MACHINE LEARNING

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Machine Learning is a form of artificial intelligence that uses algorithms to learn and provide insights without explicitly being programmed. The term was first coined by Arthur Samuel some 57 years ago which was evolved from the study of pattern recognition and computational learning theory. It had since made tremendous advancements and researchers are leveraging on machine learning in the field of robotics, computational biology, speech recognition, space exploration and even presidential election predictions. This reading list contains 50 articles and books published in the last 3 years.

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Contents

Overview

Providing an introduction to the topics and concepts of Machine Learning

Conway, D., & White, John Myles. (2012). *Machine learning for hackers*. Retrieved from proquestcombo.safaribooksonline.com

Dixon, J. (2016). *Mastering .NET machine learning.* Retrieved from http://proquestcombo.safaribooksonline.com

Kodratoff, Y. (2014). *Introduction to machine learning*. Retrieved from http://proquestcombo.safaribooksonline.com

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Pyle, D., & Jose, C. S. (June 2015). *An executive's guide to machine learning.* Retrieved from http://www.mckinsey.com/industries/high-tech/our-insights/an-executives-guide-to-machine-learning

Sugiyama, M. (2015). *Introduction to statistical machine learning*. Retrieved from http://proquestcombo.safaribooksonline.com

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Computer vision

Through capturing, processing and analysis of the images by the computer, it is able to automate tasks and make informed decision

Chowdhury, Kautz, Yener, & Lewis. (2016). Image driven machine learning methods for microstructure recognition. *Computational Materials Science, 123*, 176-187. http://dx.doi.org/10.1016/j.commatsci.2016.05.034

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Navarro, P., Pérez, F., Weiss, J., Egea-Cortines, M., & Pajares Martinsanz, G. (2016). Machine learning pand computer vision system for Phenotype data acquisition and analysis in plants. *Sensors , 16*(5), Sensors (Basel, Switzerland), 2016, Vol.16(5). http://dx.doi.org/10.3390/s16050641

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Cyber Security

Protection from unauthorized access, changes or attacks to the computers, networks, data and programs

Frost & Sullivan. (4 March 2016). Network security technology machine learning-based security systems: The dawn of intelligent security. Retrieved from http://cds.frost.com

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Sahoo, D., Nguyen, P., Mukhopadhyay, D., & Chakraborty, R. (2015). A case of lightweight Puf constructions: Cryptanalysis and machine learning attacks. *Computer-Aided Design of Integrated Circuits and Systems, IEEE Transactions on, 34*(8), 1334-1343. http://dx.doi.org/10.1109/TCAD.2015.2448677

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Zhao, Traore, Sayed, Lu, Saad, Ghorbani, & Garant. (2013). Botnet detection based on traffic behavior analysis and flow intervals. *Computers & Security, 39*, 2-16. http://dx.doi.org/10.1016/j.cose.2013.04.007

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Data Analytics

Process of acquiring, organizing and analyzing large amount that can use to identify patterns and draw conclusion from

Dean, J. (2014). *Big data, data mining, and machine learning value creation for business leaders and practitioners*. Retrieved from http://site.ebrary.com

Fontama, V., Barga, Roger, & Tok, Wee Hyong. (2014). *Predictive analytics with Microsoft azure machine learning build and deploy actionable solutions in minutes*. Retrieved from proquestcombo.safaribooksonline.com

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Naimur Rahman, Esmailpour, & Zhao. (2016). Machine learning with big data: An efficient electricity generation forecasting system. *Big Data Research, 5*, 9-15. http://dx.doi.org/10.1016/j.bdr.2016.02.002

Najafabadi, M., Villanustre, M., Khoshgoftaar, F., Seliya, T., Wald, N., & Muharemagic, R. (2015). Deep learning applications and challenges in big data analytics. *Journal of Big Data, 2*(1), 1-21. http://dx.doi.org/ 10.1186/s40537-014-0007-7

Liebowitz, J. (2013). *Big Data and Business Analytics*. http://dx.doi.org/10.1201/b14700

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Energy Efficient Buildings

Buildings that can optimize usage and use lesser amount of energy to operate

Chou, & Ngo. (2016). Time series analytics using sliding window metaheuristic optimization-based machine learning system for identifying building energy consumption patterns. *Applied Energy, 177*, 751-770. http://dx.doi.org/10.1016/j.apenergy.2016.05.074

