Last login: Fri Apr 3 15:47:34 on ttys000

WCONUSIDK1316:~ akhan39$ cd Desktop/Other\_Dev/GitHubRepos/GTech\_OMCS\_MachineLearning/Assignment3

WCONUSIDK1316:Assignment3 akhan39$ ls

BreastCancerWisconsinDataset.txt

BreastCancerWisconsinDataset\_modified.txt

CarQualityDataset.txt

akhan312-Assignment3Analysis.docx

akhan312\_Assign3\_BreastCancerDataAnalysis.py

akhan312\_Assign3\_CarDataAnalysis.py

akhan312\_Assign3\_CarDataAnalysis\_old.py

ipython.html

plots

WCONUSIDK1316:Assignment3 akhan39$ python akhan312\_Assign3\_BreastCancerDataAnalysis.py

//anaconda/lib/python2.7/site-packages/sklearn/preprocessing/label.py:108: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n\_samples, ), for example using ravel().

y = column\_or\_1d(y, warn=True)

Backprop NN With PCA Results:

Total error: 0.0395362009501

('epoch: 1', ' train error: 2.99%', ' test error: 6.06%')

Total error: 0.0210092417701

('epoch: 2', ' train error: 2.56%', ' test error: 5.19%')

Total error: 0.0147941548893

('epoch: 3', ' train error: 2.35%', ' test error: 5.19%')

Total error: 0.0125904283538

('epoch: 4', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.0114678558998

('epoch: 5', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.0108692778333

('epoch: 6', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.0104741972769

('epoch: 7', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.0102479542688

('epoch: 8', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.0100715645508

('epoch: 9', ' train error: 2.14%', ' test error: 5.19%')

Total error: 0.00991638821275

('epoch: 10', ' train error: 2.14%', ' test error: 5.19%')

Backprop NN With PCA & K-MEANs Results:

Total error: 0.122266620501

('epoch: 1', ' train error: 33.76%', ' test error: 46.75%')

Total error: 0.106390664671

('epoch: 2', ' train error: 33.76%', ' test error: 62.77%')

Total error: 0.0571522063201

('epoch: 3', ' train error: 3.63%', ' test error: 86.15%')

Total error: 0.0333679616843

('epoch: 4', ' train error: 2.78%', ' test error: 75.32%')

Total error: 0.0243774402204

('epoch: 5', ' train error: 2.14%', ' test error: 67.97%')

Total error: 0.0195554353028

('epoch: 6', ' train error: 2.35%', ' test error: 67.97%')

Total error: 0.0171864412229

('epoch: 7', ' train error: 2.14%', ' test error: 65.37%')

Total error: 0.0152934168322

('epoch: 8', ' train error: 2.14%', ' test error: 65.37%')

Total error: 0.0143079770924

('epoch: 9', ' train error: 2.14%', ' test error: 67.10%')

Total error: 0.0136589729115

('epoch: 10', ' train error: 2.14%', ' test error: 64.94%')

Backprop NN With ICA Results: 1

Total error: 0.117372367937

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110413108444

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110243196668

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110346376148

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110459365659

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110661713977

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110830202205

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110470382758

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110841054019

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111026796374

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 1

Total error: 0.113821857452

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112956529884

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.10413953738

('epoch: 3', ' train error: 24.36%', ' test error: 54.11%')

Total error: 0.0588449398279

('epoch: 4', ' train error: 4.49%', ' test error: 94.81%')

Total error: 0.0377194410879

('epoch: 5', ' train error: 2.99%', ' test error: 93.07%')

Total error: 0.0274848141947

('epoch: 6', ' train error: 2.56%', ' test error: 93.07%')

Total error: 0.0217819512516

('epoch: 7', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.018608312891

('epoch: 8', ' train error: 2.35%', ' test error: 90.91%')

Total error: 0.0167304355726

('epoch: 9', ' train error: 2.14%', ' test error: 90.91%')

Total error: 0.0151197200179

('epoch: 10', ' train error: 2.35%', ' test error: 91.77%')

