

## **Group 03**

**STAT 31631 – Statistical Modelling**

**Group project**

**Activity 04**

## Conclusion

The study successfully identifies the key factors that influence concrete compressive strength, a critical measure of construction quality. The results demonstrate that cement, blast furnace slag, fly ash, water, superplasticizer, and the age of the concrete are significant predictors of compressive strength. Among these, the age of the concrete and the cement content have the most substantial positive impact, indicating that both the duration of curing and the proportion of cement are crucial for achieving higher strength.

Water content, however, negatively affects compressive strength, underscoring the importance of careful water management in concrete mix designs. The roles of coarse and fine aggregates, while not statistically significant in this model, suggest that their influence might be context-dependent or require further study with different mix proportions or types of aggregates.

Overall, the model explains approximately 77.41% of the variability in concrete compressive strength, confirming the importance of the selected predictors. The study provides valuable insights for optimizing concrete mix designs to enhance both construction quality and sustainability. Future research could explore additional variables or alternative modeling techniques to further refine these findings.

## References

Web site : UC Irvine Machine Learning Repository