

A NON- INVASIVE MEDICAL TOOL FOR ANEMIA DISEASE DIAGNOSIS

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Abstract - In this present era Anemia is global health problem, Anemia is a very big issue for present era. The World Health Organization (WHO) estimates that some two billion people are anemic. As per the medical science there is lots of way to detect the Anemia, but most of the approaches are based on Invasive approach. The problem with Invasive approach is require the physical contact with the device so, In this paper we discuss about the previous existing Invasive and non- invasive approaches which are based on nails eyes and hemoglobin based. Here we also did the comparative analysis and based on the analysis we find the previous . existing issues and based on those issues we try to find the future scope on this area. Here we also did the implementation of those previous existing approaches. Here we use the python as a language for the implementation of existing approaches. In terms of result analysis, we use two parameters which are time complexity and accuracy.

Keywords: *Invasive, Non- Invasive, Digital image processing, Computer vision, Device, Blood, Nails, Eyes*

1. PRESENTATION

A New Method and a Non-Invasive Device to Estimate Anemia Based on Digital Images of the Conjunctiva Anemia is a worldwide general medical issue with significant ramifications for human wellbeing. The World Health Organization (WHO) evaluates that around two billion individuals are iron deficient, which is dened as Hb focuses that are beneath the suggested edges [1], [2]. Frailty is dened as a diminishing in the red platelets circling in the blood or as a decline in the centralization of Hb: consequently, it is a decreased capacity of the blood to move oxygen. It begins basically from wholesome variables (iron decieny, nutrients and minerals), irresistible illnesses (jungle fever, intestinal parasites) or hereditary components (hemoglobin opathies) [3], [4]. These variables can happen in detachment yet are habitually related. Iron decieny Anemia is the most well-known dietary decieny, and it causes a large number of passings (allianceanemia.org); it is additionally liable for expanded dreariness and mortality in pre- younger students and pregnant ladies. In 2002, iron decieny Anemia was viewed as among the most significant contributing components to the worldwide weight of ailment [5]. Weakness has a moderate advancement: typically, no conspicuous indications show up for Hb>9-10 g/dl, since the human body executes compensatory components, for example, expanding the measure of blood siphoned, so that the measure of oxygen discharged to the tissues remains practically unaltered. At the point when the pay can no longer ensure a satisfactory portion of oxygen, indications, for example, weakness, whiteness, peevishness, expanded pulse, sleep deprivation, cerebral pain and numerous others show up. The clinical report, as a rule, is vague and difcult to depict. Also, Anemia is regularly not analyzed or enough treated in incessant patients for whom it is a significant hazard factor (counting mortality) and has a signicant sway on the personal satisfaction. Notwithstanding its etiology, since an extreme level of Anemia bargains the cell oxygen accessibility and causes harm that ranges from harm to crucial organs to a possibly perilous condition, by and large, iron deficient patients must be transfused dependent on their Hb level, which can

