From pixels to patterns: AI-driven image analysis in multiple domains

Javanmardi, S.

Bibliography

Abdal Hafeth, D. and S. Kollias (2024). Insights into object semantics: Leveraging transformer networks for advanced image captioning. *Sensors 24*(6), 1796.

Adeel, A., M. A. Khan, M. Sharif, F. Azam, J. H. Shah, T. Umer, and S. Wan (2019, 12). Diagnosis and recognition of grape leaf diseases: An automated system based on a novel saliency approach and canonical correlation analysis based multiple features fusion. *Sustainable Computing: Informatics and Systems 24*, 100349.

Adem, K., S. Kiliçarslan, and O. Cömert (2019, 1). Classification and diagnosis of cervical cancer with stacked autoencoder and softmax classification. *Expert Systems with Applications 115*, 557–564.

Adhikari, K. and A. S. Roy (2024). E-waste by mobile Phones: A Case Study on the Consumption, Disposal Behavior, and Awareness of Consumers in Kolkata, India. *Bulletin of Science, Technology & Society*, 02704676231224700.

Aganj, I., M. G. Harisinghani, R. Weissleder, and B. Fischl (2018). Unsupervised medical image segmentation based on the local center of mass. *Scientific reports 8*(1), 13012.

Ai, X., J. Zhuang, Y. Wang, P. Wan, and Y. Fu (2021). ResCaps: an improved capsule network and its application in ultrasonic image classification of thyroid papillary carcinoma. *Complex & Intelligent Systems*, 1–9.

Albawi, S., T. A. Mohammed, and S. Al-Zawi (2017). Understanding of a convolutional neural network. In *2017 international conference on engineering and technology (ICET)*, pp. 1–6. Ieee.

Ali, H., M. Lali, M. Nawaz, M. Sharif, and B. Saleem (2017, 6). Symptom based automated detection of citrus diseases using color histogram and textural descriptors. *Computers and Electronics in Agriculture 138*, 92–104.

Anderson, P., X. He, C. Buehler, D. Teney, M. Johnson, S. Gould, and L. Zhang (2018). Bottom-up and top-down attention for image captioning and visual question answering. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 6077–6086.

Aneja, J., A. Deshpande, and A. G. Schwing (2018). Convolutional image captioning. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 5561–5570.

Ansari, N., S. S. Ratri, A. Jahan, M. Ashik-E-Rabbani, and A. Rahman (2021, 3). Inspection of paddy seed varietal purity using machine vision and multivariate analysis. *Journal of Agriculture and Food Research 3*, 100109.

Anubha Pearline, S., V. Sathiesh Kumar, and S. Harini (2019, 3). A study on plant recognition using conventional image processing and deep learning approaches. *Journal of Intelligent & Fuzzy Systems 36*(3), 1997–2004.

Asawa, J., M. Deshpande, S. Gaikwad, and R. Toshniwal (2021). Caption recommendation system. *United International Journal for Research & Technology (UIJRT) 2*, 4–9.

Ashtiani, S.-H. M., S. Javanmardi, M. Jahanbanifard, A. Martynenko, and F. J. Verbeek (2021). Detection of mulberry ripeness stages using deep learning models. *IEEE Access 9*, 100380–100394.

Assirelli, A., F. Stagno, A. Cocchi, S. Sirri, A. Saviane, D. Giovannini, and S. Cappellozza (2019). Innovative system for mulberry fruit harvesting. *Journal of Berry Research 9*(4), 615–630.

Azarmdel, H., A. Jahanbakhshi, S. S. Mohtasebi, and A. R. Muñoz (2020). Evaluation of image processing technique as an expert system in mulberry fruit grading based on ripeness level using artificial neural networks (ANNs) and support vector machine (SVM). *Postharvest Biology and Technology 166*, 111201.

Bai, S. and S. An (2018). A survey on automatic image caption generation. *Neurocomputing 311*, 291–304.

Bakhshipour, A., A. Sanaeifar, S. H. Payman, and M. de la Guardia (2018, 4). Evaluation of Data Mining Strategies for Classification of Black Tea Based on Image-Based Features. *Food Analytical Methods 11*(4), 1041–1050.

Banerjee, S. and A. Lavie (2005). METEOR: An automatic metric for MT evaluation with improved correlation with human judgments. In *Proceedings of the acl workshop on intrinsic and extrinsic evaluation measures for machine translation and/or summarization*, pp. 65–72.

Barbazuk, W. B., I. Korf, C. Kadavi, J. Heyen, S. Tate, E. Wun, J. A. Bedell, J. D. McPherson, and S. L. Johnson (2000). The syntenic relationship of the zebrafish and human genomes. *Genome research 10*(9), 1351–1358.

Benjelloun, M., M. El Adoui, M. A. Larhmam, and S. A. Mahmoudi (2018). Automated breast tumor segmentation in DCE-MRI using deep learning. In *2018 4th International Conference on Cloud Computing Technologies and Applications (Cloudtech)*, pp. 1–6. IEEE.

Beyaz, A., D. M. Martínez Gila, J. Gómez Ortega, and J. Gámez García (2019, 4). Olive fly sting detection based on computer vision. *Postharvest Biology and Technology 150*, 129–136.

Blasco, J. and N. Aleixos (2023). Computer vision in agriculture. In *Encyclopedia of Smart Agriculture Technologies*, pp. 1–12. Springer.

Bradford, Y. M., S. Toro, S. Ramachandran, L. Ruzicka, D. G. Howe, A. Eagle, P. Kalita, R. Martin, S. A. Taylor Moxon, and K. Schaper (2017). Zebrafish models of human disease: gaining insight into human disease at ZFIN. *ILAR journal 58*(1), 4–16.

Buda, M., A. Saha, and M. A. Mazurowski (2019). Association of genomic subtypes of lower-grade gliomas with shape features automatically extracted by a deep learning algorithm. *Computers in biology and medicine 109*, 218–225.

Cagan, R. L., L. I. Zon, and R. M. White (2019). Modeling cancer with flies and fish. *Developmental cell 49*(3), 317–324.

Cai, L., J. Gao, and D. Zhao (2020). A review of the application of deep learning in medical image classification and segmentation. *Annals of translational medicine 8*(11).

