**Exploratory analysis of suicidal tendency in depression investigation social media post**

**Abstract:** Depression and suicide are inter-connected. Depressive condition influences the chance of suicide risk. Though, to what extent of depression level triggers suicidal attempt is a scrutiny. Traditional interview-based clinical diagnostic approach is not effective to anticipate a depressed person's psychiatric status. Since patients often prefer not to disclose their emotions, reluctant to seek help from psychotherapists, or doctor. Social media's footprint often seen people discussing things which are not disclosed publicly, emotionally distressed often disclose themselves, seek empathy and reveals physiological states. Hence it has become a valuable source of research for depression and suicidal behaviors. This study uses social media datasets for exploratory data analysis to estimate the degree of suicidal thoughts within depressed person's post. The objective is to determine if a depressed individual has a suicidal tendency, determine the degree of the intensity or the opposite. This study presents an unsupervised feature analysis using the topic model approach followed by supervised classification to quantize significance. Latent suicidal intents, cross-topic co-occurrence patterns, and dominant high-impact keywords of suicide are revealed from unsupervised Latent Dirichlet Allocation (LDA) modeling. Furthermore, Supervised machine learning classifier models are applied to determine the severity of suicide tendencies. To get the best results, cutting edge text embedding vectorization techniques and machine learning estimators are applied. Statistical measurements depicts the degree of suicide intensity within depressed label post. From the analysis it is revealed that suicidal tendency within depression people post is extremely high. Depressed person's post showed 60\% similarities in various categories of suicidal intensity.

**Keywords:** Suicide and Depression, NLP, Unsupervised LDA model, exploratory analysis, feature extraction.

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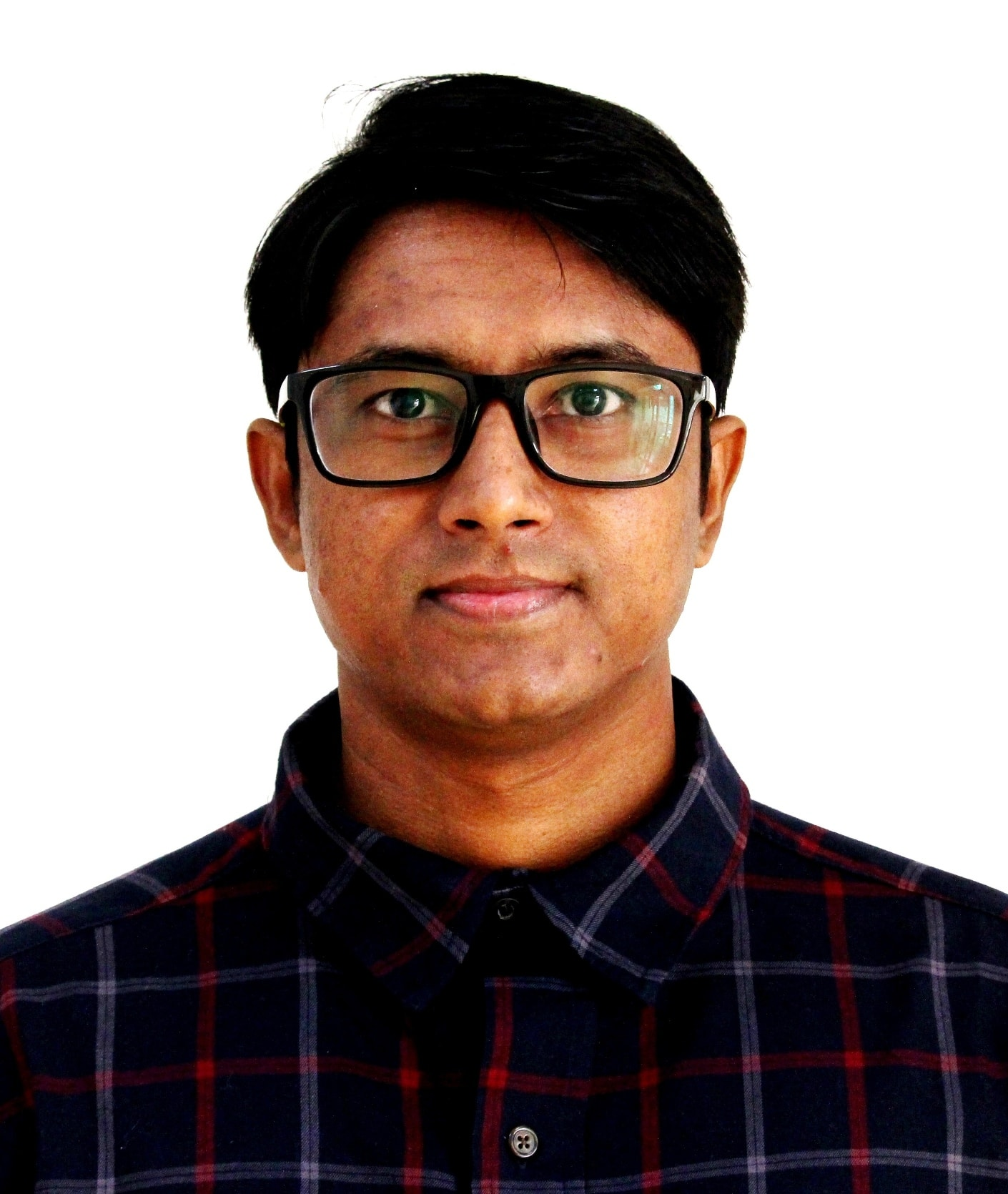
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