dataset for radiology report generation. This experience grounded my technical work in clinical needs and taught me the value of cross-domain collaboration. Later, as a visiting researcher in Professor Jiajun Wu’s lab at Stanford, I tackled the challenge of modeling real-world motion of articulated objects. I developed a large-scale automated pipeline to scrape and process videos, creating a dataset of millions of object-centric frames for 3D/4D reconstruction of animals—an unprecedented scale for this domain. This work culminated in a first-author publication at NeurIPS 2025 (Datasets and Benchmarks track) and now forms the foundation for my ongoing research on animal motion generation.

My cross-cultural background has not only shaped my research interests but also instilled in me a deep commitment to fostering inclusive scientific communities. Having experienced educational systems with vastly different levels of resources, I recognize how disparities in access—to mentorship, data, or computing—can limit potential. I see diversity not only in terms of identity but also in the range of lived experiences that shape how we approach science. This belief motivates me to design research that lowers entry barriers, such as building open, large-scale datasets that democratize access to high-quality data and promote equitable participation in AI research.

At USC, I mentored international freshmen through the Chinese Student Association, helping them adjust academically and culturally while bridging communities between domestic and international students. My collaborations with doctors, engineers, and researchers across countries have further strengthened my ability to integrate diverse viewpoints toward shared goals. As a GEM Fellow at UIUC, I hope to continue this work by supporting initiatives that expand mentorship and peer networks for students from underrepresented backgrounds, fostering an environment where diverse perspectives drive innovation.

Now, as a first-year Ph.D. student at UIUC working with Professor James Rehg, I am extending my data-centric research to explore how diffusion models can generate synthetic eye-tracking data to overcome data scarcity in scientific and clinical studies. My goal is to develop generative models that bridge data gaps

in critical domains, enabling deep learning to support applications from diagnosing neurological disorders to improving human-centered technologies. My research background, cross-cultural perspective, and dedication to inclusive science have prepared me to contribute meaningfully to the GEM community. I am inspired by GEM's mission to empower diverse talent in STEM and am eager to join a fellowship that shares my belief that technology should advance equity as well as innovation.