|  |  |
| --- | --- |
| Activity No. 2 | |
| Noise Generation and Analysis | |
| **Course Code:** CPE 027 | **Program:** |
| **Course Title:** Digital Signal Processing and Applications | **Date Performed:** |
| **Section:** | **Date Submitted:** |
| **Name/s:** | **Instructor:** |
| **1. Objective:** | |
| This activity deals with the programmatic creation of a noise signal by analyzing and quantifying properties in a pre-existing dataset. | |
| **2. Intended Learning Outcomes (ILOs):** | |
| After completion of this activity the students should be able to:  Develop a program that manipulates the statistical properties of signals and noise. | |
| **3. Discussion :** | |
| Noisy data is meaningless data. The term has often been used as a synonym for corrupt data. However, its meaning has expanded to include any data that cannot be understood and interpreted correctly by machines, such as unstructured text. Any data that has been received, stored, or changed in such a manner that it cannot be read or used by the program that originally created it can be described as noisy.  Noisy data unnecessarily increases the amount of storage space required and can also adversely affect the results of any data mining analysis. Statistical analysis can use information gleaned from historical data to weed out noisy data and facilitate data mining.  Noisy data can be caused by hardware failures, programming errors and gibberish input from speech or optical character recognition (OCR) programs. Spelling errors, industry abbreviations and slang can also impede machine reading. | |
| **4. Resources:** | |
| The activity will require the following software, tools and equipment: | |
| **5. Directions:** | |
| 1. Create a random noise data set using python, based on the first 100 samples of the dataset. You can do this by collecting all their mean and standard deviations and averaging it. You can use a randomizing script to generate those data.  2. Create a program to subtract the noise you have generated to ten(10) samples at steps 100 to 195.  3. Create another program to subtract the Baseline Noise to the same ten(10) at steps 100 to 195.  4. Retrieve the raw data for the samples you took at instructions 2 and 3.  5. Compare the plots, means, standard deviations, and errors of the three results. | |
| **6. Procedures** | |
| *\*Document EVERYTHING you did to accomplish this. Discuss why you did those.* | |
| **7. Results(sample)** | |
| *\*Don’t forget to add a link of your ipynb file, csv, and image results.* | |
| **8. Data Analysis** | |
| ***\*****what did you observe in the data?* | |
| **9. Summary and Conclusions** | |
| *\*summarize what you did. What did you find out?* | |
| **10. Learnings and Contributions of each member** | |
| *\*what did you do to contribute to this activity? What new learnings, methods and techniques did you pick up? Describe in detail.* | |