Calín-Sánchez, Ã., J. J. Martínez-Nicolás, S. Munera-Picazo, Ã. A. Carbonell-Barrachina, P. Legua, and F. Hernández (2013). Bioactive compounds and sensory quality of black and white mulberries grown in Spain. *Plant foods for human nutrition 68*, 370–377.

Cárdenas-Pérez, S., J. Chanona-Pérez, J. V. Méndez-Méndez, G. Calderón-Domínguez, R. López-Santiago, M. J. Perea-Flores, and I. Arzate-Vázquez (2017). Evaluation of the ripening stages of apple (Golden Delicious) by means of computer vision system. *Biosystems Engineering 159*, 46–58.

Castro, W., J. Oblitas, M. De-La-Torre, C. Cotrina, K. Bazán, and H. Avila-George (2019). Classification of cape gooseberry fruit according to its level of ripeness using machine learning techniques and different color spaces. *IEEE access 7*, 27389–27400.

Chakraborty, S. K., N. S. Chandel, D. Jat, M. K. Tiwari, Y. A. Rajwade, and A. Subeesh (2022). Deep learning approaches and interventions for futuristic engineering in agriculture. *Neural Computing and Applications 34*(23), 20539–20573.

Chang, T.-Y., C. Pardo-Martin, A. Allalou, C. Wählby, and M. F. Yanik (2012). Fully automated cellular-resolution vertebrate screening platform with parallel animal processing. *Lab on a Chip 12*(4), 711–716.

Chen, H., H. Gao, X. Fang, L. Ye, Y. Zhou, and H. Yang (2015). Effects of allyl isothiocyanate treatment on postharvest quality and the activities of antioxidant enzymes of mulberry fruit. *Postharvest Biology and Technology 108*, 61–67.

Chen, J., Q. Liu, and L. Gao (2019, 3). Visual Tea Leaf Disease Recognition Using a Convolutional Neural Network Model. *Symmetry 11*(3), 343.

Chen, J., Y. Lu, Q. Yu, X. Luo, E. Adeli, Y. Wang, L. Lu, A. L. Yuille, and Y. Zhou (2021). Transunet: Transformers make strong encoders for medical image segmentation. *arXiv preprint arXiv:2102.04306*.

Chen, Z., X. Liu, J. Yang, E. Little, and Y. Zhou (2020). Deep learning-based method for SEM image segmentation in mineral characterization, an example from Duvernay Shale samples in Western Canada Sedimentary Basin. *Computers & Geosciences 138*, 104450.

Chimeno-Trinchet, C., C. Murru, M. E. Díaz-García, A. Fernández-González, and R. Badía-Laíño (2020, 11). Artificial Intelligence and fourier-transform infrared spectroscopy for evaluating water-mediated degradation of lubricant oils. *Talanta 219*, 121312.

Choi, W.-H. and Y.-S. Choi (2022). Effective Pre-Training Method and Its Compositional Intelligence for Image Captioning. *Sensors 22*(9), 3433.

Chung, J., C. Gulcehre, K. Cho, and Y. Bengio (2014). Empirical evaluation of gated recurrent neural networks on sequence modeling. In *NIPS 2014 Workshop on Deep Learning, December 2014*.

Cornia, M., L. Baraldi, and R. Cucchiara (2022). Explaining transformer-based image captioning models: An empirical analysis. *AI Communications 35*(2), 111–129.

Deeba, K. and B. Amutha (2020). WITHDRAWN: ResNet-deep neural network architecture for leaf disease classification.

Devlin, J., S. Gupta, R. Girshick, M. Mitchell, and C. L. Zitnick (2015). Exploring nearest neighbor approaches for image captioning. *arXiv preprint arXiv:1505.04467*.

Dong, A., W. Wang, X. Zhao, X. Chu, B. Wang, X. Bai, H. Qin, H. Jiang, B. Jia, Y. Yang, and D. Kimulia (2018). <i>Rapid Classification of Corn Varieties by Using Near Infrared Spectroscopy</i>. In *2018 Detroit, Michigan July 29 - August 1, 2018*, St. Joseph, MI. American Society of Agricultural and Biological Engineers.

Donno, D., A. K. Cerutti, I. Prgomet, M. G. Mellano, and G. L. Beccaro (2015). Foodomics for mulberry fruit (Morus spp.): Analytical fingerprint as antioxidants' and health properties' determination tool. *Food Research International 69*, 179–188.

Dutta, K., P. Krishnan, M. Mathew, and C. V. Jawahar (2018). Towards accurate handwritten word recognition for Hindi and Bangla. In *Computer Vision, Pattern Recognition, Image Processing, and Graphics: 6th National Conference, NCVPRIPG 2017, Mandi, India, December 16-19, 2017, Revised Selected Papers 6*, pp. 470–480. Springer.

Emmert-Streib, F., Z. Yang, H. Feng, S. Tripathi, and M. Dehmer (2020). An introductory review of deep learning for prediction models with big data. *Frontiers in Artificial Intelligence 3*, 4.

Faisal, M., M. Alsulaiman, M. Arafah, and M. A. Mekhtiche (2020). IHDS: Intelligent harvesting decision system for date fruit based on maturity stage using deep learning and computer vision. *IEEE Access 8*, 167985–167997.

Farhadi, A., M. Hejrati, M. A. Sadeghi, P. Young, C. Rashtchian, J. Hockenmaier, and D. Forsyth (2010). Every picture tells a story: Generating sentences from images. In *European conference on computer vision*, pp. 15–29. Springer.

Féré, M., C. Gobinet, L. H. Liu, A. Beljebbar, V. Untereiner, D. Gheldof, M. Chollat, J. Klossa, B. Chatelain, and O. Piot (2020). Implementation of a classification strategy of Raman data collected in different clinical conditions: application to the diagnosis of chronic lymphocytic leukemia. *Analytical and bioanalytical chemistry 412*, 949–962.

Fogarty, E. S., D. L. Swain, G. M. Cronin, L. E. Moraes, and M. Trotter (2020, 2). Behaviour classification of extensively grazed sheep using machine learning. *Computers and Electronics in Agriculture 169*, 105175.

Fukushima, H. C. S., R. L. Bailone, T. Corrêa, H. Janke, L. K. De Aguiar, P. G. Setti, and R. C. Borra (2021). Zebrafish toxicological screening could aid Leishmaniosis drug discovery. *Laboratory Animal Research 37*, 1–11.

