

## Performance of Signal Strength prediction in Data transmission Using Elliott wave Theory

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**Abstract:** The article describes an algorithm for predicting the future signals with the aid of past signal samples. In the real signal processing environment, the amplitude and unsystematic in phase signal are lead to more complex to estimation the signal, thereby, customer service is enhanced by forecast. The forecast of financial marketplace are usually done by means of Elliot wave theory. In this article possibility and applicability survey of the EW Theory is proposed in the paper towards the power of the signal forecast. In nature, the EW theory has free declining environment, and also uncomfortable based on the customer and base station and height of the antenna. The proposed algorithm has tested in real life conditions, considering both, the pedestrian persons and the people travelling at 60 Km/Hr. Consequently, the predicted result incorporates the practical signal strength based on increasing distribution utility, signal to intervention noise ratio (SNR) and instability at their subsequent time. The end result of the algorithm shows 68% of successful prediction.

**Keywords:** Elliott wave, Fibonacci, SNR, prediction.

### 1. Introduction

Desire for everyone will be to predict something which happens ahead. In predict to forthcoming signal power prior to itself will support significantly in different field for instance wireless communication. “Golden ration” is nothing but present value is divided by the previous value in the Fibonacci series, thereby the ratio is almost 1.618. In 1930’s Ralph Nelson Elliott, a professional accountant, developed the analytical tools and discovered the underlying social principles. He anticipated that market prices disclose in definite pattern as Elliott waves.

In [1], the authors developed a predictive form of an evolving signal. From the obtainable input-output data, if-then rules are conditional. The model prediction issue can be used to detect any variation of the process also to an operator's action and component's failure. Application are

obtainable with respect to chaotic time sequence of literature and to level of the water in the steam generator of a hassled water reactors. Fuzzy prediction systems (1) extinguishes the fuzzy resolution on signal strength, and there member ship functions, handoff factor (HF) with handoff threshold (HFT) to proposed a suitable prediction systems.

The authors in [2] intended active regressive integrated moving normal (DRIMA) model using unsystematic method strategy the upcoming value was predicted. With the information of current and previous data, the planned DRIMA model predicts the value of next data. In [3], the author’s obtainable production inventory model for practical applications in real world. Predicting the periodic sustain and overall claim is a demanding job. But it can be definitely completed with the suggested method by means of fuzzy valuation.

The authors in [4] developed a mobility based predictive bandwidth reservation arrangement, which offers flexible procedure regardless of restricted resources in wireless communication network, as flexible usage. The simulation consequences were confirmed to be effective in decreasing the interruption on standard calls ratio and handoff call falling ratio level in actual time circulation circumstances. To come across the normal mobile handoff and redirecting, the wireless networks require effective flexibility management. The authors in [5-6], consider the problem of consumer mobility valuation and prediction for refining the assembly consistency and bandwidth productivity, realized by emerging a categorized consumer mobility model which thoroughly observe the effort of mobile consumers. For estimated outline equivalent, Kalman filtering methods was used as precise prediction procedure.

The authors in [7] presented the Fuzzy logic equivalent intervention cancellation (FLPIC), which had deducted the interference from each consumer’s received signal. The performance of FLPIC with multi-user detection (MUD) for several frequency selected similar fading channels in CDMA [8] was examined. The results reproduced that the suggested method can adjust to large deviations relating to customer’s fading effects.

## 2. F (Fibonacci) Ratio and EW Rules

### 2.1. F (Fibonacci) Ratio in EW Patterns

Elliott wave proposal involves an instinct wave and remedial trend as shown in Figure 1.

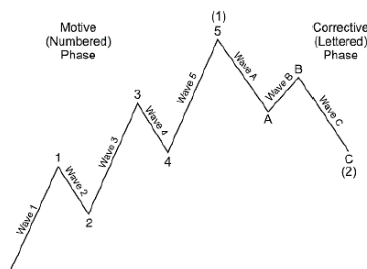


Fig. 1. Basic Elliott wave pattern

The wave which moves along the inclination and the predictive wave is known as Impulse wave. The Fibonacci ratios is the back bone of the EW analysis.

