6-modul: Foundation of ML

1. **Introduction to Supervised Learning:**
    - **Topshiriq:** Bitta sun'iy ma'lumotlar to'plamini yarating (masalan, uylari narxi va ularning kvadrat metriga bog'liqligi). Bu ma'lumotlar to'plamini qo'llab, oddiy regression modelini yarating va natijalarni tahlil qiling.
2. **Unsupervised Learning:**
    - **Topshiriq:** K-Means clustering algoritmini qo'llab, o'zingiz yaratgan yoki topgan ma'lumotlar to'plamida to'plamlarni ajratib chiqing. Natijalarni vizualizatsiya qiling.
3. **Reinforcement Learning:**
    - **Topshiriq:** Q-Table yordamida oddiy o'yin (masalan, 2x2 labirint) o'ynaydigan agent yaratib, o'rganish jarayonini kuzating.
4. **Linear Regression:**
    - **Topshiriq:** Bir nechta o'zgaruvchilar yordamida uy narxlarini bashorat qiluvchi linear regression modelini yarating va uning aniqligini baholang.
5. **Linear Regression - Regularization:**
    - **Topshiriq:** Ridge va Lasso regression modellarini yarating. Ularni oddiy linear regression bilan solishtirib ko'ring va natijalarni tahlil qiling.
6. **Logistic Regression (Classification):**
    - **Topshiriq:** Logistic regression yordamida binar klassifikatsiya vazifasini bajaring. Masalan, e-mail xabarlarini spam yoki spam emasligiga ajrating.
7. **Logistic Regression - Cost Function:**
    - **Topshiriq:** Logistic regression uchun cost functionning grafik tasvirini chizing va uning gradient descent orqali minimallashtirilishini tushuntiring.
8. **Logistic Regression - Evaluation Metric:**
    - **Topshiriq:** Logistic regression modelini yaratib, uning aniqligi, precison, recall, F1-score kabi baholash metrikalarini hisoblang va tahlil qiling.
9. **Decision Tree:**
    - **Topshiriq:** Decision tree algoritmi yordamida ma'lumotlar to'plamida klassifikatsiya vazifasini bajaring va daraxtni vizualizatsiya qiling.
10. **Random Forest:**
    - **Topshiriq:** Random forest yordamida model yarating va uni oddiy decision tree bilan solishtirib ko'ring. O'zingizning modelda o'ta o'rgatish va kam o'rgatish hodisalarini aniqlang.

7-modul: Neural Networks

1. **Neural Network bilan tanishuv:**
    - **Topshiriq:** Bir necha qatlamli sun'iy neyron tarmog'ini yaratib, oddiy regression vazifasini bajaring.
2. **Neural Network - Activation:**

- **Topshiriq:** Turli aktivatsiya funksiyalari (sigmoid, ReLU, tanh) o'rtasida tahlil o'tkazib, ularning natijalarga ta'sirini solishtiring.

3. **Forward Propagation:**
    - **Topshiriq:** Oddiy sun'iy neyron tarmog'ining forward propagation jarayonini qo'lda hisoblang va uni kodda amalga oshiring.
4. **Forward Propagation - amalda qo'llash:**
    - **Topshiriq:** Ma'lum bir amaliyot (masalan, yozuvlarni tanish) uchun forward propagationni qo'llang va natijalarni tahlil qiling.
5. **Backpropagation:**
    - **Topshiriq:** Neyron tarmog'ining backpropagation jarayonini qo'lda hisoblang va uni kodda amalga oshiring.
6. **Backpropagation - sonlar bilan:**
    - **Topshiriq:** Backpropagation jarayonini sonlar bilan batafsil tahlil qilib, uni murakkab tarmoqlarga qo'llang.

8-modul: Deep Learning

1. **Deep learning bilan tanishuv:**
    - **Topshiriq:** Oddiy sun'iy neyron tarmog'ini chuqurlashtirib, uning natijalarini tahlil qiling.
2. **Deep Learning - Backpropagation:**
    - **Topshiriq:** Murakkab neyron tarmog'ida backpropagation jarayonini amalga oshiring va uning natijalarini oddiy tarmoq bilan solishtiring.
3. **ConvNets (CNN) bilan tanishuv:**
    - **Topshiriq:** ConvNet (CNN) yordamida oddiy obrazlarni tasniflang va uning natijalarini tahlil qiling.
4. **ConvNets:**
    - **Topshiriq:** ConvNet modelini o'zingiz yaratgan ma'lumotlar to'plamida amalda qo'llang va u bilan oddiy sun'iy neyron tarmog'ini solishtiring.
5. **ConvNets - Activation Layer:**
    - **Topshiriq:** Turli aktivatsiya qatlamlari (ReLU, Leaky ReLU, Tanh) o'rtasida natijalarni solishtiring va tahlil qiling.
6. **Pooling Layer:**
    - **Topshiriq:** Pooling (MaxPooling va AveragePooling) qatlamlarining o'zgarishi natijalarini tahlil qiling va ularni amalda qo'llang.