Personal Statement

Throughout my academic journey, my intellectual drive has always been focused on tackling real-world problems and conducting research in areas where we can address different societal and global issues and work toward their solutions. Thus, I always find myself constantly searching for impactful works that use methods to investigate diverse challenges faced by people across different aspects of life. In this regard, your works aimed at providing the best user experience for individuals with physical challenges resonates with my aspiration of taking on issues that can be relevant from layman to scholarly level and I really feel enthusiastic to work on these projects.

Additionally, I think that there is a lot to explore to ensure the best accessibility experience for individuals with special needs. Developers can play a pivotal role in making the digital world more inclusive. I sincerely believe that my drive to traverse through efficient solutions to complex problems makes me a suitable candidate for this type of work, given my strong passion for problem-solving, which has been a significant focus throughout my university life up until now, constantly motivates me to be engaged in various competitive programming platforms such as Codeforces, CodeChef, and HackerRank, as well as in both online and offline coding contests.

Furthermore, my research journey so far has commenced with projects that sought to tackle issues that are very much relevant to real-world challenges. Notably, “Question Bank Simplifier” is one of them which focuses on assisting teachers to streamline their workload by generating automated question papers based on total marks, weight and difficulty level. I implemented the ‘Sum of Subset’ algorithm behind this system. My other projects include the development of the “Homemade Product Market” which I created during the Covid-19 pandemic aiming to bring all homemade business owners under one umbrella. Not surprisingly, my association with software engineering somewhat sparked a keen curiosity and thus, I chose to conduct my undergraduate thesis on software evolution and maintenance where we investigated context-adaptation bugs for micro-clones (code fragments of at most 4 lines).

In this research, we mined thousands of revisions of five software repositories in three different programming languages. Our analysis involved extracting and examining the clone evolutionary history of these systems based on their commit operations, along with identifying specific patterns that indicate when context adaptation bugs in micro-clones are fixed. Throughout our study, we tried to answer four research questions which finally indicate that micro-clones are more prone to context-adaptation bugs compared to regular clones. This research offers valuable insights to raise awareness among developers and guide them toward more effective coding practices.

On top of that, through some of my other projects, I gained hands-on experience in the fields of Machine Learning (ML) and Natural Language Processing (NLP). One of them was, “Bengali Blog Classification According to Title”, where I implemented 3 different ML algorithms (KNN, SVM, & Logistic Regression) to do so. This simple yet impactful project gave me significant exposure to the Machine Learning (ML) fields and made me wonder how groundbreaking research can be possible by bridging Software Engineering and Artificial Intelligence. This experience has deeply motivated me to search for promising scopes of integrating Machine Learning (ML) approaches to automatically detect clones, and context-bugs, as well as to prevent them which was the primary goal of our undergrad research.

I have always been drawn to research works that have the capability to maximize the quality of life at all degrees. I believe that the most impactful research works are those that have direct implementation from a ground to pedagogic level. Upon exploring the scopes that your works offer and given that my developer-level experience allows me to understand the need for research projects subjecting accessibility, I think that my involvement will not only open a perfect space for me to engage in works that deal with such issues but also can serve your interest effectively as well.

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