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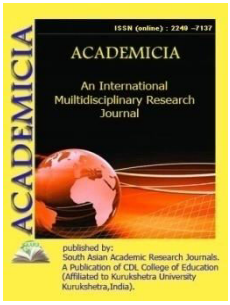

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APPLICATION OF DEEP LEARNING IN FOOD

Dr. Ajay Rana*; Rajesh Pandey; Rohit Vats*****

**Shobhit Institute of Engineering and Technology,
(Deemed to be University), Meerut, INDIA
Email id: ajay.rana@shobhituniversity.ac.in,

**School of Computer Science and Engineering,
Faculty of Engineering and Technology,
Shobhit Institute of Engineering and Technology,
(Deemed to be University), Meerut, INDIA
Email id: rajesh@shobhituniversity.ac.in

***School of Computer Science and Engineering,
INDIA
Email id: rohit.vats@shobhituniversity.ac.in

ABSTRACT

With a significant number of successful examples in image processing, voice recognition, object identification, and other areas, deep learning has shown to be an advanced technique for big data analysis. It's also being used in food science and engineering recently. This is the first review in the food realm that we are aware of. We gave a short introduction to deep learning in this article, as well as comprehensive descriptions of the structure of several common deep neural network designs and training methods. We looked at hundreds of papers that utilized deep learning as a data analysis technique to address issues and difficulties in the food domain, such as food identification, calorie estimate, fruit, vegetable, meat, and aquatic product quality detection, food supply chain, and food contamination. Each study looked at the particular issues, datasets, preprocessing techniques, networks and frameworks utilized, performance obtained, and comparisons with other popular solutions. We also looked at the possibility of using deep learning as an enhanced data mining technique in food sensory and consumption studies. Deep learning surpasses other techniques such as manual feature extractors, traditional machine learning algorithms, and deep learning as a potential tool in food quality and safety inspection, according to the results of our study. Deep learning's promising achievements in classification

and regression issues will spur further study into using deep learning to the area of food in the future.

KEYWORDS: *Computer Vision, Deep Learning, Food Quality, Food Recognition, Spectroscopy.*

REFERENCES

1. Percik, R., and M. Stumvoll. "Obesity and cancer." Experimental and clinical endocrinology & diabetes 117.10 (2009): 563.
2. D. Craig, et al. "The Okinawan diet: health implications of a low-calorie, nutrient-dense, antioxidant-rich dietary pattern low in glycemic load." Journal of the American College of Nutrition 28.sup4 (2009): 500S-516S.
3. Ford ES, Giles WH, Dietz WH: Prevalence of the metabolic syndrome among US adults: findings from the third National Health and Nutrition Examination Survey. JAMA 287:356–359, 2002.
4. risaPouladzadeh, PallaviKuhad, Sri Vijay Bharat Peddi, AbdulsalamYassine, ShervinShirmohammadi "Mobile Cloud Based Food Calorie Measurement" The 4th International IEEE Workshop on Multimedia Services and Technologies for EHealth (MUST-EH), ICME, China, July 2014.
5. N. Ryu, Y. Kawahawa, and T. Asami, "A Calorie Count Application for a Mobile Phone Based on METS Value," Sensor, Mesh and Ad Hoc Communications and Networks, 2008.
6. E. Thammasat, "The statistical recognition of walking, jogging, and running using smartphone accelerometers," in Biomedical Engineering International Conference (BMEiCON), 2013 6th, 2013, pp. 1–4.
7. Yue Y, Jia W, Sun M. Measurement of food volume based on single 2-D image without conventional camera calibration. Proceedings of IEEE 34th Annual Conference on Engineering in Medicine and Biology; 28 August–1 September; San Diego, CA. 2012. pp. 2166–2169.
8. Krizhevsky, A., Sutskever, I., and Hinton, G. on "ImageNet classification with deep convolutional neural networks." in NIPS'2012.
9. N. Srivastava and R. Salakhutdinov, &ldquo, "Multimodal Learning with Deep Boltzmann Machines", Proc. Neural Information and Processing System, 2012.
10. Ranzato, M., Monga, R., Mao, M., Yang,K., Le, Q.V., Nguyen, P., Senior, A., Vanhoucke V., Dean J. and Hinton, G.E., "OnRectied Linear Units for Speech Processing", in ICASSP , 2013.