Gandhi, A., K. Adhvaryu, S. Poria, E. Cambria, and A. Hussain (2023). Multimodal sentiment analysis: A systematic review of history, datasets, multimodal fusion methods, applications, challenges and future directions. *Information Fusion 91*, 424–444.

Ge, Y., P. J. From, and Y. Xiong (2024). Multi-view gripper internal sensing for the regression of strawberry ripeness using a mini-convolutional neural network for robotic harvesting. *Computers and Electronics in Agriculture 216*, 108474.

Ge, Y., Y. Xiong, and P. J. From (2019). Instance segmentation and localization of strawberries in farm conditions for automatic fruit harvesting. *IFAC-PapersOnLine 52*(30), 294–299.

Goessling, W. and K. C. Sadler (2015). Zebrafish: an important tool for liver disease research. *Gastroenterology 149*(6), 1361–1377.

Griffin, A., K. R. Hamling, S. Hong, and S. C. Baraban (2018). Preclinical animal models for Dravet syndrome: seizure phenotypes, comorbidities and drug screening. *Frontiers in pharmacology 9*, 368680.

Guo, Y., W. J. Veneman, H. P. Spaink, and F. J. Verbeek (2017). Three-dimensional reconstruction and measurements of zebrafish larvae from high-throughput axial-view in vivo imaging. *Biomedical optics express 8*(5), 2611–2634.

Guo, Y., Z. Xiong, and F. J. Verbeek (2018). An efficient and robust hybrid method for segmentation of zebrafish objects from bright-field microscope images. *Machine vision and applications 29*, 1211–1225.

Gupta, N., N. Ahuja, S. Malhotra, A. Bala, and G. Kaur (2017, 6). Intelligent heart disease prediction in cloud environment through ensembling. *Expert Systems 34*(3).

Halstead, M., C. McCool, S. Denman, T. Perez, and C. Fookes (2018). Fruit quantity and ripeness estimation using a robotic vision system. *IEEE robotics and automation LETTERS 3*(4), 2995–3002.

Han, L., J. Tian, Y. Huang, K. He, Y. Liang, X. Hu, L. Xie, H. Yang, and D. Huang (2024). Hyperspectral imaging combined with dual-channel deep learning feature fusion model for fast and non-destructive recognition of brew wheat varieties. *Journal of Food Composition and Analysis 125*, 105785.

Han, Q., H. Gao, H. Chen, X. Fang, and W. Wu (2017). Precooling and ozone treatments affects postharvest quality of black mulberry (Morus nigra) fruits. *Food chemistry 221*, 1947–1953.

Haque, I. R. I. and J. Neubert (2020). Deep learning approaches to biomedical image segmentation. *Informatics in Medicine Unlocked 18*, 100297.

Harel, B., Y. Parmet, and Y. Edan (2020). Maturity classification of sweet peppers using image datasets acquired in different times. *Computers in Industry 121*, 103274.

He, K., X. Zhang, S. Ren, and J. Sun (2016). Deep residual learning for image recognition. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 770–778.

Hechenbichler, K. and K. Schliep (2004). Weighted k-nearest-neighbor techniques and ordinal classification.

Hinton, G. E., S. Sabour, and N. Frosst (2018). Matrix capsules with EM routing. In *International conference on learning representations*.

Hodosh, M., P. Young, and J. Hockenmaier (2013). Framing image description as a ranking task: Data, models and evaluation metrics. *Journal of Artificial Intelligence Research 47*, 853–899.

Hoffman, D., A. Hang, S. Larson, and B. Jones (2003, 3). Conversion of an RAPD marker to an STS marker for barley variety identification. *Plant Molecular Biology Reporter 21*(1), 81–91.

Hojjatpanah, G., M. Fazaeli, and Z. EmamâĂŘDjomeh (2011). Effects of heating method and conditions on the quality attributes of black mulberry (Morus nigra) juice concentrate. *International Journal of Food Science & Technology 46*(5), 956–962.

Hossain, M. D. Z., F. Sohel, M. F. Shiratuddin, and H. Laga (2019). A comprehensive survey of deep learning for image captioning. *ACM Computing Surveys (CsUR) 51*(6), 1–36.

Hossain, M. Z., F. Sohel, M. F. Shiratuddin, H. Laga, and M. Bennamoun (2021). Text to image synthesis for improved image captioning. *IEEE Access 9*, 64918–64928.

Hu, N., H. Ma, and T. Zhan (2020, 4). Finger vein biometric verification using block multi-scale uniform local binary pattern features and block two-directional two-dimension principal component analysis. *Optik 208*, 163664.

Huang, L., Y. Zhou, L. Meng, D. Wu, and Y. He (2017). Comparison of different CCD detectors and chemometrics for predicting total anthocyanin content and antioxidant activity of mulberry fruit using visible and near infrared hyperspectral imaging technique. *Food Chemistry 224*, 1–10.

Huang, Q., F. Zhang, and X. Li (2018, 11). Few-shot decision tree for diagnosis of ultrasound breast tumor using BI-RADS features. *Multimedia Tools and Applications 77*(22), 29905–29918.

Huang, Y.-H., Z. Xie, G.-Q. Fang, T.-C. Yu, H. Ren, S.-Y. Fang, Y. Chen, and J. Hu (2019, 3). Routability-Driven Macro Placement with Embedded CNN-Based Prediction Model. In *2019 Design, Automation & Test in Europe Conference & Exhibition (DATE)*, pp. 180–185. IEEE.

Huang, Y.-P., T.-H. Wang, and H. Basanta (2020). Using fuzzy mask R-CNN model to automatically identify tomato ripeness. *IEEE Access 8*, 207672–207682.

Hudedmani, M. G., R. Umayal, S. K. Kabberalli, and R. Hittalamani (2017). Programmable logic controller (plc) in automation. *Advanced Journal of Graduate Research 2*(1), 37–45.

Iqbal, Z., M. A. Khan, M. Sharif, J. H. Shah, M. H. ur Rehman, and K. Javed (2018, 10). An automated detection and classification of citrus plant diseases using image processing techniques: A review. *Computers and Electronics in Agriculture 153*, 12–32.

