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Chuqur o'rganish (Deep Learning) tushunchasi

Abdukadirov Baxtiyor Abduvaxitovich

Farg'ona davlat universiteti
Axborot texnologiyalari kafedrasida dotsenti, PhD

bakxtiyor.uz@gmail.com

Qodiraliyev Jahonmurod Davronbek o'g'li

Farg'ona davlat universiteti
Axborot tizimlari va texnologiyalari yo'nalishi,

2-bosqich talabasi

jahonmurod004@gmail.com

Annotatsiya

Ushbu maqolada sun'iy intellektning eng jadal rivojlanayotgan yo'nalishi — chuqur o'rganish (Deep Learning) texnologiyasining nazariy asoslari va ishlash tamoyillari tadqiq etiladi. Maqolada ko'p qatlamli neyron tarmoqlarining arxitekturasi, an'anaviy mashina o'rganishidan farqli jihatlari va o'qitish algoritmlari (Backpropagation, Gradient Descent) tahlil qilingan. Shuningdek, Deep Learning tizimlarining zamonaviy texnologiyalardagi amaliy ahamiyati yoritib berilgan.

Kalit so'zlar: Deep Learning, neyron tarmoqlari, sun'iy intellekt, Big Data, Backpropagation, ko'p qatlamli neyron tarmoqlar, mashina o'rganishi.

Аннотация

В данной статье исследуются теоретические основы и принципы работы технологий глубокого обучения (Deep Learning) — наиболее динамично развивающегося направления искусственного интеллекта. В работе анализируются архитектура многослойных нейронных сетей, их отличия от традиционного машинного обучения и алгоритмы обучения (Backpropagation, Gradient Descent). Также освещается практическое значение систем Deep Learning в современных технологиях.

Ключевые слова: Глубокое обучение, нейронные сети, искусственный интеллект, Big Data, обратное распространение ошибки, многослойные нейронные сети, машинное обучение.

Annotation

This article examines the theoretical foundations and operating principles of Deep Learning, the most rapidly developing field of artificial intelligence. The paper analyzes the architecture of multi-layered neural networks, its differences from traditional machine learning, and training algorithms (Backpropagation, Gradient Descent). The practical significance of Deep Learning systems in modern technologies is also highlighted.





Keywords: Deep Learning, neural networks, artificial intelligence, Big Data, backpropagation, multi-layered neural networks, machine learning.

Chuqur o'rganish (Deep Learning) tushunchasi

Kirish. Sun'iy intellekt (SI) olamida so'nggi yillarda erishilgan ulkan yutuqlar, xususan nutqni tanish, tasvirlarga ishlov berish va murakkab strategik o'yinlarda insonni mag'lub etish kabi jarayonlar aynan Chuqur o'rganish (Deep Learning) texnologiyasi bilan bog'liq. Deep Learning — bu mashina o'rganishining (Machine Learning) bir qismi bo'lib, u inson miyasidagi biologik neyronlar tuzilishiga taqlid qiluvchi sun'iy neyron tarmoqlariga asoslanadi.

Nazariy asoslar va farqli jihatlar. Deep Learning tizimlarining an'anaviy mashina o'rganishidan asosiy farqi — xususiyatlarni avtomatik aniqlash (automatic feature extraction) qobiliyatidir. Agar klassik algoritmlarda ma'lumotlarning belgilari mutaxassislar tomonidan qo'lda kiritilgan bo'lsa, chuqur neyron tarmoqlari xom ma'lumotlardan (masalan, tasvir pikselleridan) o'zi mustaqil ravishda ierarxik xususiyatlarni ajratib oladi. "Chuqur" atamasi neyron tarmog'idagi yashirin qatlamlarning (hidden layers) ko'pligini anglatadi.

Ishlash tamoyili va arxitekturasi. Deep Learning modellari odatda uchta asosiy qatlamdan tashkil topadi:

Kirish qatlami (Input Layer): Ma'lumotlarni qabul qiladi.

Yashirin qatlamlar (Hidden Layers): Ma'lumotlar ustida murakkab matematik transformatsiyalarni bajaradi. Qatlamlar qancha ko'p bo'lsa, model shunchalik murakkab qonuniyatlarni o'rgana oladi.

Chiqish qatlami (Output Layer): Yakuniy qarorni (tasniflash yoki bashorat natijasini) taqdim etadi.

Modellarni o'qitish jarayoni Backpropagation (xatoni orqaga qaytarish) algoritmi va Gradient Descent (gradient tushishi) optimallashtirish usuliga tayanadi. Ushbu jarayonda neyronlar orasidagi bog'lanish vaznlari (weights) xatoni minimallashtirish uchun qayta hisoblab chiqiladi.

Amaliy qo'llanilishi. Deep Learning bugungi kunda hayotimizning ajralmas qismiga aylandi:

Tabiiy tilga ishlov berish (NLP): Chat-botlar (ChatGPT), avtomatik tarjimonlar va virtual asistentlar.

Kompyuter ko'rishi: Tibbiy diagnostika (MRT tahlili), yuzni tanish va avtopilot tizimlari.

Moliyaviy tahlil: Birja bashoratlari va firibgarliklarni (fraud detection) aniqlash.

Xulosa.

Chuqur o'rganish texnologiyasi sun'iy intellektni yangi bosqichga olib chiqdi. Katta hajmdagi ma'lumotlar (Big Data) va yuqori hisoblash quvvatlarining (GPU) mavjudligi ushbu sohaning rivojlanishiga turtki bo'lmoqda. Kelajakda Deep





Learning modellari yanada mukammallashib, inson aqliy faoliyatini yanada aniqroq modellashtirish imkonini beradi.

Foydalanilgan adabiyotlar:

1. Goodfellow I., Bengio Y., Courville A. — Deep Learning. MIT Press, 2016.
2. LeCun Y., Bengio Y., Hinton G. — Deep Learning. Nature, 2015.
3. François Chollet — Deep Learning with Python. Manning Publications, 2021.
4. Andrew Ng — Deep Learning Specialization Courses (Coursera).
5. Stanford University — CS231n: Convolutional Neural Networks for Visual Recognition.