Fibonacci levels contains the resulting details:

00.0%, 23.6%, 38.2%, 50.0%, 61.8%, 100.0%, 161.8%, and 261.8%.

The Elliott Wave sequence defined to Fibonacci levels is as follows.

The Wave 1 to Wave 2 illustrates 50.0%, or 61.8% .

The Wave 1 and Wave 3 illustrates 161.8%, 261.8%.

The Wave 3 to Wave 4 illustrates 38.2%, 50.0%. 61.8 .

The Wave 4 and Wave 5 illustrates 100% of Wave 1 or 161.8%.

The Wave 5 and Wave A illustrates 161.8%, 100%, 61.8%, or 50.0%.

The Wave A to Wave B illustrates 50.0%, 61.8.

The Wave B to Wave C 100% or 161.8% of Wave A, or 161%.

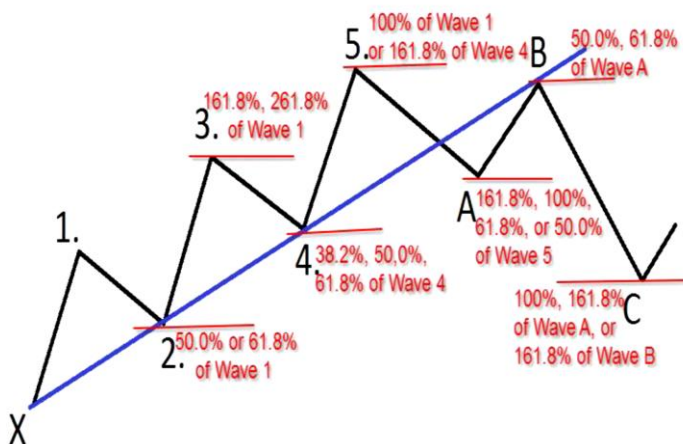


Figure. 2. Image of Fibonacci ratios

In Figure 2, the Fibonacci relations that check EW designs on the chart was displayed. Relating the EW arrangement by F relations provides facts on high possibility opinions and where the resulting power level is expected to sack. Hence including of waves and claim of the suitable F Level are important for each EW trader.

## 2.2. Elliott wave rules:

### i) Impulsive Wave:

The impulsive waves are categorized on the base of certain types. There are two significant points to be recollected. They are:

- Wave-5 subject to Wave-1 that reviews the complete Wave-1 or more. Likewise depending upon Wave-3 that review 0.618 times Wave-3.
- Wave-3 subject to Wave-1 that reviews 1.618 or 2.618 or 4.23 times Wave-1.

Additional types of waves wherever three impulse wave ranges consequently exist.

- *Extend Wave-1:*

If Wave-1 is extra than Wave-3, Wave-5 travels beside the trend such that the distance of Wave-3 and Wave-5 together is 0.618 times the Wave-1. (Extension of 1st wave).

- *Extend Wave-3:*

If Wave-1 is smaller than Wave-3, Wave-5 reviews Wave-1. This is exact to the elementary Elliott wave. (Extension of 3rd wave).

- *Extend Wave-5:*

If Wave-1 is the same to Wave-3, Wave-5 is stretched up to 1.618 times the distance of Wave-1 and Wave-3. (Extension of 5th wave).

*ii) Corrective Wave:*

- Wave-4 is governed and depend on Wave-3 that can go back almost up to 62% of Wave-1.
- Wave-2 is governed and depend on Wave-1 that can go back up to 99% of Wave-1.

### 3. Proposed Algorithm

In actual prediction, strength of signal are documented by Global System for Mobile Communications signal observer application, which is kept in the client equipment. In the proposed method, EW theory is modelled using four historic P1, P2, P3, P4 and estimated PP. The detailed analysis of the proposed estimation is explained in the following sections.