Backprop NN With ICA Results: 2

Total error: 0.117495396053

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.114296407627

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113983198175

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113391219539

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112904330007

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112814726877

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112571289759

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112311431465

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112177538453

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111999680611

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 2

Total error: 0.0803772581134

('epoch: 1', ' train error: 2.56%', ' test error: 92.64%')

Total error: 0.0269969212746

('epoch: 2', ' train error: 2.14%', ' test error: 92.21%')

Total error: 0.0203294156826

('epoch: 3', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0173053693288

('epoch: 4', ' train error: 2.14%', ' test error: 92.64%')

Total error: 0.0154689133578

('epoch: 5', ' train error: 2.14%', ' test error: 92.21%')

Total error: 0.0142904483459

('epoch: 6', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.013570928919

('epoch: 7', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0126902916415

('epoch: 8', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.0125181377186

('epoch: 9', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0118222554516

('epoch: 10', ' train error: 2.14%', ' test error: 92.21%')

Backprop NN With ICA Results: 3

Total error: 0.119652915904

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113279136212

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113236950622

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113009858204

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112630114513

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112653062714

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112565317018

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112247087423

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112384332524

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112295069911

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 3

Total error: 0.125151181698

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111905880317

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0932240793359

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0544506967295

('epoch: 4', ' train error: 4.49%', ' test error: 94.81%')

Total error: 0.0362218051797

('epoch: 5', ' train error: 2.35%', ' test error: 92.64%')

Total error: 0.0263882551517

('epoch: 6', ' train error: 2.56%', ' test error: 92.64%')

Total error: 0.0212027724618

('epoch: 7', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.0183803405153

('epoch: 8', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0162348064701

('epoch: 9', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0144683152665

('epoch: 10', ' train error: 2.56%', ' test error: 92.64%')

Backprop NN With ICA Results: 4

Total error: 0.120423432138

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111774559414

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112129212978

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112002991329

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111913511417

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112284162089

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112020343291

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111872615437

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112264201902

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.11180168438

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 4

Total error: 0.113937028308

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.11292251076

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112556637645

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112508756985

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111745587843

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.104245034908

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0664137373207

('epoch: 7', ' train error: 3.85%', ' test error: 93.51%')

Total error: 0.0378951857662

('epoch: 8', ' train error: 2.35%', ' test error: 93.07%')

Total error: 0.0255239543913

('epoch: 9', ' train error: 2.35%', ' test error: 92.64%')

Total error: 0.0199068031317

('epoch: 10', ' train error: 2.35%', ' test error: 91.77%')

Backprop NN With ICA Results: 5

Total error: 0.11717235414

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112571481181

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112335058609

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112372568893

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112079301021

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111545306789

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112061057597

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111960511185

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111630017616

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111730243738

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 5

Total error: 0.0727011568042

('epoch: 1', ' train error: 8.12%', ' test error: 94.81%')

Total error: 0.0371909602323

('epoch: 2', ' train error: 2.35%', ' test error: 91.34%')

Total error: 0.0238956932943

('epoch: 3', ' train error: 2.35%', ' test error: 90.91%')

Total error: 0.0181438458203

('epoch: 4', ' train error: 2.56%', ' test error: 90.91%')

Total error: 0.0153897646335

('epoch: 5', ' train error: 2.56%', ' test error: 90.48%')

Total error: 0.0139032504274

('epoch: 6', ' train error: 2.56%', ' test error: 90.48%')

Total error: 0.0126693727886

('epoch: 7', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.0123889061516

('epoch: 8', ' train error: 2.56%', ' test error: 90.48%')

Total error: 0.0118830712902

('epoch: 9', ' train error: 2.35%', ' test error: 90.91%')

Total error: 0.0117577637791

('epoch: 10', ' train error: 2.35%', ' test error: 90.91%')

Backprop NN With ICA Results: 6

Total error: 0.127003915409

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111185051996

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112187598022

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112009496404

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111804405245

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111447090059

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111290462136

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111832206825

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111115691717

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111727853734

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 6

Total error: 0.0910502975419

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0469689723289

('epoch: 2', ' train error: 3.85%', ' test error: 94.81%')

Total error: 0.0277239111558

('epoch: 3', ' train error: 2.35%', ' test error: 93.07%')

