# Gate placement

For gate placement, we wanted to investigate the results for adding gates near the project start, middle, and end. We also implemented functionality for drawing these diagrams, with the help of functionality implemented in Assignment 2 – Chess Games. Gates are represented as orange diamonds. These images are saved in the images folder if they are too blurry in the report.

## Villa PERT-Diagrams with gate placements

|  |  |  |
| --- | --- | --- |
| Gate after C | Gate after H | Gate after P |
|  |  |  |

# **Machine Learning Results**

# Classification

## Accuracy for different classification methods

|  |  |  |  |
| --- | --- | --- | --- |
|  | Gate after C | Gate after H | Gate after P |
| Logistic Regression | 73% | 79% | 96.5% |
| Random Forest | 73.5% | 77.5% | 98% |
| Decision Trees | 53% | 67.5% | 98% |

## **Confusion matrixes for different classification methods**

For confusion matrixes, a good prediction means that most of the values are on the diagonal.

### Gate after C

|  |  |  |
| --- | --- | --- |
| Logistic Regression | Random Forest | Decision Trees |
|  |  |  |

## Gate after H

|  |  |  |
| --- | --- | --- |
| Logistic Regression | Random Forest | Decision Trees |
|  |  |  |

## Gate after P

|  |  |  |
| --- | --- | --- |
| Logistic Regression | Random Forest | Decision Trees |
|  |  |  |

Comment:

## Regression

### Accuracy tables for different regression methods

Gate after C

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | R^2 | MAE | MSE | Accuracy |
| Logistic Regression | 0.63 | 16.79 | 446.48 | 63% |
| Random Forest | 0.55 | 17.97 | 536.16 | 55% |
| Decision Trees | 0.09 | 25.68 | 1076.07 | 9.9% |

Gate after H

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | R^2 | MAE | MSE | Accuracy |
| Logistic Regression | 0.79 | 11.16 | 186.26 | 79% |
| Random Forest | 0.77 | 11.55 | 203.86 | 77% |
| Decision Trees | 0.54 | 16.18 | 399.04 | 54% |

Gate after P

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | R^2 | MAE | MSE | Accuracy |
| Logistic Regression | 0.99 | 1.06 | 1.71 | 99% |
| Random Forest | 0.99 | 1.24 | 2.31 | 99% |
| Decision Trees | 0.99 | 1.73 | 4.60 | 99% |

# Statistics from 1000 samples of each risk factor

Deciles = 10

A picture containing text, screenshot

Description automatically generated