Kim, Y., Ahn, K., & Park, C. (2016). Issues of application of machine learning models for virtual and real-life buildings. *Sustainability, 8*(6), 543. http://dx.doi.org/10.3390/su8060543

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Zamora-Martínez, Romeu, Botella-Rocamora, & Pardo. (2014). On-line learning of indoor temperature forecasting models towards energy efficiency. *Energy & Buildings, 83*, 162-172. http://dx.doi.org/10.1016/j.enbuild.2014.04.034

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Healthcare Informatics

Interdisciplinary study of medical research and the application of IT-based innovations in healthcare

Clark, Niehaus, Duff, Di Simplicio, Clifford, Smith, . . . Holmes. (2014). First steps in using machine learning on fMRI data to predict intrusive memories of traumatic film footage. *Behaviour Research and Therapy, 62*, 37-46. http://dx.doi.org/10.1016/j.brat.2014.07.010

Cleophas, T., & Zwinderman, Aeilko H. (2014). *Machine learning in medicine - Cookbook three*. http://dx.doi.org/10.1007/978-3-319-12163-5

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Pattern Recognition

Classification or description of observations based on using similarities or patterns in data to make informed judgement

Attal, F., Boubezoul, A., Oukhellou, L., & Espie, S. (2015). Powered two-wheeler riding pattern recognition using a machine-learning framework. *Intelligent Transportation Systems, IEEE Transactions on, 16*(1), 475-487. http://dx.doi.org/10.1109/TITS.2014.2346243

El-Bendary, El Hariri, Hassanien, & Badr. (2015). Using machine learning techniques for evaluating tomato ripeness. *Expert Systems With Applications, 42*(4), 1892-1905. http://dx.doi.org//10.1016/j.eswa.2014.09.057

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Pisharady, P., Vadakkepat, Prahlad, Poh, Loh Ai, & SpringerLink. (2014). *Computational intelligence in Multi-feature visual pattern recognition*. http://dx.doi.org/10.1007/978-981-287-056-8

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Prosthetics

Artificial device that is used to replace a missing or defective body part, such as an arm, leg or hand

Atzori, M., Gijsberts, A., Kuzborskij, I., Elsig, S., Mittaz Hager, A., Deriaz, O., . . . Caputo, B. (2015). Characterization of a benchmark database for myoelectric movement classification. *IEEE Transactions on Neural Systems and Rehabilitation Engineering, 23*(1), 73-83. http://dx.doi.org/10.1109/TNSRE.2014.2328495

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Robotic Control

Branch of mechanical, electrical and computer science that deals with the study of design, programming of the robots

Fernandes, Souza, Pessin, Shinzato, Sales, Mendes, . . . Wolf. (2014). CaRINA intelligent robotic car: Architectural design and applications. *Journal of Systems Architecture, 60*(4), 372-392. http://dx.doi.org/10.1016/j.sysarc.2013.12.003

Nichols, K., & Okamura, A. (2015). Methods to segment hard inclusions in soft tissue during Autonomous robotic palpation. *Robotics, IEEE Transactions on, 31*(2), 344-354. http://dx.doi.org/10.1109/TRO.2015.2402531

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Speech recognition

Subfield of computational linguistics whereby a computer, device or program is able to recognize and understand the spoken words

Arruti, Andoni, Pujol, Oriol, Cearreta, Idoia, Álvarez, Aitor, Lazkano, Elena, & Sierra, Basilio. (2014). Feature selection for speech emotion recognition in Spanish and Basque: On the Use of Machine Learning to Improve Human-Computer Interaction. *PLoS ONE, 9*(10), 1-23. http://dx.doi.org/10.1371/journal.pone.0108975

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Yu, D., & Deng, L. (2015). *Automatic Speech Recognition*. Retrieved from http://link.springer.com

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Trends

Reports on the general direction and developments of machine learning

Jordan, M., & Mitchell, T. (2015). Machine learning: Trends, perspectives, and prospects. *Science,349*(6245), 255-260. http://dx.doi.org/10.1126/science.aaa8415

Morgan, L. (January 15 2016). 6 Machine learning, AI, analytics trends to watch. Retrieved from http://www.informationweek.com/iot/6-machine-learning-ai-analytics-trends-to-watch/d/d-id/1323884

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