Total error: 0.0198194315749

('epoch: 4', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0159394001305

('epoch: 5', ' train error: 2.14%', ' test error: 90.91%')

Total error: 0.0138293258117

('epoch: 6', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0128502296416

('epoch: 7', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.0123039774215

('epoch: 8', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0118275232034

('epoch: 9', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0114274578488

('epoch: 10', ' train error: 2.14%', ' test error: 91.34%')

Backprop NN With ICA Results: 7

Total error: 0.115367361495

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112579673288

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112560593621

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112589974395

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112333264589

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.11247934348

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112564596516

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112506596646

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112486432228

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112365045025

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 7

Total error: 0.0670285165886

('epoch: 1', ' train error: 2.14%', ' test error: 90.04%')

Total error: 0.0369938129961

('epoch: 2', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0252386331202

('epoch: 3', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0198403513222

('epoch: 4', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.016666829561

('epoch: 5', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0147238780387

('epoch: 6', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0134302950667

('epoch: 7', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0125776746897

('epoch: 8', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0118598119503

('epoch: 9', ' train error: 2.14%', ' test error: 92.21%')

Total error: 0.0116067804612

('epoch: 10', ' train error: 2.14%', ' test error: 91.34%')

Backprop NN With ICA Results: 8

Total error: 0.109261339632

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.107839836899

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108005566473

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.1078313938

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108047444553

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108027058778

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108311311782

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108195951318

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108395382576

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.108518010499

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 8

Total error: 0.126206293597

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.104983814125

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0716333941386

('epoch: 3', ' train error: 5.98%', ' test error: 94.37%')

Total error: 0.0422290440405

('epoch: 4', ' train error: 2.99%', ' test error: 92.64%')

Total error: 0.0281718722502

('epoch: 5', ' train error: 2.35%', ' test error: 90.91%')

Total error: 0.0212101145943

('epoch: 6', ' train error: 2.35%', ' test error: 89.61%')

Total error: 0.0178059757863

('epoch: 7', ' train error: 2.35%', ' test error: 90.04%')

Total error: 0.0154570461074

('epoch: 8', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0143195655499

('epoch: 9', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0133769797262

('epoch: 10', ' train error: 2.14%', ' test error: 88.74%')

Backprop NN With ICA Results: 9

Total error: 0.115194240928

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111193300913

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111060775962

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110924188308

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111097352555

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111094272477

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110936830761

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111103411802

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.110834041031

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.111073964286

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With ICA & K-MEANs Results: 9

Total error: 0.0990989452587

('epoch: 1', ' train error: 4.06%', ' test error: 94.81%')

Total error: 0.0442118095901

('epoch: 2', ' train error: 2.35%', ' test error: 93.07%')

Total error: 0.0285018214257

('epoch: 3', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0212786217036

('epoch: 4', ' train error: 2.35%', ' test error: 92.21%')

Total error: 0.0178442032927

('epoch: 5', ' train error: 2.14%', ' test error: 89.18%')

Total error: 0.0156812657337

('epoch: 6', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0143192021472

('epoch: 7', ' train error: 2.14%', ' test error: 91.34%')

Total error: 0.0135058174915

('epoch: 8', ' train error: 2.14%', ' test error: 90.04%')

Total error: 0.0128425050973

('epoch: 9', ' train error: 2.14%', ' test error: 90.91%')

Total error: 0.0125470423029

('epoch: 10', ' train error: 2.14%', ' test error: 92.21%')

Backprop NN With RP Results: 1

Total error: 0.0853852278954

('epoch: 1', ' train error: 12.82%', ' test error: 25.97%')

Total error: 0.0575256537509

('epoch: 2', ' train error: 10.47%', ' test error: 25.54%')

Total error: 0.0490210490832

('epoch: 3', ' train error: 9.83%', ' test error: 25.97%')

Total error: 0.0449604141875

('epoch: 4', ' train error: 9.40%', ' test error: 26.84%')

Total error: 0.0429592913442

('epoch: 5', ' train error: 8.55%', ' test error: 28.14%')

