STATEMENT OF PURPOSE

My fascination with Artificial Intelligence began in high school when I first heard about Tesla's self driving cars. I was amazed by how machines could replicate human perception and decision making. That initial curiosity evolved into a deep academic passion to understand how intelligent systems can learn, reason and contribute to solving real world problems. Over the years, this passion has shaped every phase of my academic and professional life and it now motivates my decision to pursue a Ph.D. in Computer Science at The University of Alabama.

I earned my Bachelor of Science in Computer Science and Engineering from the Bangladesh University of Business and Technology (BUBT) in 2021 with a CGPA of 3.84/4.00 ranking among the top five students in my class. My coursework in areas such as Data Mining, Neural Networks, Fuzzy Systems and Pattern Recognition laid the foundation for my interest in AI and machine learning. My final-year research project "Best Eleven Forecast for Bangladesh Cricket Team with Machine Learning Techniques" allowed me to explore Naive Bayes, Support Vector Machine and Random Forest algorithms to predict player performance. Through this project, I gained hands-on experience in Python, TensorFlow, Keras developed essential problem-solving, teamwork and analytical skills.

After completing my undergraduate degree, I joined BUBT as a Lecturer in the Department of Computer Science and Engineering, where I taught core programming and AI-related courses while mentoring undergraduate research projects. During this period, I also collaborated with my thesis supervisor Mr. Milon Biswas on multiple research studies focused on medical imaging and computer vision and published several papers in prestigious journal and conferences. These experiences gave me a solid grounding in deep learning model design dataset preparation and neural network optimization for real world healthcare applications.

In 2023, I began my Master of Science in Computer Science at Kent State University (USA) and successfully completed it in 2025 with a CGPA of 3.80. My master's journey further strengthened my research skills and provided me with exposure to advanced AI techniques, research methodologies and interdisciplinary collaboration. As a Graduate Teaching Assistant, I assisted in fundamental programming courses mentored undergraduate students and supported faculty research. My time at Kent State was transformative I coauthored and peer-reviewed scholarly articles engaged with diverse research communities and learned how to critically analyze and communicate complex ideas effectively.

To date, I have authored and co-authored over ten publications with 250+ google scholar citations in respected journals and conferences, including Information Sciences (Elsevier), Frontiers in Genetics, Expert Systems with Applications and IEEE CBMS. My research spans deep learning, computer vision, explainable AI and health informatics with a particular focus on improving diagnostic systems for infectious and chronic diseases using image-based AI models. I have also

contributed as a peer reviewer for IEEE CBMS (2023 & 2024) and Tech Science Press journals experiences that enhanced my understanding of rigorous scientific writing and review processes.

Beyond research, I have taken on leadership roles such as Secretary of the Bangladesh Student Association at Kent State University and Advisor of the IEEE CS BUBT Student Branch, experiences that strengthened my communication, teamwork, and mentoring abilities. I believe these interpersonal skills are equally vital in collaborative research environments.

The University of Alabama's Ph.D. program aligns perfectly with my academic goals and research background. I am particularly interested in working on machine learning and computer vision applications for healthcare as well as explainable AI systems that can enhance transparency and trust in medical diagnostics. The ongoing research at The University of Alabama in AI driven health informatics, neural networks and intelligent systems resonates deeply with my current interests. I am especially drawn to faculty whose work involves efficient and interpretable deep learning architectures as I aspire to develop computational models that bridge the gap between AI theory and clinical usability.

My long-term goal is to become research driven academic contributing both to fundamental AI research and its real world applications in medicine and beyond. I aim to mentor future students foster interdisciplinary collaborations and build systems that make intelligent technology more accessible and equitable. I believe that The University of Alabama with its strong research culture world class faculty and collaborative environment offers the ideal platform for this next phase of my academic journey.

I am fully aware that pursuing a Ph.D. demands intellectual rigor, creativity and resilience. With the academic foundation I have built through my B.Sc. and M.S. programs combined with my research and teaching experience, I am confident in my ability to contribute meaningfully to the university's research community. I am eager to embark on this path deepen my expertise and make a lasting contribution to the field of Artificial Intelligence.

Sincerely,
Md. Kawsher Mahbub