### 4. Experimental Results

The developed RSSI data would be kept and jointly recorded by means of GSM monitoring application. In actuals, interconnect among customer equipment and NI USRP-2920 added to real system for the appropriate application suggested in this research artefact. The graphical illustration of the acquired data is pictured in Figure 3. Using Elliott wave pattern. The recommended algorithm is verified on the two circumstances, one as pedestrian customer and another as customer travelling at 80 km/hr, and computed using 256 facts and samples.

The Figure 3 explains the performance of Elliot wave theory for the both scenario addressed in this research article.

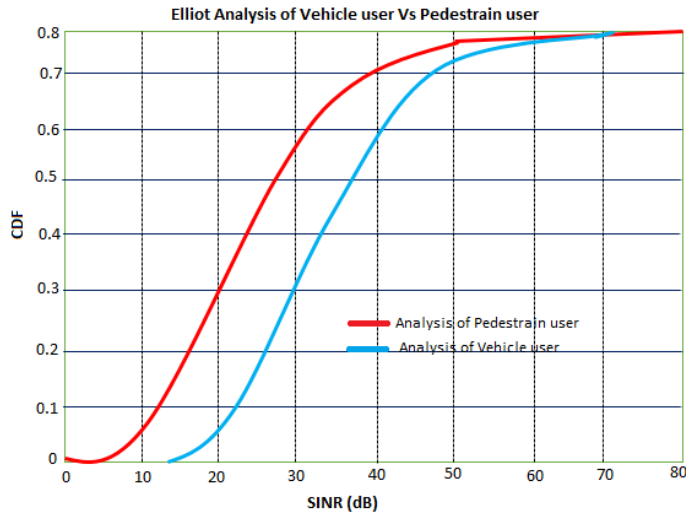


Figure. 3. Elliot Study of Vehicle and Pedestrian user

Table 1 Analysis with respect to CDF

CDF	SNR (dB)	
	Vehicle User	Pedestrian User
0.6	20	28
0.7	26	34

Table 2 Analysis with respect to SINR

SNR (dB)	CDF	
	Vehicle User	Pedestrian User
20	0.6	0.2
30	0.88	0.7

The Elliot wave theory suggested in this research tracks two methods: Cumulative Distribution Function and Signal to Interference Noise Ratio as shown in Table 2. The suggested method estimates pedestrian customer has good strength in signal when comparing to the vehicle customer.

**A. Volatility Analysis**

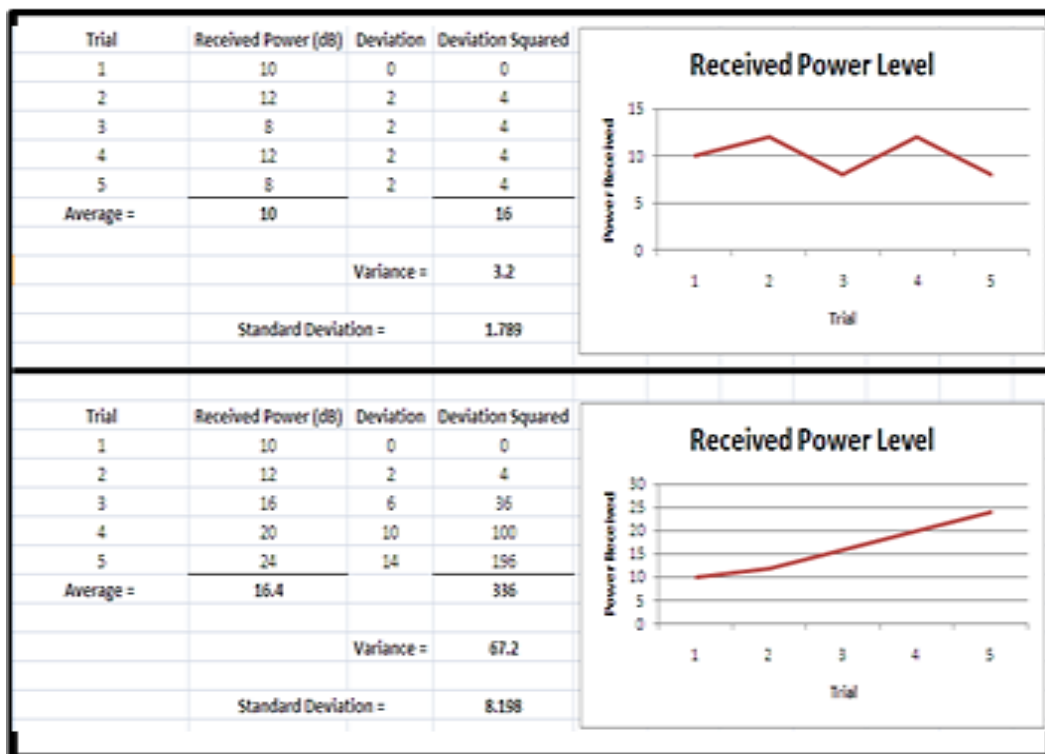
The variation of power level in a specified time by Elliott wave is unknown but instability, which truly computes the typical deviation of the expected power level in the specified period.