uctuate step by step. Iron deficiency is evaluated by estimating the degree of Hb, a protein in the red platelet that is the most dependable pointer of Anemia, since Hb supplies oxygen to the entirety of the cells of the body. Standard clinical strategies to analyze Anemia basically depend on the intrusive assurance of blood Hb, which requires venepuncture performed by a medical caretaker or a doctor. Visit blood inspecting prompts the patient's distress, and the necessity of setting off to a research center or calling a medical caretaker includes significant cost. Indeed, it is of incredible enthusiasm to contemplate techniques and to configuration instruments to screen the convergence of Hb in a noninvasive manner, with diminished costs, both in the lab and at the patient's home, here and there even day by day. Numerous examinations show extraordinary enthusiasm for the whiteness of body parts to assess Anemia. For instance, Aggarwal et al. [6] examined the legitimacy of palmar paleness for the finding of Anemia among kids matured 659 months. Tsumura et al. [7] considered skin shading and surface examination/amalgamation by removing Hb and melanin data in the skin. Moreover, [8] reports concentrates on the connection among skin and Hb. Spinelli et al. [9] looked at the examination of palmar and conjunctival whiteness to identify Anemia: they found that there was a more prominent degree of affectability to conjunctival paleness than to palmar whiteness. Different investigations discovered relationships between's clinical signs, for example, paleness to Anemia; in [10], Kalter et al give the helpfulness of clinical indications in the discovery of Anemia, which proposes the possibility of adding conjunctival whiteness to the Integrated Management of Childhood Illness (IMCI), a system intended to lessen kid mortality and grimness in creating nations. Hasan et al [11] and Wang [12], [13] present picture preparing of a ngertip video to research the connection between the picture pixel data and distinctive (Hb) levels. Also, for this situation, the gauge of Hb is firmly inuenced by the shade of the skin or by basic tanning. For a long time, doctors in like manner practice have evaluated Anemia in individuals by watching the eyelid conjunctiva. This training is as yet boundless in many distraught regions of the earth. Watching the eyelid conjunctiva can give data to suspecting Anemia, as a few investigations recommended. In [14], the nearness of conjunctival whiteness was used for Hb assurance, and the creators arrived at 95% segregation exactness among iron deficient and non-frail patients dependent on an assessment of conjunctival paleness, considering a cut-off of 90 g/L for the Hb fixation. A comparable methodology is portrayed in [15], however the creators expressed that conjunctival paleness assessment is firmly inuenced by the eyewitness. In fact, the doctor's experience is significant in this sort of assessment. In [9], Spinelli et al. presume that it was still right on time to suggest the standard utilization of this strategy (2003); notwithstanding, it could advance significant investment funds whenever idealized. The basic factor in the entirety of the refered to works is that the assessment of conjunctival whiteness isn't target, and it requires direct judgment of master doctors. Lately, there has been an expanding enthusiasm for the utilization of advanced pictures of the palpebral conjunctiva to make a non-intrusive gauge of Anemia. In the following area, we will detail related work that tends to Anemia assessment dependent on advanced picture handling. As indicated by an investigation led by the world wellbeing association (WHO), 24.8 level of the whole total populace was viewed as weak between the year 1995 and 2005. The Hemoglobin fixation in the human blood is considered as the highest quality level for the location of iron deficiency. This is an intravenous procedure which requires specific careful gear. As of late, figure prick blood test is taken for lab testing however blood testing requires a lot of time and may open social insurance laborers to dangers of blood borne contaminations. Assessment of the conjunctival paleness of the eye is typically used to quickly screen for sickliness in numerous centers, Physicians for the most part pulls down the eyelid and emotionally look at the shade of the front conjunctival whiteness layer. The clinical sign for paleness identification can end up being very helpful by and large, yet at the same time the absence of between onlooker understandings much of the time and low affectability of foremost conjunctival shading can sabotage the validness of the visual location process. Shading scale cards, which comprises of the shading range and the relating hemoglobin fixation is utilized in numerous events to ease the issue of between spectator difference and human blunder to make the visual identification process increasingly dependable. Hemoglobin is the essential constituent which adds to the pigmentation found in human blood. It has a predisposition in mirroring the red part of the light falling on its surface contrasted with the green segment which it dominantly retains. This is the main explanation behind the profound

ruddy appearance of hemoglobin. Henceforth, by looking at the red and green segments of the RGB shading range of the conjunctival paleness, it is conceivable to at a slant gauge the hemoglobin fixation in the human circulatory system. Because of absence of legitimate human services and clinical offices in immature nations, numerous individuals are defenseless against paleness. This circumstance can be lightened if a sign of sickliness can be assessed without including costly blood tests, which are inaccessible in a significant number of these regions. Indeed, even the accessibility of specialists or clinical laborers are patchy. It would be an incredible assistance if the nearness of sickliness in a patient can be identified utilizing non-intrusive strategies which does exclude costly tests or even the nearness of a specialist or clinical laborer. The nearness of iron deficiency in an individual can be a sign of different sicknesses like jaundice and absence of nourishment. The location of iron deficiency can serve to demonstrate the nearness of different ailments also.

The rest of the paper is organized as follows. Necessary literature survey related previous research on Medical Tool to Estimate Anemia are given in II detection based previous work are given in section ii whereas section III describes research issue & future scope methodology & IMPLEMENTATION FOR THE PREVIOUS EXISTING APPROACHES. IV describes methodology & IMPLEMENTATION FOR THE PREVIOUS EXISTING APPROACHES. Experimental results and its analysis are given in section V. Finally, section VI concludes the paper.