Total error: 0.0417955349328

('epoch: 6', ' train error: 8.33%', ' test error: 30.30%')

Total error: 0.0411240886998

('epoch: 7', ' train error: 8.97%', ' test error: 27.71%')

Total error: 0.040730656406

('epoch: 8', ' train error: 8.55%', ' test error: 28.57%')

Total error: 0.0405100593239

('epoch: 9', ' train error: 8.33%', ' test error: 29.00%')

Total error: 0.0403280800279

('epoch: 10', ' train error: 8.55%', ' test error: 28.14%')

Backprop NN With RP & K-MEANs Results: 1

Total error: 0.1465074867

('epoch: 1', ' train error: 2.35%', ' test error: 83.55%')

Total error: 0.0298356620614

('epoch: 2', ' train error: 2.35%', ' test error: 91.34%')

Total error: 0.0182058439115

('epoch: 3', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0147568454082

('epoch: 4', ' train error: 2.14%', ' test error: 92.21%')

Total error: 0.013154594892

('epoch: 5', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0124089043441

('epoch: 6', ' train error: 2.14%', ' test error: 92.21%')

Total error: 0.0117672540387

('epoch: 7', ' train error: 2.35%', ' test error: 91.77%')

Total error: 0.0115077837899

('epoch: 8', ' train error: 2.14%', ' test error: 91.77%')

Total error: 0.0110787797942

('epoch: 9', ' train error: 2.14%', ' test error: 92.64%')

Total error: 0.0111714098536

('epoch: 10', ' train error: 2.14%', ' test error: 92.64%')

Backprop NN With RP Results: 2

Total error: 0.124749091711

('epoch: 1', ' train error: 33.12%', ' test error: 20.35%')

Total error: 0.097942740082

('epoch: 2', ' train error: 17.95%', ' test error: 9.09%')

Total error: 0.0802737478252

('epoch: 3', ' train error: 13.46%', ' test error: 9.09%')

Total error: 0.0681565660631

('epoch: 4', ' train error: 12.82%', ' test error: 9.96%')

Total error: 0.0605386990637

('epoch: 5', ' train error: 12.39%', ' test error: 11.26%')

Total error: 0.055964339423

('epoch: 6', ' train error: 11.32%', ' test error: 12.12%')

Total error: 0.0528436403267

('epoch: 7', ' train error: 11.32%', ' test error: 11.69%')

Total error: 0.0505999730668

('epoch: 8', ' train error: 11.32%', ' test error: 11.69%')

Total error: 0.0496343818682

('epoch: 9', ' train error: 11.11%', ' test error: 12.12%')

Total error: 0.0484588681701

('epoch: 10', ' train error: 10.90%', ' test error: 11.69%')

Backprop NN With RP & K-MEANs Results: 2

Total error: 0.145464513867

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.10855707662

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0992934273411

('epoch: 3', ' train error: 22.01%', ' test error: 35.50%')

Total error: 0.0859035619641

('epoch: 4', ' train error: 17.31%', ' test error: 60.17%')

Total error: 0.0679743096836

('epoch: 5', ' train error: 11.11%', ' test error: 87.88%')

Total error: 0.0514703441482

('epoch: 6', ' train error: 7.69%', ' test error: 88.31%')

Total error: 0.0391887280521

('epoch: 7', ' train error: 6.20%', ' test error: 89.18%')

Total error: 0.031492509926

('epoch: 8', ' train error: 5.34%', ' test error: 89.61%')

Total error: 0.0265483413558

('epoch: 9', ' train error: 4.91%', ' test error: 90.48%')

Total error: 0.0237618951265

('epoch: 10', ' train error: 4.27%', ' test error: 90.91%')

Backprop NN With RP Results: 3

Total error: 0.106126042728

('epoch: 1', ' train error: 16.67%', ' test error: 35.06%')

Total error: 0.0506752530118

('epoch: 2', ' train error: 6.62%', ' test error: 27.27%')

Total error: 0.0288179493291

('epoch: 3', ' train error: 4.91%', ' test error: 24.68%')

Total error: 0.022609042368

('epoch: 4', ' train error: 4.70%', ' test error: 21.21%')