Javanmardi, S., S.-H. M. Ashtiani, F. J. Verbeek, and A. Martynenko (2021). Computer-vision classification of corn seed varieties using deep convolutional neural network. *Journal of Stored Products Research 92*, 101800.

Javanmardi, S., M. Jahanbanifard, M. M. Bonsangue, and F. J. Verbeek (2023). Using a Novel Capsule Network for an Innovative Approach to Image Captioning. In *The Third AAAI Workshop on Scientific Document Understanding*. CEUR.

Javanmardi, S., A. M. Latif, M. T. Sadeghi, M. Jahanbanifard, M. Bonsangue, and F. J. Verbeek (2022). Caps captioning: a modern image captioning approach based on improved capsule network. *Sensors 22*(21), 8376.

Javanmardi, S., X. Tang, M. Jahanbanifard, and F. J. Verbeek (2023). Unsupervised Segmentation of High-Throughput Zebrafish Images Using Deep Neural Networks and Transformers. In *International Conference on Data Science and Artificial Intelligence*, pp. 213–227. Springer.

Jelled, A., R. B. Hassine, A. Thouri, G. Flamini, H. Chahdoura, A. El Arem, J. B. Lamine, Z. Haouas, H. B. Cheikh, and L. Achour (2017). Immature mulberry fruits richness of promising constituents in contrast with mature ones: A comparative study among three Tunisian species. *Industrial Crops and Products 95*, 434–443.

Jia, S., D. An, Z. Liu, J. Gu, S. Li, X. Zhang, D. Zhu, T. Guo, and Y. Yan (2015, 5). Variety identification method of coated maize seeds based on near-infrared spectroscopy and chemometrics. *Journal of Cereal Science 63*, 21–26.

Jiang, W., L. Ma, Y.-G. Jiang, W. Liu, and T. Zhang (2018). Recurrent fusion network for image captioning. In *Proceedings of the European Conference on Computer Vision (ECCV)*, pp. 499–515.

Jiao, S., Y. Zhong, and Y. Deng (2016, 10). Hot air-assisted radio frequency heating effects on wheat and corn seeds: Quality change and fungi inhibition. *Journal of Stored Products Research 69*, 265–271.

Jin, J., K. Fu, R. Cui, F. Sha, and C. Zhang (2015). Aligning where to see and what to tell: image caption with region-based attention and scene factorization. *arXiv preprint arXiv:1506.06272*.

Johnson, J., A. Karpathy, and L. Fei-Fei (2016). Densecap: Fully convolutional localization networks for dense captioning. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 4565–4574.

Kalueff, A. V., M. Gebhardt, A. M. Stewart, J. M. Cachat, M. Brimmer, J. S. Chawla, C. Craddock, E. J. Kyzar, A. Roth, and S. Landsman (2013). Towards a comprehensive catalog of zebrafish behavior 1.0 and beyond. *Zebrafish 10*(1), 70–86.

Karpathy, A. and L. Fei-Fei (2015). Deep visual-semantic alignments for generating image descriptions. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 3128–3137.

khan, M. A., T. Akram, M. Sharif, and T. Saba (2020, 9). Fruits diseases classification: exploiting a hierarchical framework for deep features fusion and selection. *Multimedia Tools and Applications 79*(35-36), 25763–25783.

Khan, M. A., M. I. U. Lali, M. Sharif, K. Javed, K. Aurangzeb, S. I. Haider, A. S. Altamrah, and T. Akram (2019). An Optimized Method for Segmentation and Classification of Apple Diseases Based on Strong Correlation and Genetic Algorithm Based Feature Selection. *IEEE Access 7*, 46261–46277.

Kiratiratanapruk, K. and W. Sinthupinyo (2011, 12). Color and texture for corn seed classification by machine vision. In *2011 International Symposium on Intelligent Signal Processing and Communications Systems (ISPACS)*, pp. 1–5. IEEE.

Kiros, R., R. Salakhutdinov, and R. S. Zemel (2014). Unifying visual-semantic embeddings with multimodal neural language models. *arXiv preprint arXiv:1411.2539*.

Kontogianni, A., E. Alepis, M. Virvou, and C. Patsakis (2024). Implementing Machine Learning for Smart Tourism Frameworks. In *Smart TourismâĂŞThe Impact of Artificial Intelligence and Blockchain*, pp. 87–120. Springer.

Kozłowski, M., P. Górecki, and P. M. Szczypiński (2019, 8). Varietal classification of barley by convolutional neural networks. *Biosystems Engineering 184*, 155–165.

Krizhevsky, A., I. Sutskever, and G. E. Hinton (2012). Imagenet classification with deep convolutional neural networks. *Advances in neural information processing systems 25*.

Kulkarni, G., V. Premraj, V. Ordonez, S. Dhar, S. Li, Y. Choi, A. C. Berg, and T. L. Berg (2013). Babytalk: Understanding and generating simple image descriptions. *IEEE transactions on pattern analysis and machine intelligence 35*(12), 2891–2903.

Kuo, C.-F. J., Y.-S. Leu, D.-J. Hu, C.-C. Huang, J.-J. Siao, and K. B. P. Leon (2020, 3). Application of intelligent automatic segmentation and 3D reconstruction of inferior turbinate and maxillary sinus from computed tomography and analyze the relationship between volume and nasal lesion. *Biomedical Signal Processing and Control 57*, 101660.

Kurtulmuş, F. and H. Ünal (2015, 3). Discriminating rapeseed varieties using computer vision and machine learning. *Expert Systems with Applications 42*(4), 1880–1891.

Kuznetsova, P., V. Ordonez, A. Berg, T. Berg, and Y. Choi (2013). Generalizing image captions for image-text parallel corpus. In *Proceedings of the 51st Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*, pp. 790–796.

Kuznetsova, P., V. Ordonez, T. L. Berg, and Y. Choi (2014). Treetalk: Composition and compression of trees for image descriptions. *Transactions of the Association for Computational Linguistics 2*, 351–362.

Kwan, C., B. Chou, J. Yang, A. Rangamani, T. Tran, J. Zhang, and R. Etienne-Cummings (2019). Target tracking and classification using compressive sensing camera for SWIR videos. *Signal, Image and Video Processing 13*(8), 1629–1637.