2. Audit OF LITERATURE

Non-invasive methodologies are critical for patients who need visit blood tests, and late upgrades in picture investigation have empowered promising approaches to be created. As of late, new and intriguing ways to deal with impartially connect the eyelid shading with the Hb fixation dependent on advanced pictures of the palpebral conjunctiva have been proposed. For instance, in [16], Sanchez-Carrillo et al. utilized a colorimetric apparatus to contrast diverse shading conceals and the conjunctiva. Henceforth, they accomplished intriguing affectability and specificity levels in screening Hb focuses. Also, in [17], Suner et al examined shading highlights of computerized pictures of the conjunctiva. They used a standard dim card with a known RGB incentive to look at pictures procured under various lighting conditions. In their trial, they used an assessment programming that ran on a Personal Digital Assistant (PDA), which considered the RGB shading model and found a moderate relationship between's the Hb fixation determined in situ and the Hb focus estimated in vitro. Another extremely intriguing investigation is accounted for in [18], where the creators utilize 18 potential highlights, including a recently included entropy include. In [19], Chen and Miaou propose a consolidated methodology that comprises of a modied Kalman lter and punishment relapse for non-invasive Anemia recognition basing on the examination of computerized pictures of the palpebral conjunctiva, and they successfully lessen the quantity of suspect examples. In [20], the blend of a stochastic photon proliferation model in a multi-layered human eyelid tissue and reectance spectroscopy was utilized to examine the phantom reectance of palpebral conjunctiva for Hb assurance. The extricated Hb levels were contrasted and in vitro estimations of Hb; the technique demonstrated 86% affectability gauges for clinically analyzed Anemia cases. Tragically, the outcomes were gotten utilizing refined and costly clinical hardware that isn't reasonable for usage in home settings. In our previouswork [21], we additionally evaluated Hb levels utilizing an advanced picture of the eyelid conjunctiva: not quite the same as [16] and [17], our methodology didn't require a near card to decide the shade of the conjunctiva, because of the structure of a specic gadget that was made of two parts: the equipment and programming modules (see g. 1). The gadget comprises of a head-mounted plastic aloof watcher (like a Google cardboard) that takes care of certain issues, including the inuence of surrounding light. As prove, we found a moderate connection (0.49) between a (CIELAB part) estimation of the picture of the palpebral conjunctiva taken through the above gadget and the Hb esteems. Moreover, to foresee the requirement for blood transfusion, we utilized a parallel more tasteful dependent on a Support Vector Machine (SVM), and the subsequent files were 84.4% (precision), 82.4% (specificity) and 100% (affectability). The outcomes were acquired with 77 patients (9 of them iron deficient, 68 solid). In [18], the creators, referring to [21], say that 'ideally, such a gadget can get famous and reasonable later on'; notwithstanding, we accept that the gadget is still very unwieldy and costly for home use. The resultwas

exceptionally reassuring, however the examination ought to be reached out to a bigger number of patients to find out if that philosophy can really be utilized to maintain a strategic distance from superfluous blood transfusion or blood testing to recognize the present level of Anemia. Likewise in this paper, we assessed the chance of evaluating the Hb level through an advanced picture of the eyelid conjunctiva. Because of the plan of another gadget and new programming running on a typical cell phone, we got an agreeable outcome that will be point by point in the following segments. Barba[22], According to this paper an iterative thresholding calculation is used for division reason especially from uproarious pictures. This calculation vanquishes the issue of cell extraction and division from overwhelming loud pictures. This calculation works over the balanced edge of pictures iteratively giving strength to picture. Rubeto[23], This paper examines about the malarial picture preparing framework. This framework distinguishes and orders intestinal sickness parasites in Giemsa recolored blood slides pictures. At that point after parasitaemia assessment is finished. Morphological way to deal with cell picture division is more exact than the old style watershed-based calculation is appeared in this paper. Dim scale granulometries are associated considering opening with circle shaped segments, level and non-level. Non level circle formed organizing segment improves the roundness and the red cells minimization. Ruberto[24], This paper talk about a framework arranges and recognize intestinal sickness parasite by utilizing minute pictures of platelets. Morphological methodology and the critical necessities in building up this structure are the best frameworks for platelet pictures division. Liao [25], this examination take a shot at an Automated Cell Count strategy is portrayed. An exact strategy for division for tallying white platelets naturally is introduced here. Introductory a direct thresholding approach is associated and the count is resolved about blood spread pictures from priori data. The imprints are offset by then with a particular ultimate objective to convey important results. This strategy is progressively powerful when contrasted with customary techniques which use data of neighborhood setting. It can perform exact division of white platelets however they have un- sharp cutoff points. Starck[26], In this work creator utilizing a channel bank of a" trous wavelet channels, curvelet change executes curvelet sub-groups and uses a ridgelet change as a part step, and thought all through is that changes should be over whole, more eagerly than fundamentally analyzed. In this electronic changes are associated for de-noising of some standard pictures set up in dull commotion. A blend of geometric separation and an upgraded separation change joining force slopes is utilized for the watershed step Lin[27], According to this paper an express scientific model for qualities of cell cores like size and shape measures is incorporated. For each distinguished core, a certainty score is processed by estimating appropriateness of core in the model. Fabio[28], Here creator shows the accommodation of a programmed morphological system to see the Acute Lymphocytic Leukemia (ALL)with the assistance of pictures of fringe blood magnifying lens. The exhibited framework individuates the leucocytes from the others platelets, after that it picks the lymphocyte cells (the cells causes uncommon leukemia), morphological lists from those cells are assessed then after and finally order is performed whether the nearness of the leukemia is there or not. Muthalagu[29], According to this paper creator present non-invasive technique, connection of hemoglobin with conjunctiva whiteness shading scores and characterization utilizing neural systems. Around 200 example eye pictures were gathered from Sankara Nethralaya with various lighting conditions (LED, CFL, Tungsten, tube light, daylight, Daylight) and diverse portable and computerized cameras. Utilizing the proposed HSI model, the diverse shading score of the chose district was assessed and related with research center hemoglobin esteem. Elman neural system was utilized for corresponding and characterizing iron deficient and non-frail cases, out of which 91.3 rates of the expectations were right and 8.7 rates weren't right arrangements. Bhavya [32], In this work creator the point of convergence of our examination is on clinical pictures However, finding, distinguishing and checking of red platelets genuinely are monotonous and repetitive that could be streamlined by methods for programmed investigation, in which division is a vital advance. In this paper, we demonstrate an approach to manage programmed division and including of red platelets in infinitesimal platelet pictures utilizing Hough Transform and SURF. Giovanni[30], He creator propose a non-invasive way to deal with Hb estimation dependent on the picture investigation of a specic conjunctival area. We will likely build up a gadget that isn't costly and easy to use for surveying the sickly condition; this gadget could be utilized by the doctor to conclude whether to take a blood test or even by a patient at home to

