Paul & Daisy Soros

Essay One: Tell us about your experiences as a New American. Whether as an immigrant yourself, or as a child of immigrants, how have your experiences as a New American informed and shaped who you are and your accomplishments? Feel free to discuss how individual people (such as family or teachers), institutions, aspects of law, culture, society or American governance made an impact on your life as an immigrant or child of immigrants. The program is interested in understanding the context of your personal, professional, and academic accomplishments. For tips on writing your essays, please visit the PD Soros essay writing guide. (1000 words)

My New American story begins not with my own birth, but with a dream that started in a small, rural village in Fenyang, Shanxi, China. It was my father's dream. In a place where few people left and opportunities were scarce, he saw education as his only path forward. He became the top student in his town, which led him to one of the country's best universities. Still, he wanted to learn more—to understand the advanced knowledge and technology that he believed were growing most rapidly in the United States. So, with little more than determination and hope, he left China to pursue a Ph.D. at Texas A&M University.

He arrived with no fellowship or financial support, a frightening situation for a young man from a poor background. My parents lived with almost nothing in those early years. Their small apartment in Bryan, Texas, had no new furniture; everything came from dumpsters or the roadside. My crib was made from a discarded frame, and the mattress we slept on had been thrown away by someone else. But in that bare apartment, my parents built a life rooted in hard work, learning, and belief in a better future. Long before I understood it, I was learning that meaning and purpose can grow from scarcity when you meet it with effort and hope.

I grew up surrounded by that spirit of perseverance. At home, I heard Mandarin every day, smelled stir-fried rice and noodles in the kitchen, and listened to my father's research stories. But outside our apartment, everything felt different—the language, the food, even the rhythm of daily life. In kindergarten and primary school, I was the only Asian child in my class, unsure how to join the games or conversations. I had a name, but not yet a place where I truly belonged.

When my father completed his Ph.D. and our family moved back to China, everything shifted again. I entered a Chinese primary school and immediately felt how different the education system was. In the U.S., my teachers encouraged creativity and self-expression. In China, classes focused on precision, discipline, and problem-solving in STEM. There was one correct answer for everything, and success meant finding it quickly and exactly. The switch was hard. I missed the freedom of asking "why," but I also came to appreciate the strength that came from structure and focus.

Over the next decade, my father's work moved our family between China and the U.S. several times. Each move meant starting over—new schools, new friends, new ways of learning. I was always the outsider, trying to catch up and fit in. In the US, I struggled to speak with the same ease as my classmates. In China, I worked double-time to reach the academic level expected there. It was exhausting, but over time I began to realize that living between two systems was shaping the way I thought. I had learned how to adapt, how to listen, and how to see problems from more than one angle.

What once felt like a disadvantage has become the foundation of my intellectual life. I didn't just receive one education—I received two, intertwined. The American classroom taught me to ask questions, to be curious, and to explore ideas without fear of being wrong. The Chinese classroom taught me discipline, logic, and how to correctly break complex problems into smaller parts. Together, they formed the way I now think and work.

This combination is exactly what drew me to Computer Science and AI research. To build AI that solves real-world problems, you need both creativity and structure—the ability to imagine new approaches and the technical skills to make them real. My research aims to bring those two together. I'm especially interested in data-centric AI: how we can make models that learn effectively even when data is scarce or incomplete. That question connects directly to how I grew up—learning to do more with less, finding ways to build strength and meaning from limited resources.

I often think back to my parents' first years in Bryan. They started with nothing, but their belief in education and persistence built everything that mattered: opportunity, knowledge, and purpose. Their

journey—and mine—has taught me that progress often begins with discomfort, and that belonging is something you create through contribution. That belief guides how I approach both my research and my life.

To me, being a New American means holding two worlds and learning to draw from both. It means turning difference into insight. I no longer see being "in between" as a weakness—it's a source of empathy, creativity, and resilience. America, with its mix of cultures and ideas, is the place where my experience makes perfect sense. Here, the lessons from a rural village in Shanxi and the lessons from an American classroom come together. Here, I can use that blend of perspectives to contribute—to science, to community, and to the continuing story of what it means to be American.

