**Statement of Purpose**

My research interests lies in software engineering, human-computer interaction (HCI), machine learning, artificial intelligence, deep learning, and the Internet of Things. These drives my ambition to build intelligent, user-centered tools that empower developers across domains, particularly in education and healthcare. Through this programme, I seek to synthesize these fields to address productivity challenges in development and create solutions for pressing issues in these sectors.

My interest in software engineering and data science has evolved through significant roles as an instructor and mentor, where I observed common challenges faced by emerging developers. Currently, I instruct students in Software Development at Vnicom Tech Hub and also mentor young learners at Prince Children Foundation. In these roles, I guide students in understanding programming fundamentals, problem-solving strategies, and project development, fostering an environment that encourages hands-on learning and exploration. Teaching and mentoring has given me insight into the cognitive processes and difficulties that novice developers experience. This motivates my research focus on designing tools that enhance developer productivity, support personalized learning, and streamline the process of learning and applying complex computational techniques.

In addition to supporting developers, I am committed to applying my research interests to tackle challenges in healthcare, a sector where accessible, data-driven tools have the potential to make a profound impact. The healthcare sector faces unique and complex demands, such as managing large volumes of patient data, predicting patient outcomes, optimizing resource allocation, and personalizing treatment plans. I envision using machine learning and deep learning to process these data more effectively and develop models that can assist clinicians in identifying patterns, managing patient risk factors, and improving diagnostic accuracy. Moreover, by leveraging IoT technologies, I hope to create smart systems that monitor patient health remotely, thereby facilitating timely interventions and reducing hospital readmission rates, especially in undeserved regions in Nigeria.

Through my mentorship experiences, I am particularly interested in researching methods to improve software usability and accessibility for a broad range of developers, including end-user programmers like healthcare professionals who may lack formal programming training. In particular, many end-user programmers face challenges in translating complex software requirements into efficient, error-free code. My research aims to address this gap by integrating empirical methods in software engineering with HCI techniques to develop intelligent tools that adapt to diverse programming needs. For instance, by analyzing developers’ interactions with APIs and code completion systems, I hope to uncover insights that will improve tool usability and reduce cognitive barriers. Ultimately, I aim to make computational tools more intuitive and efficient, allowing users to focus on high-level problem-solving rather than low-level implementation details.

One of my current projects involves analyzing factors influencing student performance, where I apply machine learning methods to understand variables like attendance, study hours, and parental involvement. This experience solidified my interest in using machine learning to address real-world challenges and highlighted the potential of machine learning to drive insights and decision-making. Building on this experience, I am particularly inspired to explore how these methods can be extended to healthcare applications. For example, predictive analytics can play a crucial role in early disease detection, while deep learning algorithms may enhance imaging analysis for accurate diagnoses. By bridging these methods with IoT, I envision systems that continuously monitor patient health metrics, integrate this data with patient histories, and apply real-time analytics to support clinical decision-making, improving patient outcomes and reducing healthcare costs.

My professional experiences have further deepened my understanding of the practical challenges and nuances of software engineering, which are often not addressed by existing tools and methods. In previous collaborations with development teams, I identified and addressed performance bottlenecks in software build processes, underscoring the importance of designing tools that reflect real-world developer practices and constraints. This experience highlighted for me the need for a research approach that combines software engineering theory with insights from HCI and applied machine learning to create tools that support developer needs in an actionable way. This expertise will be instrumental in developing healthcare applications that are both technically robust and tailored to the unique demands of clinicians, nurses, and support staff who rely on intuitive, reliable systems for patient care.

I am particularly drawn to the program’s emphasis on interdisciplinary research in software engineering, HCI, and applied machine learning. I am eager to contribute to projects that explore the intersections of these fields, learning from and collaborating with experts to push the boundaries of what computational tools can achieve.

In the long term, I aspire to a career in research and academia, where I can continue developing tools that democratize access to software development and improve outcomes in fields like healthcare. I look forward to the opportunity to join your program and collaborate with an innovative research community to advance the field of computer science.