conclude whether to educate a doctor; along these lines, we can abstain from having the patient go every now and again to the research center to take a blood test. This gadget additionally permits us to quickly screen for Anemia in countless people, for instance, gatherings of young ladies who are toward the start of the menses. Trupti [35], In this work creator directs in such situation to take choice in infection analysis. The contribution to the proposed framework is individual nail picture. The framework will process a picture of nail and concentrate highlights of nail which is utilized for illness analysis. Human nail comprise of different highlights, out of which proposed framework utilizes nail shading changes for sickness determination. Here, first preparing set information is readied utilizing Weka device from nail pictures of patients of explicit infections. A component removed from input nail picture is contrasted with the preparation informational index with get result. In this examination we found that utilizing shading highlight of nail picture normal 65% outcomes are accurately coordinated with preparing set information during three tests directed. Komal [36], In this work creator gives directs about the emoglobin is the most significant blood parameter. Hemoglobin is the protein in red platelets that convey oxygen to the body. Low degree of hemoglobin can be because of malady like frailty and high hemoglobin level might be because of polycythemia Vera. Traditional strategies are for the most part used to compute hemoglobin level. Srinivasan this approach is based on color analysis.

3. Balanced OF THE STUDY

As we know we are living in the era of 3D medical science where we have lots of Tools which are able to identify the disease. In present era we have lots of technology but there is lack of medical tools which are able to find anemia with any invasive process. Currently we have to take the blood samples and through that we are able to find the anemia. Currently there is lots of research who are working on Non invasive process where they are using the concept of image processing. Here they are using the approaches like eye side or nails. So as per the current search there is lots of research gaps are there which is really need to be solved and those are followings:

- **Lack of Real Time:** All current approach are require pre define images of eye side or nails, so for that approach we have to capture good quality image through eye side scanner or high end camera.
- **Accuracy:** All current approaches are not able to make proper result as they are focus on one single approach like SPO2 based, EYE side based on nails based so there is any cross check method is available which give surety of anemia.
- **Long Process:** As per scanner approach all previous existing tools are require longs time
- **Time Issue:** All current algorithm are not so quick to give proper result in time.
- **Quality Issue:** This is a big hazard which is really need to be solved there is no any approach which is able to get quality level report from the input parameters.

Future Scope on Estimate Anemia

As per the previous research there is lots of research gap which need to be solved so in this work these are our objects which we will solve:

- **Real Time Analysis**
- **High Accuracy:**
- **No more Long Process**
- **Reduction in Time Complexity**
- **Improvement in Quality Issue**

So this is the future scope of this Estimate Anemia algorithm which will give a new direction to the researchers.

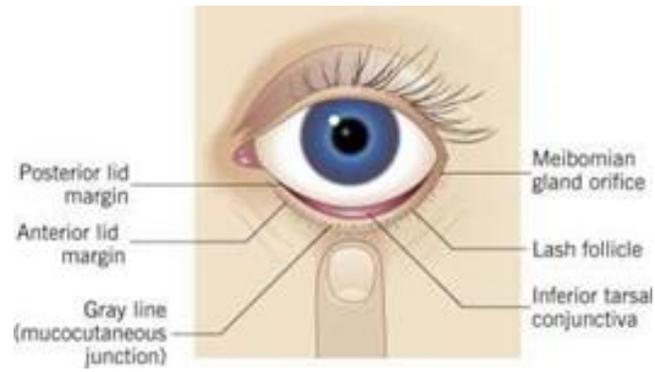


Fig. Inner Eyelid



Fig. Parts of Human Eyes

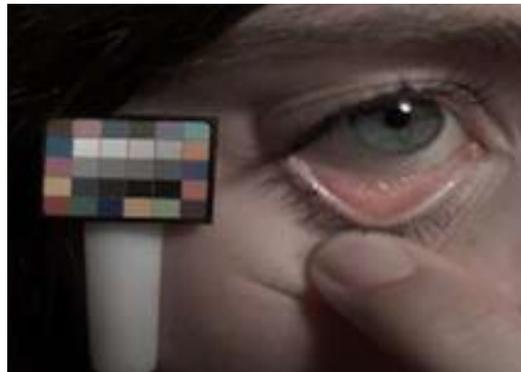


Fig. Color Calculation for Anemia Detection



Fig. Digital Image Using Camera



Fig. Image of Human Nail



Fig. Image of Human Nail by DigitalCamera



Fig. Normal Color of Human Nail



Fig. Anemia Detection Using Nail Image

4. Destinations:

In this section we talk about the basic Anemia estimation process, what kind of basic algorithm was used and what are the advance research is there. Here we did the complete comparative study and implementation of those approaches.