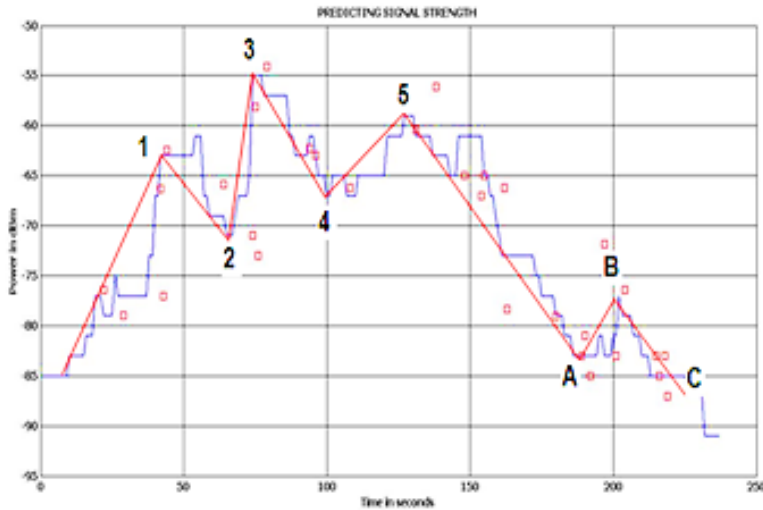
**Case 1:**

The acknowledged power level for an hour in the series of 10, 12, 8, 12 and 8 dB is charted in Table 3 by means of normal deviation of 1.78. The pedestrian customer situation accepts power level in the narrow band from 8 to 12 at normal deviation is low as 1.789.

**Case 2:**

In the scenario two, the attained power levels are ranged as 10, 12, 16, 20 and 24 dB respectively, and the normal deviation of 8.198. In the vehicle customer situation, the attained power level in the range of 10 to 24. In this situation, normal deviation is much greater than the pedestrian customer owing to the power level being superior.





**Figure .4** Estimation of signal strength for pedestrian user

Figure 4, the solid (blue) line specifies the signal received and (red) dotted line specifies predicted points. However, the solid color line specifies the existence of Elliott wave design from the received signal. Thus the valuation can be improved by increasing the sample numbers. The estimate can be enhanced through increase of samples.

## 5. Conclusions

The proposed method adds overhead data by removing and using the Elliott wave theory procedure. The proposed method is estimated based on the two cases, which is independent to signal strength, user location and fading. The computation of estimated signal analyzed both on the pedestrian customer scenario compared to vehicle customer. Thus, proposed system disregards the handoff potential in cellular network and effective resource can be attained in the subsequent generation of the cellular network.

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## Acknowledgements

The authors declare that they have no conflict of interest.

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The authors declare that they have no conflict of interest.

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