Lebret, R., P. Pinheiro, and R. Collobert (2015). Phrase-based image captioning. In *International Conference on Machine Learning*, pp. 2085–2094. PMLR.

Lee, Y. and K. T. Hwang (2017). Changes in physicochemical properties of mulberry fruits (Morus alba L.) during ripening. *Scientia Horticulturae 217*, 189–196.

Li, D., Y. Liu, and L. Gao (2016, 11). Research of Maize Seeds Classification Recognition Based on the Image Processing. *International Journal of Signal Processing, Image Processing and Pattern Recognition 9*(11), 181–190.

Li, H., Z. Yang, Q. Zeng, S. Wang, Y. Luo, Y. Huang, Y. Xin, and N. He (2020). Abnormal expression of bHLH3 disrupts a flavonoid homeostasis network, causing differences in pigment composition among mulberry fruits. *Horticulture research 7*.

Li, S., G. Kulkarni, T. Berg, A. Berg, and Y. Choi (2011). Composing simple image descriptions using web-scale n-grams. In *Proceedings of the Fifteenth Conference on Computational Natural Language Learning*, pp. 220–228.

Li, X., B. Dai, H. Sun, and W. Li (2019, 4). Corn Classification System based on Computer Vision. *Symmetry 11*(4), 591.

Liao, W., X. Wang, D. An, and Y. Wei (2019, 5). Hyperspectral Imaging Technology and Transfer Learning Utilized in Haploid Maize Seeds Identification. In *2019 International Conference on High Performance Big Data and Intelligent Systems (HPBD&IS)*, pp. 157–162. IEEE.

Lin, C.-Y. (2004). Rouge: A package for automatic evaluation of summaries. In *Text summarization branches out*, pp. 74–81.

Lin, M., Q. Chen, and S. Yan (2013). Network in network. *arXiv preprint arXiv:1312.4400*.

Lin, T.-Y., M. Maire, S. Belongie, J. Hays, P. Perona, D. Ramanan, P. Dollár, and C. L. Zitnick (2014). Microsoft coco: Common objects in context. In *European conference on computer vision*, pp. 740–755. Springer.

Liu, H., G. Wang, T. Huang, P. He, M. Skitmore, and X. Luo (2020). Manifesting construction activity scenes via image captioning. *Automation in Construction 119*, 103334.

Liu, J., J. Pi, and L. Xia (2020). A novel and high precision tomato maturity recognition algorithm based on multi-level deep residual network. *Multimedia Tools and Applications 79*, 9403–9417.

Liu, K., C. Petree, T. Requena, P. Varshney, and G. K. Varshney (2019). Expanding the CRISPR toolbox in zebrafish for studying development and disease. *Frontiers in cell and developmental biology 7*, 13.

Liu, X., L. Song, S. Liu, and Y. Zhang (2021). A review of deep-learning-based medical image segmentation methods. *Sustainability 13*(3), 1224.

Liu, Z.-y., F. Cheng, Y.-b. Ying, and X.-q. Rao (2005). Identification of rice seed varieties using neural network. *Journal of Zhejiang University-Science B 6*(11), 1095–1100.

Lou, H., Y. Hu, L. Zhang, P. Sun, and H. Lu (2012). Nondestructive evaluation of the changes of total flavonoid, total phenols, ABTS and DPPH radical scavenging activities, and sugars during mulberry (Morus alba L.) fruits development by chlorophyll fluorescence and RGB intensity values. *LWT-food science and technology 47*(1), 19–24.

Lu, J., C. Xiong, D. Parikh, and R. Socher (2017). Knowing when to look: Adaptive attention via a visual sentinel for image captioning. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 375–383.

Ma, D., H. Cheng, and W. Zhang (2013, 12). Maize Embryo Image Acquisition and Variety Identification Based on OTSU and K-Means Clustering Algorithm. In *2013 International Conference on Information Science and Cloud Computing Companion*, pp. 835–840. IEEE.

Mandal, B., S. Ghosh, R. Sarkhel, N. Das, and M. Nasipuri (2019). Using dynamic routing to extract intermediate features for developing scalable capsule networks. In *2019 Second International Conference on Advanced Computational and Communication Paradigms (ICACCP)*, pp. 1–6. IEEE.

Martins, M. S., A. C. Gonçalves, G. Alves, and L. R. Silva (2023). Blackberries and mulberries: Berries with significant health-promoting properties. *International Journal of Molecular Sciences 24*(15), 12024.

Mason, R. and E. Charniak (2014). Nonparametric method for data-driven image captioning. In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*, pp. 592–598.

McCluskey, B. M. and J. H. Postlethwait (2015). Phylogeny of zebrafish, a âĂIJmodel species,âĂİ within Danio, a âĂIJmodel genusâĂİ. *Molecular biology and evolution 32*(3), 635–652.

Mishra, Y. K., S. K. Verma, A. Nandi, A. Sinha, P. Patel, E. Jha, S. Mohanty, P. K. Panda, R. Ahuja, and M. Suar (2021). Zebrafish (Danio rerio) as an ecotoxicological model for Nanomaterial induced toxicity profiling. *Precision Nanomedicine 4*(1), 750–782.

Mohtar, I. A., N. S. S. Ramli, and Z. Ahmad (2019). Automatic classification of mangosteen ripening stages using deep learning. In *2019 1st International Conference on Artificial Intelligence and Data Sciences (AiDAS)*, pp. 44–47. IEEE.

Momeny, M., A. Jahanbakhshi, K. Jafarnezhad, and Y.-D. Zhang (2020). Accurate classification of cherry fruit using deep CNN based on hybrid pooling approach. *Postharvest Biology and Technology 166*, 111204.

Moon, A., J. Kim, J. Zhang, and S. W. Son (2018, 11). Evaluating fidelity of lossy compression on spatiotemporal data from an IoT enabled smart farm. *Computers and Electronics in Agriculture 154*, 304–313.

Mumtaz, W. and A. Qayyum (2019). A deep learning framework for automatic diagnosis of unipolar depression. *International journal of medical informatics 132*, 103983.

Nasirahmadi, A. and S.-H. Miraei Ashtiani (2017, 4). Bag-of-Feature model for sweet and bitter almond classification. *Biosystems Engineering 156*, 51–60.