Basically there is two type of approach are there which are able to detect anemia those approach are:

1. Invasive: In this approach by using of blood sample hemoglobin level is identify this approach is time taking and most important this approach use chemical also which is not good in terms of health.
2. Non- Invasive: In this approach there is no need of blood sample but again this approach use the followings type of systems which are:
 - a. Eye Side Based [30]
 - b. Nails Based [35]
 - c. Spo2 based [36]
 - d. Color Analysis [38]

4.1 Giovanni[30]: He author propose a non- invasive way to deal with Hb estimation dependent on the picture investigation of a specic conjunctival district. There objective is to build up a gadget that isn't costly and easy to use for evaluating the pale condition

4.2 Trupti [35]: In this work creator manages in such situation to take choice in malady finding. The contribution to the proposed framework is individual nail picture. The framework will process a picture of nail and concentrate highlights of nail which is utilized for illness determination. Human nail comprise of different highlights, out of which proposed framework utilizes nail shading changes for sickness conclusion. Here, first preparing set information is readied utilizing Weka apparatus from nail pictures of patients of explicit sicknesses. A component removed from input nail picture is contrasted with the preparation informational index with get result.

4.3 Komal [36]: In this work author create a system which is able to detect the blood oxidation level and based on that they calculate the blood level by using of SPO2.

4.4 Srinivasan [39]: In this work author create a system which will take the photograph of the thumb with blood and later with blood and based on that they perform the color analysis and as a result they identify the anemia on person.

As we know present era there is need of fast processing system so for the implementation of that previous algorithm we use python as a language and based on that we did the comparative analysis.

4.5 Observation & Analysis

In this section we introduce the relative investigation of all with past existing methodology with our Methodology. According to the section 3.2 Algorithm. we are using Deep Learning and Machine Learning Techniques to trained our System.

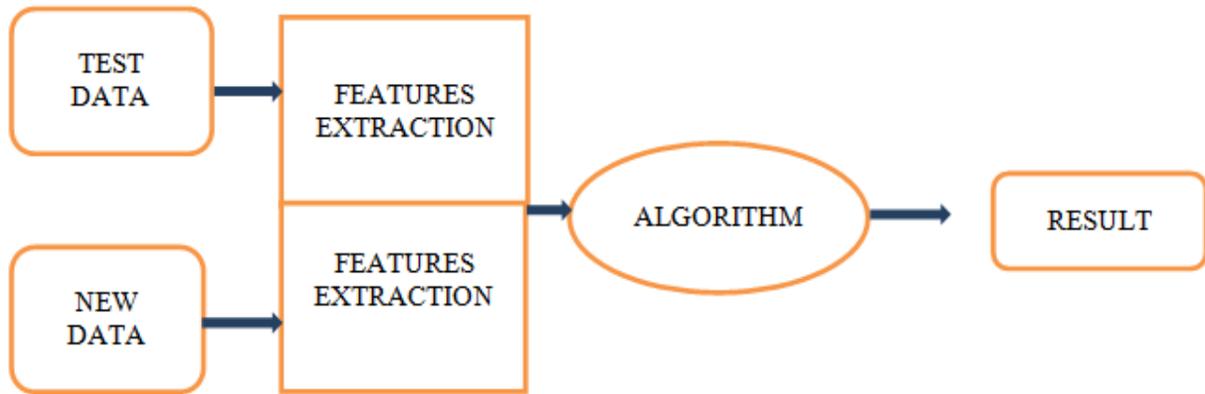


Fig. 4.5.1 Block Diagram of Proposed Algorithmic Process





Fig. 4.5.2 Test Images used to train our model

4.5.1 Analysis on the basis of number of parameters used to detect Anemia

Table 4.5.1 Shows the Comparison in Number of parameters used to detect Anemia by various Authors

S.No.	AUTHORS PROCESS	NO. OF PARAMETERS	TYPES OF PARAMETERS
1	Dimauro. Giovanni et al.,	1	Conjunctiva
2	Trupti S Indi et al.,	1	Nail
3	Komal Sharma et al.,	1	Blood Sample
4	K Srinivasan et al.,	1	Biomarkers
5	Our System	3	Eye, Nail and SPo2 Meter

