

Title (en)
APPARATUS AND METHOD FOR CLASSIFYING MATERIAL OBJECTS

Title (de)
VORRICHTUNG UND VERFAHREN ZUM KLASSIFIZIEREN VON MATERIALOBJEKTEN

Title (fr)
APPAREIL ET PROCÉDÉ DE CLASSIFICATION D'OBJETS MATÉRIELS

Publication
EP 4194107 A1 20230614 (EN)

Application
EP 22152672 A 20220121

Priority
EP 21213912 A 20211210

Abstract (en)
The application concerns an apparatus and a method for classifying material objects. The apparatus comprises a deep learning model. The apparatus is configured to, in an initialization phase, subject the deep learning model to supervised learning based on a training data obtained from, for each of a training set of material objects, a pairs of sensor data obtained by a measurement of the respective material object and label information associating the respective material object with a target classification. Additionally, the apparatus is configured to, using the deep learning model, classify a predetermined material object based on sensor data obtained by a measurement of the predetermined material object.

IPC 8 full level
B07C 5/34 (2006.01)

CPC (source: EP)
B07C 5/3416 (2013.01)

Citation (applicant)

- FIRSCHING, M.NACHTRAB, F.UHLMANN, N.HANKE, R.: "Multi-Energy X-ray Imaging as a Quantitative Method for Materials Characterization", ADVANCED MATERIALS, vol. 23, 2011, pages 2655 - 2656
- COHEN, J.: "A coefficient of agreement for nominal scales", EDUCATIONAL AND, vol. 20, 1960, pages 37 - 46
- ARTSTEIN, R., POESIO, M.: "Inter-coder agreement for computational linguistics", COMPUTATIONAL LINGUISTICS, vol. 34, 2008, pages 555 - 596, XP058245377, DOI: 10.1162/coli.07-034-R2
- MCHUGH, M. L.: "Interrater reliability: the kappa statistic", BIOCHEMIA MEDICA, vol. 22, 2012, pages 276 - 282
- HE, K.ZHANG, X.REN, S.SUN, J.: "Deep residual learning for image recognition", IEEE CONFERENCE ON COMPUTER VISION AND PATTERN RECOGNITION, 2016, pages 770 - 778, XP055536240, DOI: 10.1109/CVPR.2016.90
- TAN, M., LE, Q.: "EfficientNet: Rethinking model scaling for convolutional neural networks", INTERNATIONAL CONFERENCE ON MACHINE LEARNING, vol. 97, 2019, pages 6105 - 6114
- CUBUK, E. D.ZOPH, B.SHLENS, J.LE, Q. V.: "RandAugment: Practical automated data augmentation with a reduced search space", NEURAL INFORMATION PROCESSING SYSTEMS, vol. 34, 2020, pages 18613 - 18624
- TANNO, R., SAEEDI, A., SANKARANARAYANAN, D., ALEXANDER, D. C., & SILBERMAN, N.: "Learning From Noisy Labels by Regularized Estimation of Annotator Confusion", IEEE/CVF CONFERENCE ON COMPUTER VISION AND PATTERN RECOGNITION, 2019, pages 11236 - 11245, XP033686493, DOI: 10.1109/CVPR.2019.01150
- SONG, H. A.-G.: "Learning from noisy labels with deep neural networks: A survey", ARXIVE, 2020
- HASTIE, T. A.: "The elements of statistical learning", SPRINGER SERIES IN STATISTICS, 2009
- LI, L. A.: "Hyperband: A novel bandit-based approach to hyperparameter optimization", THE JOURNAL OF MACHINE LEARNING RESEARCH, 2017, pages 6765 - 6816

Citation (search report)
[XA] US 2021229133 A1 20210729 - KUMAR NALIN [US], et al

Cited by
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Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
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Designated validation state (EPC)
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