

Predictive Analytics on Academic Record of NUCES

Abstract

Each year a number of students take admission in FAST NUCES . The students taking admission in FAST NUCES are from different educational backgrounds and different regions . Their academic performance throughout their university life is a reflection of their educational background , their previous academic records and the region/district from where they belong . The main purpose of this project is to analyze the academic data of FAST NUCES and find out the correlation between the background and academic performance of students . Based on our research on the data we will predict how the freshmen batch is likely to perform in their upcoming four years . The work will be performed using machine learning techniques , after the EDA and visualization of the data set .

List of attributes required

Attributes from admission form:

- 1) Student name/no. (if not anonymized) , otherwise any unique identifier
Note : If we will not be provided with the anonymized data , we will anonymize it first before using it for our project . NDA can be signed for this purpose .
- 2) Gender
- 3) NU Test / SAT / NTS score
- 4) Educational background (Intermediate/ A-levels)
 - Details about opted field in Intermediate: comp sci / pre-engineering
 - For A levels: studied computer science or not
- 5) Educational background (Matriculation/ O-levels)
- 6) Grades of Matriculation / equivalent
- 7) Grades of Intermediate / equivalent
- 8) School name
- 9) College name
- 10) CGPA
- 11) City
- 12) District
- 13) University Campus
- 14) Department/Degree
- 15) Date of admission

Attributes from Transcript:

- 1) Courses enrolled
- 2) Marks in each course
- 3) Grade in each course
- 4) Course type

Questions to be answered

We will be answering the following questions with the help of the analytics we will perform on the academic record of NUCES :

Q1. How does the previous educational background (Intermediate / A levels) affect the performance at FAST?

Attributes:

- Educational background (Intermediate / A levels)
- Sgpa
- Cgpa

Q2. How does the previous educational background (Matriculation / O levels) affect the performance at FAST?

Attributes:

- Educational background (Matriculation / O levels)
- Sgpa
- Cgpa

Q3. What is the correlation between matriculation / equivalence grade and the performance at FAST?

Attributes:

- Grade of matriculation exam / equivalent exam
- Sgpa
- Cgpa

Q4. What is the correlation between intermediate / equivalence grade and the performance at FAST?

Attributes:

- Grade of intermediate exam / equivalent exam
- Sgpa
- Cgpa

Q5. Does previous knowledge / experience of Computer Science (intermediate / equivalent) affect the grades in programming courses?

Attributes:

- Grades of programming courses
- Opted field in intermediate (Computer science / Pre-engineering)

Q6. Does previous knowledge / experience of Computer Science (matric / equivalent) affect the grades in programming courses?

Attributes:

- Grades of programming courses
- Opted field in matric (Computer science / Pre-engineering)

Q7. Does previous knowledge / experience of Engineering affect the grades in EE courses?

Attributes:

- Grades of EE courses
- Opted field in intermediate (Computer science / Pre-engineering)

Q8. Does there exist any correlation between the city/district (a person belongs to) and their academic performance?

Attributes:

- City of a student
- District of a student
- Cgpa
- Sgpa

Q9. Does the educational background affect the test score? What is the correlation between these two?

Attributes:

- Educational background (Intermediate / A levels)
- NU Test / SAT / NTS score

Q10. Does the NU test score affect the academic performance at FAST? What is the correlation between these two?

Attributes:

- NU Test
- Cgpa
- Sgpa

Q11. Does the performance in initial CS / EE courses affect the performance in the later ones?

Attributes:

- Grades of CS / EE courses

For example: How does performance in OOP relate to PF?

Q12. Does academic performance vary campus wise ?

Attributes:

- Campus
- Cgpa
- Sgpa

Q13. What role does gender play in academic performance ? Do girls tend to perform better than boys or vice versa ?

Attributes:

- Gender
- Sgpa
- Cgpa

Q14. Does the SAT / NTS score affect the academic performance at FAST? What is the correlation between these two?

Attributes:

- SAT / NTS Score
- Sgpa
- Cgpa

Q15. What is the correlation of a school with academic performance at FAST ? i-e students from which school perform better than others ?

Attributes:

- School name
- Sgpa
- Cgpa

Q16. What is the correlation of a college with academic performance at FAST ? i-e students from which college perform better than others ?

Attributes:

- College name
- Sgpa
- Cgpa