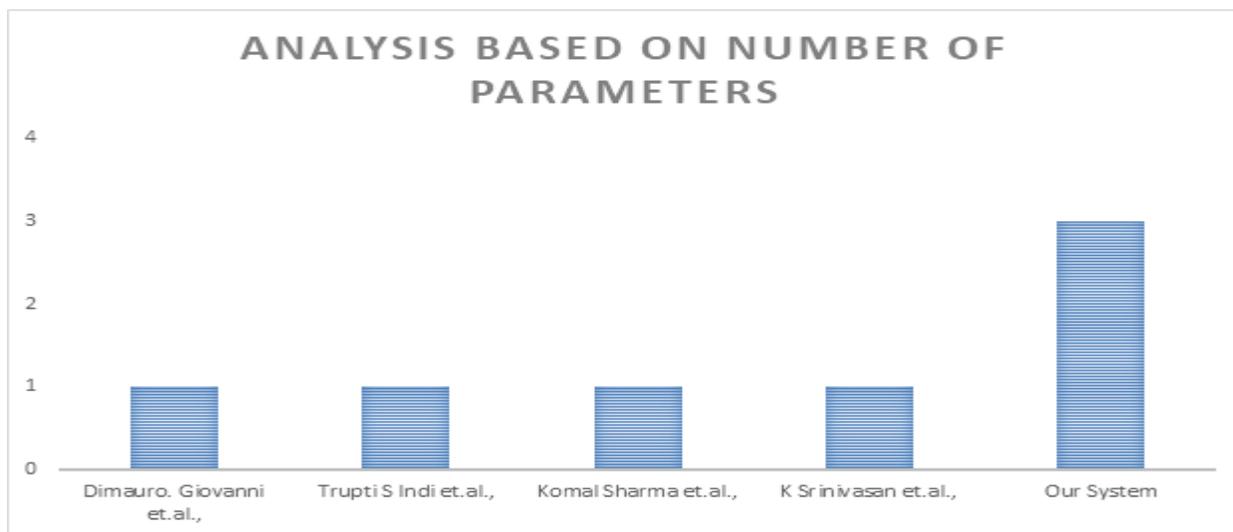


Fig. 4.1.1 Graphical Representation of Analysis based on number of Parameters

4.5.2 Analysis based on Hardware and Software used as well as costing of the Anemia Test and the Device or Lab setup.

Table 4.5.2 shows the comparison for the hardware and software requirements for the testing of Anemia. According to the requirements the Testing cost and Device Cost is mapped.

S.No.	AUTHORS PROCESS	HARDWARE USED	SOFTWARE USED	TESTING COST	DEVICE SETUP COST
1	Dimauro. Giovanni et al.,	Mobile Phone	Java Mobile App	Average	Low
2	Trupti S Indi et al.,	ESDDS System	Java App	Low	High

3	Komal Sharma et al.,	Laboratory	NA	Costlier	Costlier
4	K Srinivasan et al.,	Laboratory	NA	Average	Average
5	Our System	Dedicated Hardware Raspberry-Pi	Python	Low	Cheap