Total error: 0.0201962300679

('epoch: 5', ' train error: 4.70%', ' test error: 19.91%')

Total error: 0.0188752436335

('epoch: 6', ' train error: 4.70%', ' test error: 20.35%')

Total error: 0.0182426740087

('epoch: 7', ' train error: 4.49%', ' test error: 20.35%')

Total error: 0.0178449724183

('epoch: 8', ' train error: 4.27%', ' test error: 20.35%')

Total error: 0.017462346513

('epoch: 9', ' train error: 4.27%', ' test error: 20.35%')

Total error: 0.0171847751589

('epoch: 10', ' train error: 4.27%', ' test error: 20.35%')

Backprop NN With RP & K-MEANs Results: 3

Total error: 0.0892437310249

('epoch: 1', ' train error: 4.06%', ' test error: 90.48%')

Total error: 0.0446339685046

('epoch: 2', ' train error: 3.21%', ' test error: 88.31%')

Total error: 0.0299668902621

('epoch: 3', ' train error: 2.78%', ' test error: 87.88%')

Total error: 0.0232785160261

('epoch: 4', ' train error: 2.99%', ' test error: 88.31%')

Total error: 0.0197463637213

('epoch: 5', ' train error: 2.99%', ' test error: 88.31%')

Total error: 0.0177031386191

('epoch: 6', ' train error: 2.78%', ' test error: 90.04%')

Total error: 0.0164660980162

('epoch: 7', ' train error: 2.78%', ' test error: 87.45%')

Total error: 0.0154081439735

('epoch: 8', ' train error: 2.35%', ' test error: 89.18%')

Total error: 0.014679690338

('epoch: 9', ' train error: 2.56%', ' test error: 87.45%')

Total error: 0.014144985115

('epoch: 10', ' train error: 2.56%', ' test error: 87.45%')

Backprop NN With RP Results: 4

Total error: 0.0471865384018

('epoch: 1', ' train error: 5.56%', ' test error: 11.26%')

Total error: 0.0329571845806

('epoch: 2', ' train error: 4.91%', ' test error: 10.82%')

Total error: 0.0261067585419

('epoch: 3', ' train error: 4.06%', ' test error: 9.09%')

Total error: 0.0220748122204

('epoch: 4', ' train error: 3.85%', ' test error: 8.23%')

Total error: 0.0196877066771

('epoch: 5', ' train error: 3.63%', ' test error: 8.23%')

Total error: 0.0182747827224

('epoch: 6', ' train error: 3.63%', ' test error: 7.79%')

Total error: 0.0170996069599

('epoch: 7', ' train error: 3.42%', ' test error: 8.23%')

Total error: 0.0164810924473

('epoch: 8', ' train error: 3.63%', ' test error: 8.23%')

Total error: 0.0161185129938

('epoch: 9', ' train error: 3.63%', ' test error: 7.79%')

Total error: 0.0156316425175

('epoch: 10', ' train error: 3.63%', ' test error: 7.36%')

Backprop NN With RP & K-MEANs Results: 4

Total error: 0.113062471338

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113058042613

('epoch: 2', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112959810901

('epoch: 3', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.11297249078

('epoch: 4', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113068085349

('epoch: 5', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112934075748

('epoch: 6', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112741674445

('epoch: 7', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112278836999

('epoch: 8', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.112933137108

('epoch: 9', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.113370687425

('epoch: 10', ' train error: 33.76%', ' test error: 35.93%')

Backprop NN With RP Results: 5

Total error: 0.0365671618593

('epoch: 1', ' train error: 6.20%', ' test error: 25.54%')

Total error: 0.0244536285001

('epoch: 2', ' train error: 5.56%', ' test error: 24.24%')

Total error: 0.0219873563205

('epoch: 3', ' train error: 5.13%', ' test error: 21.21%')

Total error: 0.0204490241003

('epoch: 4', ' train error: 5.13%', ' test error: 18.61%')

Total error: 0.0194121789736

('epoch: 5', ' train error: 4.49%', ' test error: 17.75%')

Total error: 0.0184381790361

('epoch: 6', ' train error: 4.49%', ' test error: 14.29%')