Nayab, S., K. Razzaq, S. Ullah, I. A. Rajwana, M. Amin, H. N. Faried, G. Akhtar, A. S. Khan, Z. Asghar, and H. Hassan (2020). Genotypes and harvest maturity influence the nutritional fruit quality of mulberry. *Scientia Horticulturae 266*, 109311.

Nguyen, C. L. and H. V. H. Nguyen (2018). The quality of mulberry juice as affected by enzyme treatments. *Beverages 4*(2), 41.

Nie, P., J. Zhang, X. Feng, C. Yu, and Y. He (2019, 10). Classification of hybrid seeds using near-infrared hyperspectral imaging technology combined with deep learning. *Sensors and Actuators B: Chemical 296*, 126630.

Nord, H., N. Dennhag, J. Muck, and J. von Hofsten (2016). Pax7 is required for establishment of the xanthophore lineage in zebrafish embryos. *Molecular biology of the cell 27*(11), 1853–1862.

Ordonez, V., G. Kulkarni, and T. Berg (2011). Im2text: Describing images using 1 million captioned photographs. *Advances in neural information processing systems 24*, 1143–1151.

Özkan, K., Å. IşÄśk, and B. T. Yavuz (2019, 8). Identification of wheat kernels by fusion of RGB, SWIR, and VNIR samples. *Journal of the Science of Food and Agriculture 99*(11), 4977–4984.

Papineni, K., S. Roukos, T. Ward, and W.-J. Zhu (2002). Bleu: a method for automatic evaluation of machine translation. In *Proceedings of the 40th annual meeting of the Association for Computational Linguistics*, pp. 311–318.

Patrício, D. I. and R. Rieder (2018, 10). Computer vision and artificial intelligence in precision agriculture for grain crops: A systematic review. *Computers and Electronics in Agriculture 153*, 69–81.

Pereira, L. F. S., S. Barbon Jr, N. A. Valous, and D. F. Barbin (2018). Predicting the ripening of papaya fruit with digital imaging and random forests. *Computers and electronics in agriculture 145*, 76–82.

Phillips, J. B. and M. Westerfield (2014). Zebrafish models in translational research: tipping the scales toward advancements in human health. *Disease models & mechanisms 7*(7), 739–743.

Pourdarbani, R., S. Sabzi, D. Kalantari, J. Paliwal, B. Benmouna, G. García-Mateos, and J. M. Molina-Martínez (2020). Estimation of different ripening stages of Fuji apples using image processing and spectroscopy based on the majority voting method. *Computers and Electronics in Agriculture 176*, 105643.

Pourreza, A., H. Pourreza, M.-H. Abbaspour-Fard, and H. Sadrnia (2012, 4). Identification of nine Iranian wheat seed varieties by textural analysis with image processing. *Computers and Electronics in Agriculture 83*, 102–108.

Prykhozhij, S. V. and J. N. Berman (2018). Zebrafish knock-ins swim into the mainstream.

Qiang, Z., L. He, and F. Dai (2019). Identification of plant leaf diseases based on inception V3 transfer learning and fine-tuning. In *International Conference on Smart City and Informatization*, pp. 118–127. Springer.

Quan, L., H. Feng, Y. Lv, Q. Wang, C. Zhang, J. Liu, and Z. Yuan (2019, 8). Maize seedling detection under different growth stages and complex field environments based on an improved Faster RâĂŞCNN. *Biosystems Engineering 184*, 1–23.

Ramesh, A., M. Pavlov, G. Goh, S. Gray, C. Voss, A. Radford, M. Chen, and I. Sutskever (2021). Zero-shot text-to-image generation. In *International Conference on Machine Learning*, pp. 8821–8831. PMLR.

Ramos, R. P., J. S. Gomes, R. M. Prates, E. F. Simas Filho, B. J. Teruel, and D. dos Santos Costa (2021). NonâĂŘinvasive setup for grape maturation classification using deep learning. *Journal of the Science of Food and Agriculture 101*(5), 2042–2051.

Rennie, S. J., E. Marcheret, Y. Mroueh, J. Ross, and V. Goel (2017). Self-critical sequence training for image captioning. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 7008–7024.

Rissone, A. and S. M. Burgess (2018). Rare genetic blood disease modeling in zebrafish. *Frontiers in Genetics 9*, 403624.

Rogl, S. and B. Javornik (1996, 1). Seed protein variation for identification of common buckwheat (Fagopyrum esculentum Moench) cultivars. *Euphytica 87*(2), 111–117.

Rohela, G. K., P. Shukla, R. Kumar, and S. R. Chowdhury (2020). Mulberry (Morus spp.): An ideal plant for sustainable development. *Trees, Forests and People 2*, 100011.

Rohith, G. and L. S. Kumar (2020). Remote sensing signature classification of agriculture detection using deep convolution network models. In *International*

Conference on Machine Learning, Image Processing, Network Security and Data Sciences, pp. 343–355. Springer.

Ronneberger, O., P. Fischer, and T. Brox (2015). U-net: Convolutional networks for biomedical image segmentation. In *Medical image computing and computer-assisted interventionâĂŞMICCAI 2015: 18th international conference, Munich, Germany, October 5-9, 2015, proceedings, part III 18*, pp. 234–241. Springer.

Ropelewska, E. (2020, 9). The use of seed texture features for discriminating different cultivars of stored apples. *Journal of Stored Products Research 88*, 101668.

Sabour, S., N. Frosst, and G. E. Hinton (2017). Dynamic routing between capsules. *NIPS*.

Sabzi, S., Y. Abbaspour-Gilandeh, G. García-Mateos, A. Ruiz-Canales, J. M. Molina-Martínez, and J. I. Arribas (2019). An automatic non-destructive method for the classification of the ripeness stage of red delicious apples in orchards using aerial video. *Agronomy 9*(2), 84.

Saeed, M. S., M. W. Mustafa, U. U. Sheikh, T. A. Jumani, and N. H. Mirjat (2019). Ensemble bagged tree based classification for reducing non-technical losses in multan electric power company of pakistan. *Electronics 8*(8), 860.

Salaberria, A., G. Azkune, O. L. de Lacalle, A. Soroa, and E. Agirre (2023). Image captioning for effective use of language models in knowledge-based visual question answering. *Expert Systems with Applications 212*, 118669.