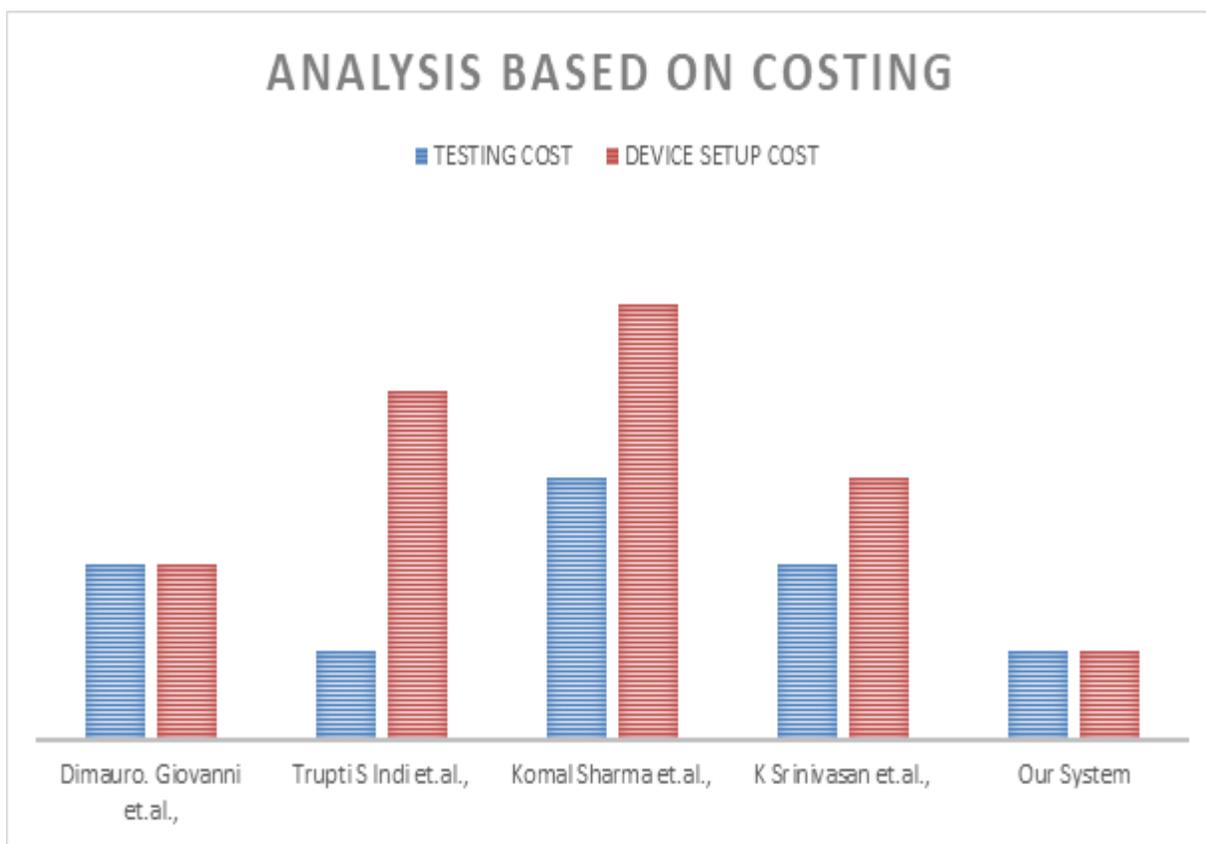


Fig. 4.1.2 Graphical Representation of Analysis based on costing of test and device setup.

4.5.3 Analysis based on data collection, range of estimation, Efficiency and Accuracy of the system.

Table 4.5.3 shows the comparison of data collection and the decided range. According to the data and range Efficiency and Accuracy of the system is mapped

S.No.	AUTHORS PROCESS	DATA COLLECTION	ESTIMATION RANGE	EFFICIENCY	ACCURACY
1	Dimauro. Giovanni et al.,	Anemia Patient	Pre Defined Clinical Data	High	High
2	Trupti S Indi et al.,	Patient Data	Pre Defined Dataset	Average	High
3	Komal Sharma et al.,	Random Sample	Biochemical Analysis	Very High	High
4	K Srinivasan et al.,	Pregnant Women	Biomarks	Mild	Low
5	Our System	Only 1 Test Image	No Prefined Dataset Required	Average	Very High

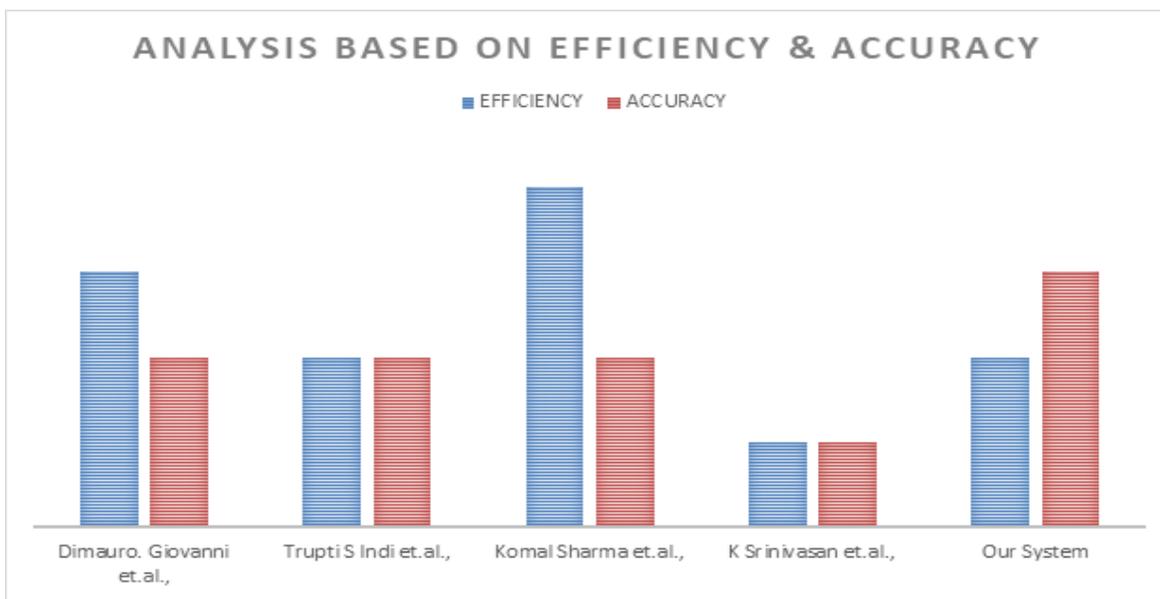


Fig. 4.5.3 Graphical Representation of Analysis based on Efficiency and Accuracy of the system.

4.5.4 Analysis based on number of parameters analyzed, techniques used for testing and the time consumption in testing.

Table 4.5.4 shows the comparison of Number of Parameters analyzed, Technique used for the analysis and the time consumption.