Total error: 0.017598586338

('epoch: 7', ' train error: 4.27%', ' test error: 12.99%')

Total error: 0.0169747477506

('epoch: 8', ' train error: 3.85%', ' test error: 11.69%')

Total error: 0.016305688103

('epoch: 9', ' train error: 3.42%', ' test error: 9.52%')

Total error: 0.015823742948

('epoch: 10', ' train error: 2.99%', ' test error: 8.66%')

Backprop NN With RP & K-MEANs Results: 5

Total error: 0.11026964919

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0768417981786

('epoch: 2', ' train error: 8.33%', ' test error: 22.51%')

Total error: 0.0461607049309

('epoch: 3', ' train error: 5.34%', ' test error: 23.81%')

Total error: 0.0320816389893

('epoch: 4', ' train error: 3.63%', ' test error: 58.87%')

Total error: 0.0248561329736

('epoch: 5', ' train error: 3.42%', ' test error: 67.53%')

Total error: 0.0210177530501

('epoch: 6', ' train error: 3.42%', ' test error: 70.13%')

Total error: 0.0189154238248

('epoch: 7', ' train error: 2.99%', ' test error: 71.00%')

Total error: 0.0172093257774

('epoch: 8', ' train error: 2.78%', ' test error: 71.00%')

Total error: 0.0161340717507

('epoch: 9', ' train error: 2.78%', ' test error: 72.29%')

Total error: 0.0155619020918

('epoch: 10', ' train error: 2.78%', ' test error: 72.29%')

Backprop NN With RP Results: 6

Total error: 0.11295231815

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0908185403819

('epoch: 2', ' train error: 13.03%', ' test error: 46.75%')

Total error: 0.0654151582278

('epoch: 3', ' train error: 6.84%', ' test error: 59.74%')

Total error: 0.0443009566928

('epoch: 4', ' train error: 4.70%', ' test error: 58.01%')

Total error: 0.0316026170904

('epoch: 5', ' train error: 3.42%', ' test error: 58.87%')

Total error: 0.0244851254864

('epoch: 6', ' train error: 3.21%', ' test error: 58.44%')

Total error: 0.0209214648851

('epoch: 7', ' train error: 2.99%', ' test error: 58.44%')

Total error: 0.0183664923562

('epoch: 8', ' train error: 2.99%', ' test error: 56.28%')

Total error: 0.0163452819995

('epoch: 9', ' train error: 2.99%', ' test error: 56.28%')

Total error: 0.014436847203

('epoch: 10', ' train error: 2.78%', ' test error: 56.28%')

Backprop NN With RP & K-MEANs Results: 6

Total error: 0.123815143352

('epoch: 1', ' train error: 29.06%', ' test error: 90.04%')

Total error: 0.072371732006

('epoch: 2', ' train error: 4.91%', ' test error: 81.39%')

Total error: 0.0379563770562

('epoch: 3', ' train error: 3.42%', ' test error: 80.52%')

Total error: 0.0230791875016

('epoch: 4', ' train error: 3.21%', ' test error: 85.28%')

Total error: 0.0177235926012

('epoch: 5', ' train error: 2.99%', ' test error: 87.01%')

Total error: 0.0149798891762

('epoch: 6', ' train error: 2.78%', ' test error: 90.04%')

Total error: 0.0134234884158

('epoch: 7', ' train error: 2.14%', ' test error: 89.18%')

Total error: 0.0124369555986

('epoch: 8', ' train error: 2.14%', ' test error: 89.18%')

Total error: 0.011762934314

('epoch: 9', ' train error: 2.14%', ' test error: 89.61%')

Total error: 0.0112118346579

('epoch: 10', ' train error: 2.14%', ' test error: 90.04%')

Backprop NN With RP Results: 7

Total error: 0.159300853582

('epoch: 1', ' train error: 22.44%', ' test error: 22.51%')

Total error: 0.0944535956235

('epoch: 2', ' train error: 20.51%', ' test error: 22.94%')

Total error: 0.0781611294553

('epoch: 3', ' train error: 14.96%', ' test error: 19.91%')