Essay Two: Tell us about your current and near-term career-related activities and goals, as well as why you decided to pursue the specific graduate program(s) and school(s) that you have. How do you see your current work and study informing your early career goals? If you have not been accepted into a program yet, please tell us about why you selected the programs to which you are applying. For tips on writing your essays, please visit the PD Soros essay writing guide. (1000 words)

My interest in computer vision and graphics began with a simple curiosity: how can machines see and understand the world? Over time, this curiosity evolved into a broader research goal—to develop AI systems that can understand complex visual distributions and dynamic processes. Central to this goal is a data-centric approach: I focus not just on models, but on creating, processing, and leveraging datasets that allow AI to learn more effectively from limited or imperfect data.

My research journey began during the pandemic, while I was taking classes remotely from Shanghai. Seeking hands-on experience, I joined Professor Lin Zhang and Professor Yu Wang at Tongji University. There, I worked on low-level computer vision tasks, including camera calibration, image feature matching, and super-resolution. My role focused on collecting, organizing, and processing datasets such as car surround-view and remote sensing imagery. These early projects taught me that high-quality data is as important as the models themselves, and that careful dataset design can be a research contribution in its own right.

When I returned to campus for my senior year, I joined the USC iLab, led by Professor Laurent Itti, where I explored generative methods for synthetic dataset creation. Working with Dr. Yunhao Ge, I developed a workflow combining cut-and-paste techniques with text-to-image generation to create large-scale synthetic datasets for object detection and segmentation. I also designed an iterative EM-based filtering algorithm to improve data quality. This work demonstrated that well-crafted synthetic data could improve model performance, sometimes beyond what real data alone could achieve, and confirmed my commitment to data-centric AI.

During my Master's degree at USC, I applied generative and data-centric approaches to healthcare. At Microsoft Research Asia, I led a project creating a million-scale dataset for radiology report generation, integrating medical images with structured text using GPT-based multimodal models. Frequent collaboration with radiologists grounded my research in real-world clinical needs and demonstrated the impact of high-quality datasets on downstream AI performance. While this project did not result in a publication, it was transformative in teaching me how to design datasets and AI systems for real-world applications.

At the same time, I initiated DreamDistribution, a method for personalized image and 3D generation that models the distribution of visual attributes—style, texture, and pose—rather than focusing on individual instances. This approach allows generative models to produce diverse yet faithful outputs, with applications ranging from text-to-image and text-to-3D generation to pose-aware visual synthesis. DreamDistribution resulted in my first-author ICLR 2025 paper, highlighting the power of modeling distributions rather than single instances. Around the same period, I co-authored a CVPR 2025 paper on animal pose estimation, complementing my subsequent work on dynamic motion understanding at Stanford.

To explore dynamic motion more deeply, I joined Stanford University's Vision and Learning Lab, advised by Professor Jiajun Wu and mentored by Dr. Shangzhe Wu. I focused on inverse rendering and 4D motion understanding, transforming 2D videos into 3D and dynamic representations of articulated objects. I built a large-scale pipeline that collected and processed millions of web-sourced animal videos, extracting depth, flow, occlusion, and motion information. This dataset, one of the largest of its kind, led to my first-author NeurIPS 2025 paper (Datasets and Benchmarks Track) and contributed to the CVPR 2025 animal pose estimation paper. This work reinforced my belief that data itself can be a scientific instrument, enabling models to reason about motion and physical interactions more effectively.

Now, as a first-year Ph.D. student at UIUC, I am advised by Professor James Rehg and beginning a project on eye-tracking data, which is crucial for studying attention and cognition but often restricted by privacy concerns. We are developing diffusion-based generative models to learn from limited public datasets and produce realistic synthetic eye-tracking samples. This ongoing work builds on my experience in data-centric generative modeling and demonstrates how careful modeling of data distributions can expand research possibilities in neuroscience and human-centered applications.

Across all these experiences, my career goal remains clear: to create AI systems that learn efficiently, understand complex dynamics, and provide actionable insights for science and society. In the near term, I aim to refine data-centric generative methods, particularly for scientific and biomedical applications where data is scarce. In the long term, I hope to lead a research group that combines large-scale dataset creation, generative modeling, and physics-informed reasoning to produce AI tools that are both interpretable and broadly useful.

I see graduate study at UIUC as the ideal environment to pursue these goals. The program's strengths in computer vision, machine learning, and interdisciplinary collaboration align perfectly with my focus on data-centric AI and generative modeling. Working here allows me to refine my expertise, contribute to impactful datasets and models, and prepare for a career at the intersection of AI research and real-world applications. By improving how AI learns from limited or complex data, I hope to advance the field and create systems that are both innovative and socially meaningful.