S.No.	AUTHORS PROCESS	NO. OF PARAMETERS	TECHNIQUE USED	TIME
1	Dimauro. Giovanni et al.,	1	Software	Low
2	Trupti S Indi et al.,	1	Software	Less
3	Komal Sharma et al.,	1	Clinical	High
4	K Srinivasan et al.,	1	Clinical	Normal
5	Our System	3	Software	Low

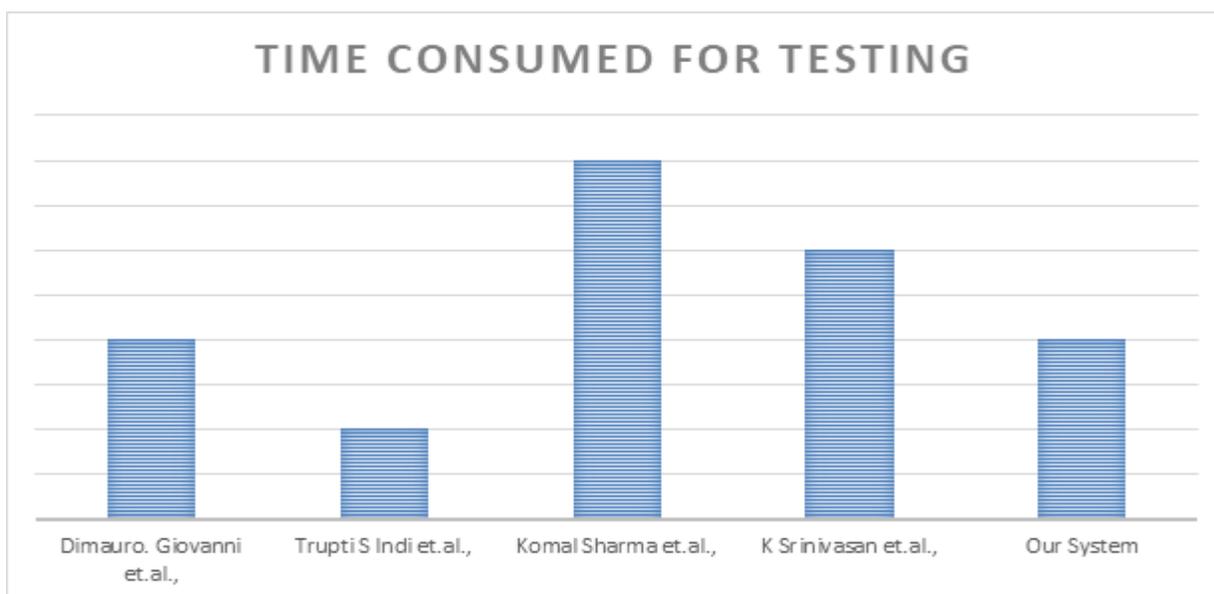


Fig. 4.5.4 Graphical Representation of Analysis based on Time Consumed for testing

4.6 Discussion

- Analysis shows that, in our method we are using 3 (Three) parameters for the detection of Anemia, while rest of all the process only 1 (One) parameter is analyzed.
- Analysis shows that, only in our method there is a dedicated hardware with better efficiency is used. Rest of the other process are not having any dedicated hardware is used. Some of the processes used Clinical Approach that require high end machines.
- Analysis shows that apart from dedicated hardware also our system and testing cost is less as compared to other system and the number of parameters used.
- Analysis shows that the detection of Anemia with Three parameters shows best Accuracy among all the processes and the time consumption is also less.

5.1 Summary of Findings

Overall investigation of time, Efficiency, exactness and gadget necessity dependent on the similar we can say Proposed approach is better regarding all boundaries as it requires less time and high precision is normal cost the expense of framework, according to relative examination our proposed approach is obviously better than the current methodology.

5.2 Conclusion

As we know in this era 2020 COVID is create a huge change in our life. Due to COVID-19 normal life is change in to the new life where everyone is taking the safety precaution. So, As we know Anemia is very dangerous disease and as per COVID if any person is having those kind of disease so there is chance of high risk. As we know in this present era Anemia is global health problem, Anemia is a very big issue for present era. The World Health Organization (WHO) estimates that some two billion people are anemic. As per the medical science there is lots of way to detect the Anemia, but most of the approaches are based on Invasive approach. In this paper we try to figure out most of the Novel approach which is able to check the Anemia by using of machine learning approach for the detection of Anemia In this work we did the complete study and the comparative analysis between present & previous existing process which require the hardware device. In terms of result analysis, we use two parameters which are time complexity and accuracy. As per Our proposed approach we use raspberry pi as a processing system where we apply the machine learning concept by using of python and through the human nails and eye, we try to figure out the anemia disease. 2020 is known for COVID-19 as we know due to COVID-19 lots of medical issue are created. Anemia is very risky for COVID-19 the person who have anemia they have high chance to get the affected by the COVID-19, so as we know to detect Anemia it's a difficult process, user have to go to the lab and then only they will get the result which is very danger in this work we proposed a portable device which is able to detect the anemia.

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