Total error: 0.0597293340344

('epoch: 4', ' train error: 11.54%', ' test error: 18.61%')

Total error: 0.0437895687354

('epoch: 5', ' train error: 8.33%', ' test error: 19.05%')

Total error: 0.0319526776934

('epoch: 6', ' train error: 6.20%', ' test error: 19.48%')

Total error: 0.0238816283383

('epoch: 7', ' train error: 3.85%', ' test error: 19.91%')

Total error: 0.0190478320512

('epoch: 8', ' train error: 3.42%', ' test error: 21.21%')

Total error: 0.0165849143109

('epoch: 9', ' train error: 3.21%', ' test error: 21.21%')

Total error: 0.0149462146533

('epoch: 10', ' train error: 2.99%', ' test error: 20.35%')

Backprop NN With RP & K-MEANs Results: 7

Total error: 0.0868415970927

('epoch: 1', ' train error: 9.40%', ' test error: 95.67%')

Total error: 0.036783724148

('epoch: 2', ' train error: 3.21%', ' test error: 94.37%')

Total error: 0.0241647750054

('epoch: 3', ' train error: 2.78%', ' test error: 94.37%')

Total error: 0.0187341115498

('epoch: 4', ' train error: 2.14%', ' test error: 94.37%')

Total error: 0.0158977583482

('epoch: 5', ' train error: 1.92%', ' test error: 94.37%')

Total error: 0.0139845143355

('epoch: 6', ' train error: 1.71%', ' test error: 93.07%')

Total error: 0.0124955212458

('epoch: 7', ' train error: 1.71%', ' test error: 93.51%')

Total error: 0.0117179481694

('epoch: 8', ' train error: 1.71%', ' test error: 93.07%')

Total error: 0.010916553482

('epoch: 9', ' train error: 1.71%', ' test error: 93.51%')

Total error: 0.0106192566097

('epoch: 10', ' train error: 1.71%', ' test error: 93.07%')

Backprop NN With RP Results: 8

Total error: 0.100743952372

('epoch: 1', ' train error: 23.93%', ' test error: 31.60%')

Total error: 0.0902825622583

('epoch: 2', ' train error: 19.66%', ' test error: 20.78%')

Total error: 0.0771463031044

('epoch: 3', ' train error: 16.45%', ' test error: 20.35%')

Total error: 0.063725186911

('epoch: 4', ' train error: 12.82%', ' test error: 18.61%')

Total error: 0.0526600863691

('epoch: 5', ' train error: 10.90%', ' test error: 17.75%')

Total error: 0.0444922775704

('epoch: 6', ' train error: 9.62%', ' test error: 18.18%')

Total error: 0.0391177614892

('epoch: 7', ' train error: 9.40%', ' test error: 19.91%')

Total error: 0.0355242530897

('epoch: 8', ' train error: 7.05%', ' test error: 22.08%')

Total error: 0.0329426980483

('epoch: 9', ' train error: 6.84%', ' test error: 22.51%')

Total error: 0.0312228188517

('epoch: 10', ' train error: 6.41%', ' test error: 23.38%')

Backprop NN With RP & K-MEANs Results: 8

Total error: 0.115333910032

('epoch: 1', ' train error: 15.38%', ' test error: 93.51%')

Total error: 0.0563709579711

('epoch: 2', ' train error: 6.84%', ' test error: 94.81%')

Total error: 0.0339860872807

('epoch: 3', ' train error: 5.34%', ' test error: 93.51%')

Total error: 0.0250919462441

('epoch: 4', ' train error: 4.91%', ' test error: 94.37%')

Total error: 0.0210753537458

('epoch: 5', ' train error: 4.27%', ' test error: 93.94%')

Total error: 0.0185088032027

('epoch: 6', ' train error: 4.06%', ' test error: 93.51%')

Total error: 0.0168898169635

('epoch: 7', ' train error: 3.63%', ' test error: 90.91%')

Total error: 0.0156734148254

('epoch: 8', ' train error: 3.63%', ' test error: 91.77%')

Total error: 0.0148126200804

('epoch: 9', ' train error: 3.42%', ' test error: 89.18%')

