



**DEPARTMENT OF INFORMATION TECHNOLOGY**  
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### **To whom it may concern**

It is with very great pleasure that I write this recommendation for **Mr. Osama Shakeel** to support his application for further studies at your reputed institute. Osama has a deep passion for Machine Learning and Data Science and has been one of the few exceptionally gifted students that I have encountered in my career of Software Engineering teaching.

I first encountered Osama when he was a junior in my **Software Construction and Development** and **Software Quality Assurance** course in BS Software Engineering Program. He excelled in all three portions of my Software Construction and Development class that I taught during the 2021-2022 academic year. As a junior, he worked very well with others, and he is well-versed in the application of various machine learning algorithms and approaches to real-world situations, and he has a thorough knowledge of how to extract important information from enormous data sets. His academic experiences have served me well in the development of my problem-solving, critical thinking, and collaborative abilities. He works effectively to communicate professionally with superiors, and coworkers by using clear and concise communication.

Among his many achievements and accomplishments, he took part in group projects based on the domains of Artificial Intelligence, Machine Learning, and Image Processing in which he did statistical research for educational purposes, gathered and evaluated the data, and then we presented the findings in the form of a lecture during his semester project. I am currently his final year project supervisor and Osama, and his colleagues are working on a project that combines Artificial Intelligence, Machine Learning and sentiment Analysis. Through the merging of multimodal data, it is dubbed '**Sentiment Analysis of Markets**'. Sentiment analysis is simply using machine learning to teach computers to do just this, extract the sentiments out of our sentences.

The main idea of the project is to take an input of market data and process that to give the emotion of the peoples and market and the sentiment as to the context of data. This idea has a wide range of applications including but not limited to Stock Price, Stock Exchange, and business growth. With the advancement in sentiment analysis and machine learning, machine models are getting too close to answer these questions like how our behavior, emotions and sentiments are. Sentiment analysis has the applications to Healthcare, Lifestyle, and Psychoanalysis.

As a teacher and his supervisor, I have found Osama to be an intelligent, motivated, and responsible student who is keen at learning. He academically excelled among his peers, often explained concepts to confused classmates, actively participated during discussion, asked questions to ensure that he had a firm understanding of concepts, and sought additional sources for supplementary problem-solving exercises. Osama is a self-motivated, dedicated,

hardworking student of high intelligence who can grasp difficult concepts, think critically and handle the rigor of a competitive environment. He exhibits the qualities of a leader and promising scientist who truly loves science.

Beyond his academic excellence, Osama is a charismatic individual who is respected and liked by faculty and peers. He interacts well with his peers be it in the classroom setting or with the broader diverse student population where he is well known as a balanced individual with a warm personality and sense of humor. He also engages in a variety of social and community activities, including our academic teams, which provide a disciplined yet exciting venue for competition and learning.

Overall, Osama exhibits the qualities of a leader as well as a great learner who has had ample research experience and excels academically in challenging, advance level courses. His academic and personal achievements show that he is committed to his education and will work hard to achieve his goals. He exudes confidence and has a vivid, outgoing, and friendly personality that allows him to get along with others very well in any setting. I admire him for his intelligence, sincerity, honesty, and integrity and am impressed by his discipline as an independent learner. He is a highly motivated individual with a thirst for knowledge. Osama Shakeel would truly be a superior addition to the student body at your institute.

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