#### SEARCH REPORT

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| **Title:**  Price Calculator of Fermented Cacao Bean Using K-Nearest Neighbor Algorithm: Vision Learning | | | |
| **Filing Date:**  **August 4, 2017** | | | |
| **Claims:**   1. A device capable of classifying the quality of cacao beans based on the following characteristics:   a. Color of the cross-cut beans  b. Shape of the beans  c. Size of the beans or the number of beans per 100-gram sample   1. A device according to claim 1 that identifies the fermentation level of the beans based on the beans’ color. 2. A device according to claim 1 that classifies which of the beans are well or under fermented, slaty, moldy and deformed. 3. A program that concurs on the following functionalities:   a. Identifies the color of multiple fermented cacao bean samples.  b. Calculate the price of the cacao beans based on the result of the quality classification.   1. A device that comprises of the following parts:   a. An image capturing chamber for the bean samples  b. A computer for the program that processes the captured image of the bean samples and calculates the price for the beans based on the processed image.   1. A device according to claim 1, wherein the fermented cacao beans are loaded into an image capturing chamber where the beans are to be examined and classified. 2. A method according to claim 1, wherein the said chamber that contains the cross cut beans can capture an image which is then processed for classification. | | | |
| **International Patent Classification**  A23G1/02  A23G1/002  G06T7/00  G06T7/90  G01J2003/466 | | | |
| **Keywords**  bean classification, fermented cacao bean classification, image processing color analysis, cacao bean color classification | | | |
| **Database** *(USPTO, Espacenet, Patentscope, JPO-IPDL, Thomson-Reuters, Google Patents)* | | **Search String**  *(ABST/(SHIPPING AND (PACKAGE OR PARCEL OR DOCUMENT) ) AND ICL/(G07F007/00 OR G07F017/00 OR G06Q020/00))* | **Number of Hits *[Ex: 205]*** |
| Patentscope | | fermented "cacao bean" classification | 27 |
| Patentscope | | "cacao bean" color classification | 34 |
| Patentscope | | “image processing” “color analysis” | 20 |
| Google Patents | | “bean classification” | 2 |
| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
| Category\* *[E.g.: X]* | Citation of Documents | | Relevant to claim no. |
|  | 1. **PATENT DOCUMENTS** | |  |
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| Y | A method of producing cocoa mass = WO2007140770A1  A method wherein nib parts of an undesired degree of fermentation are sorted out after the cracking, the individual nib pieces being analysed for fluorescence and the analytical results being the basis of any sorting out of separate nib pieces. | | 10 |
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| **\* Special Categories of Cited Documents:**  **A document defining the general state of the art which is not considered to be of particular relevance**  **X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone**  **Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art**  *Note: Further references not indicated in this search report may be cited during substantive examination.* | | | |
| **SEARCH CONDUCTED BY**  Mendi, Kevin  Capuyan, Angel Vonn Estrada, Ma. Paula  (ITSO) University of Mindanao | | | |