The King under the elevator

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Abstract

In this pretty pointless paper,we have collected data for the transit time of elevators from various floors using random data sampling.The data was collected at the Hostel 15B,IIT Bombay from 20th July 2014 to 15th August 2014.

1 Introduction

We decided to study the elevator system in our hostel so as to find a linear corelation between the transit time and the number of floors transversed.The data was collected using random sampling so as to optimize the data collection time.

2 Data collection

The following conventions were used while data collection to ensure uniformity in the data:

- The data was collected by the authors themselves at random times.

- Two timers were used:Sonata WR100M Digital Watch and Samsung Champ Duos with least counts of 1s and 0.01s respectively.

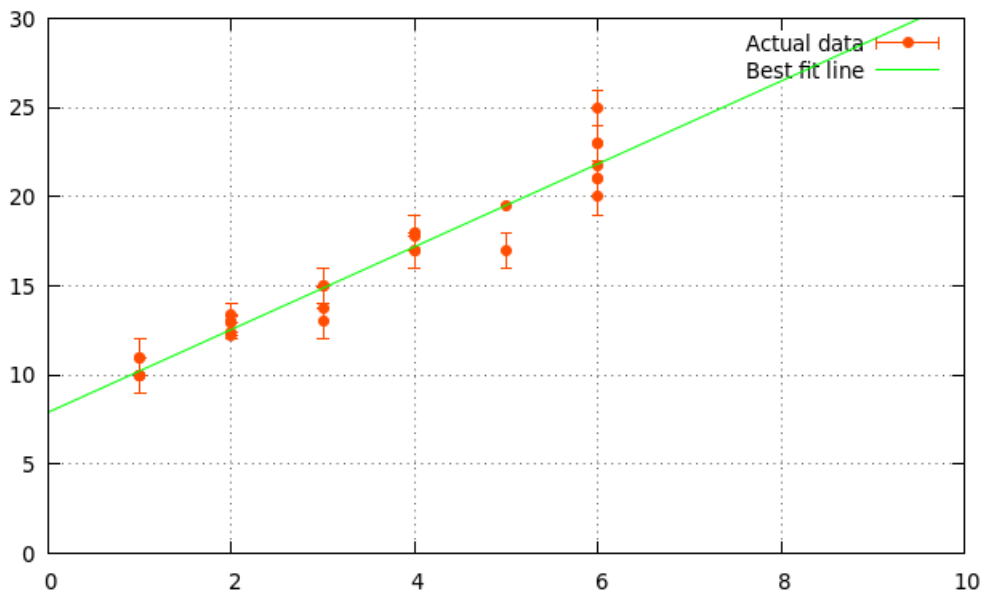- The opening and closing of the door was used as the the mark for time measurement.

Figure 1:

3 Data Analysis and Results

We did a linear fit using gnuplot on the data. The equation for the best-fit line is

$$f(x) = ax + b$$

with $a = 2.32 \pm 0.11$ and $b = 7.92 \pm 0.43$ for a reduced χ^2 of 1.21

The parameter b can be interpreted as the acceleration and deceleration time close to the source and destination floors respectively.

4 Concluding Remarks

Since the authors live on the sixth floor, we have a lack of data for $x \geq 7$. Otherwise, this analysis can be extended to the entire span of floors. While the floor display was disfunctional, this method could easily be employed to predict the floor the lift has reached even with a crude timer with an accuracy of ≈ 2 s.