Sampath, V., I. Maurtua, J. J. Aguilar Martin, and A. Gutierrez (2021). A survey on generative adversarial networks for imbalance problems in computer vision tasks. *Journal of big Data 8*, 1–59.

Sánchez-Salcedo, E. M., P. Mena, C. García-Viguera, J. J. Martínez, and F. Hernández (2015). Phytochemical evaluation of white (Morus alba L.) and black (Morus nigra L.) mulberry fruits, a starting point for the assessment of their beneficial properties. *Journal of functional foods 12*, 399–408.

Saracoglu, O. (2018). Phytochemical accumulation of anthocyanin rich mulberry (Morus laevigata) during ripening. *Journal of Food Measurement and Characterization 12*(3), 2158–2163.

Shaikh, T. A., T. Rasool, and F. R. Lone (2022). Towards leveraging the role of machine learning and artificial intelligence in precision agriculture and smart farming. *Computers and Electronics in Agriculture 198*, 107119.

Sharif, M., M. A. Khan, Z. Iqbal, M. F. Azam, M. I. U. Lali, and M. Y. Javed (2018, 7). Detection and classification of citrus diseases in agriculture based on optimized weighted segmentation and feature selection. *Computers and Electronics in Agriculture 150*, 220–234.

Shen, D., G. Wu, and H.-I. Suk (2017). Deep learning in medical image analysis. *Annual review of biomedical engineering 19*, 221–248.

Shouche, S., R. Rastogi, S. Bhagwat, and J. K. Sainis (2001, 12). Shape analysis of grains of Indian wheat varieties. *Computers and Electronics in Agriculture 33*(1), 55–76.

Simonyan, K. and A. Zisserman (2014). Very deep convolutional networks for large-scale image recognition. *arXiv preprint arXiv:1409.1556*.

Suh, H. K., J. Ijsselmuiden, J. W. Hofstee, and E. J. van Henten (2018). Transfer learning for the classification of sugar beet and volunteer potato under field conditions. *Biosystems engineering 174*, 50–65.

Sun, Q. and Z. Ge (2021). A survey on deep learning for data-driven soft sensors. *IEEE Transactions on Industrial Informatics 17*(9), 5853–5866.

Szegedy, C., W. Liu, Y. Jia, P. Sermanet, S. Reed, D. Anguelov, D. Erhan, V. Vanhoucke, and A. Rabinovich (2015). Going deeper with convolutions. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 1–9.

Tabakoglu, N. and H. Karaca (2018). Effects of ozone-enriched storage atmosphere on postharvest quality of black mulberry fruits (Morus nigra L.). *LWT 92*, 276–281.

Tan, J. H., C. S. Chan, and J. H. Chuah (2019). Image Captioning with Sparse Recurrent Neural Network. *arXiv preprint arXiv:1908.10797*.

Taner, A., Y. Öztekin, A. Tekgüler, H. Sauk, and H. Duran (2018, 7). Classification of Varieties of Grain Species by Artificial Neural Networks. *Agronomy 8*(7), 123.

Too, E. C., L. Yujian, S. Njuki, and L. Yingchun (2019). A comparative study of fine-tuning deep learning models for plant disease identification. *Computers and Electronics in Agriculture 161*, 272–279.

Vinyals, O., A. Toshev, S. Bengio, and D. Erhan (2015). Show and tell: A neural image caption generator. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 3156–3164.

Vinyals, O., A. Toshev, S. Bengio, and D. Erhan (2016). Show and tell: Lessons learned from the 2015 mscoco image captioning challenge. *IEEE transactions on pattern analysis and machine intelligence 39*(4), 652–663.

Vithu, P. and J. Moses (2016, 10). Machine vision system for food grain quality evaluation: A review. *Trends in Food Science & Technology 56*, 13–20.

Vivar, G., D.-L. Almanza-Ojeda, I. Cheng, J. C. Gomez, J. A. Andrade-Lucio, and M.-A. Ibarra-Manzano (2019, 5). Contrast and Homogeneity Feature Analysis for Classifying Tremor Levels in ParkinsonâĂŹs Disease Patients. *Sensors 19*(9), 2072.

Wakholi, C., L. M. Kandpal, H. Lee, H. Bae, E. Park, M. S. Kim, C. Mo, W.-H. Lee, and B.-K. Cho (2018, 2). Rapid assessment of corn seed viability using short wave infrared line-scan hyperspectral imaging and chemometrics. *Sensors and Actuators B: Chemical 255*, 498–507.

Wan, P., A. Toudeshki, H. Tan, and R. Ehsani (2018). A methodology for fresh tomato maturity detection using computer vision. *Computers and electronics in agriculture 146*, 43–50.

Wang, J., W. Wang, L. Wang, Z. Wang, D. D. Feng, and T. Tan (2020). Learning visual relationship and context-aware attention for image captioning. *Pattern Recognition 98*, 107075.

Wang, J. Z., S. Zhao, C. Wu, R. B. Adams, M. G. Newman, T. Shafir, and R. Tsachor (2023). Unlocking the emotional world of visual media: An overview of the science, research, and impact of understanding emotion. *Proceedings of the IEEE*.

Wang, R., T. Lei, R. Cui, B. Zhang, H. Meng, and A. K. Nandi (2022). Medical image segmentation using deep learning: A survey. *IET Image Processing 16*(5), 1243–1267.

Wang, X., X. Yan, K. Tan, C. Pan, J. Ding, Z. Liu, and X. Dong (2023). Double U-Net (W-Net): A change detection network with two heads for remote sensing imagery. *International Journal of Applied Earth Observation and Geoinformation 122*, 103456.

Webb, J. W. and R. A. Reis (1994). *Programmable Logic Controllers: Principals And Applications*. Prentice-Hall, Inc.

Wei, S., H. Liang, A. Dao, Y. Xie, F. Cao, Q. Ren, A. K. Yadav, R. Kushwaha, A. A. Mandal, and S. Banerjee (2023). Perturbing tumor cell metabolism with a Ru (II) photo-redox catalyst to reverse the multidrug resistance of lung cancer. *Science China Chemistry 66*(5), 1482–1488.

Wei, Y., L. Wang, H. Cao, M. Shao, and C. Wu (2020). Multi-attention generative adversarial network for image captioning. *Neurocomputing 387*, 91–99.

Wei Tan, J., S.-W. Chang, S. Abdul-Kareem, H. J. Yap, and K.-T. Yong (2018). Deep learning for plant species classification using leaf vein morphometric. *IEEE/ACM transactions on computational biology and bioinformatics 17*(1), 82–90.

Wen, X. (2020, 9). Modeling and performance evaluation of wind turbine based on ant colony optimization-extreme learning machine. *Applied Soft Computing 94*, 106476.

Wu, A., J. Zhu, and T. Ren (2020). Detection of apple defect using laser-induced light backscattering imaging and convolutional neural network. *Computers & Electrical Engineering 81*, 106454.

Wu, Q., C. Shen, P. Wang, A. Dick, and A. Van Den Hengel (2017). Image captioning and visual question answering based on attributes and external knowledge. *IEEE transactions on pattern analysis and machine intelligence 40*(6), 1367–1381.

Xia, C., S. Yang, M. Huang, Q. Zhu, Y. Guo, and J. Qin (2019, 12). Maize seed classification using hyperspectral image coupled with multi-linear discriminant analysis. *Infrared Physics & Technology 103*, 103077.

Xian, Y. and Y. Tian (2019). Self-guiding multimodal LSTMâĂŤwhen we do not have a perfect training dataset for image captioning. *IEEE Transactions on Image Processing 28*(11), 5241–5252.

Yan, S., Y. Xie, F. Wu, J. S. Smith, W. Lu, and B. Zhang (2020). Image captioning via hierarchical attention mechanism and policy gradient optimization. *Signal Processing 167*, 107329.

Yang, J., H. Wen, L. Zhang, X. Zhang, Z. Fu, and J. Li (2017). The influence of ripening stage and region on the chemical compounds in mulberry fruits (Morus atropurpurea Roxb.) based on UPLC-QTOF-MS. *Food Research International 100*, 159–165.

Yang, X., H. Hong, Z. You, and F. Cheng (2015, 7). Spectral and Image Integrated Analysis of Hyperspectral Data for Waxy Corn Seed Variety Classification. *Sensors 15*(7), 15578–15594.

Yang, Z. and Q. Liu (2020). ATT-BM-SOM: A framework of effectively choosing image information and optimizing syntax for image captioning. *IEEE Access 8*, 50565–50573.

Yilmaz, I., R. Masum, and A. Siraj (2020, 8). Addressing Imbalanced Data Problem with Generative Adversarial Network For Intrusion Detection. In *2020 IEEE 21st International Conference on Information Reuse and Integration for Data Science (IRI)*, pp. 25–30. IEEE.

You, Q., H. Jin, Z. Wang, C. Fang, and J. Luo (2016). Image captioning with semantic attention. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pp. 4651–4659.

You, Y., N. A. Li, X. Han, J. Guo, Y. U. Zhao, G. Liu, W. Huang, and J. Zhan (2018). Influence of different sterilization treatments on the color and anthocyanin contents of mulberry juice during refrigerated storage. *Innovative Food Science & Emerging Technologies 48*, 1–10.

Young, P., A. Lai, M. Hodosh, and J. Hockenmaier (2014). From image descriptions to visual denotations: New similarity metrics for semantic inference over event descriptions. *Transactions of the Association for Computational Linguistics 2*, 67–78.

Yu, J., J. Li, Z. Yu, and Q. Huang (2019). Multimodal transformer with multi-view visual representation for image captioning. *IEEE transactions on circuits and systems for video technology 30*(12), 4467–4480.

Zhang, J., C. Lu, J. Wang, L. Wang, and X.-G. Yue (2019). Concrete cracks detection based on FCN with dilated convolution. *Applied Sciences 9*(13), 2686.

Zhang, L., S. Zhang, J. Liu, Y. Wei, D. An, and J. Wu (2024). Maize seed variety identification using hyperspectral imaging and self-supervised learning: A two-stage training approach without spectral preprocessing. *Expert Systems with Applications 238*, 122113.

Zhang, S., S. Zhang, C. Zhang, X. Wang, and Y. Shi (2019, 7). Cucumber leaf disease identification with global pooling dilated convolutional neural network. *Computers and Electronics in Agriculture 162*, 422–430.

Zhang, W., S. Tang, J. Su, J. Xiao, and Y. Zhuang (2021). Tell and guess: cooperative learning for natural image caption generation with hierarchical refined attention. *Multimedia Tools and Applications 80*(11), 16267–16282.

Zhang, Y., J. Lian, M. Fan, and Y. Zheng (2018). Deep indicator for fine-grained classification of bananaâĂŹs ripening stages. *EURASIP Journal on Image and Video Processing 2018*(1), 1–10.

Zhao, M., W. Wu, Y. Q. Zhang, and X. Li (2011, 8). Combining genetic algorithm and SVM for corn variety identification. In *2011 International Conference on Mechatronic Science, Electric Engineering and Computer (MEC)*, pp. 990–993. IEEE.

Zhao, Y., K. Zhang, P. Sips, and C. A. MacRae (2019). Screening drugs for myocardial disease in vivo with zebrafish: an expert update. *Expert opinion on drug discovery 14*(4), 343–353.

Zhou, L., C. Zhang, F. Liu, Z. Qiu, and Y. He (2019). Application of deep learning in food: a review. *Comprehensive reviews in food science and food safety 18*(6), 1793–1811.

Zhou, S. K., H. Greenspan, and D. Shen (2023). *Deep learning for medical image analysis*. Academic Press.

Zhou, Y., T. Xu, W. Zheng, and H. Deng (2017). Classification and recognition approaches of tomato main organs based on DCNN. *Transactions of the Chinese Society of Agricultural Engineering 33*(15), 219–226.

Zhu, Zhou, Gao, Bao, He, and Feng (2019, 9). Near-Infrared Hyperspectral Imaging Combined with Deep Learning to Identify Cotton Seed Varieties. *Molecules 24*(18), 3268.

Zhuang, J., C. Hou, Y. Tang, Y. He, Q. Guo, A. Miao, Z. Zhong, and S. Luo (2019). Assessment of external properties for identifying banana fruit maturity stages using optical imaging techniques. *Sensors 19*(13), 2910.