Total error: 0.0138402896792

('epoch: 10', ' train error: 3.63%', ' test error: 93.07%')

Backprop NN With RP Results: 9

Total error: 0.0958333063762

('epoch: 1', ' train error: 12.61%', ' test error: 29.44%')

Total error: 0.0509864152937

('epoch: 2', ' train error: 7.48%', ' test error: 21.21%')

Total error: 0.0363469582115

('epoch: 3', ' train error: 6.41%', ' test error: 20.35%')

Total error: 0.0294036163239

('epoch: 4', ' train error: 5.98%', ' test error: 27.27%')

Total error: 0.025626976129

('epoch: 5', ' train error: 5.98%', ' test error: 42.86%')

Total error: 0.0228859073769

('epoch: 6', ' train error: 5.77%', ' test error: 50.22%')

Total error: 0.0211131057733

('epoch: 7', ' train error: 5.34%', ' test error: 56.71%')

Total error: 0.0202891816503

('epoch: 8', ' train error: 4.70%', ' test error: 60.17%')

Total error: 0.0192118742489

('epoch: 9', ' train error: 4.49%', ' test error: 62.77%')

Total error: 0.0184348407405

('epoch: 10', ' train error: 4.49%', ' test error: 66.23%')

Backprop NN With RP & K-MEANs Results: 9

Total error: 0.128123679045

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0700993227165

('epoch: 2', ' train error: 5.13%', ' test error: 71.00%')

Total error: 0.0404003164025

('epoch: 3', ' train error: 4.06%', ' test error: 74.89%')

Total error: 0.02769081769

('epoch: 4', ' train error: 2.99%', ' test error: 74.89%')

Total error: 0.0210758608624

('epoch: 5', ' train error: 2.99%', ' test error: 75.32%')

Total error: 0.0181656471281

('epoch: 6', ' train error: 2.78%', ' test error: 74.89%')

Total error: 0.0157849634357

('epoch: 7', ' train error: 2.78%', ' test error: 74.46%')

Total error: 0.0134936415458

('epoch: 8', ' train error: 2.56%', ' test error: 76.62%')

Total error: 0.0122794994194

('epoch: 9', ' train error: 2.56%', ' test error: 78.79%')

Total error: 0.0112017946404

('epoch: 10', ' train error: 2.35%', ' test error: 79.65%')

akhan312\_Assign3\_BreastCancerDataAnalysis.py:433: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n\_samples, ), for example using ravel().

dataTrainScaledFSDT = clf.fit(dataSet.dataTrainScaled, dataSet.targetTrain).transform(dataSet.dataTrainScaled)

Backprop NN With Decision Tree Feature Selection:

Total error: 0.104871863303

('epoch: 1', ' train error: 33.76%', ' test error: 35.93%')

Total error: 0.0643585370101

('epoch: 2', ' train error: 12.39%', ' test error: 12.99%')

Total error: 0.0465000174651

('epoch: 3', ' train error: 5.56%', ' test error: 6.49%')

Total error: 0.0348838004833

('epoch: 4', ' train error: 4.27%', ' test error: 5.63%')

Total error: 0.0277961796373

('epoch: 5', ' train error: 4.27%', ' test error: 5.63%')

Total error: 0.0240386482035

('epoch: 6', ' train error: 4.06%', ' test error: 5.19%')

Total error: 0.02088619597

('epoch: 7', ' train error: 4.06%', ' test error: 5.19%')

Total error: 0.0197704953495

('epoch: 8', ' train error: 4.06%', ' test error: 5.19%')

Total error: 0.0183776616066

('epoch: 9', ' train error: 4.06%', ' test error: 5.19%')

Total error: 0.0174439119628

('epoch: 10', ' train error: 3.63%', ' test error: 5.19%')

Backprop NN With DT Feature Selection & K-MEANs Results: 9

Total error: 0.0629786713635

('epoch: 1', ' train error: 3.42%', ' test error: 82.68%')

Total error: 0.0241301890918

('epoch: 2', ' train error: 3.21%', ' test error: 81.82%')

Total error: 0.0190517166436

('epoch: 3', ' train error: 2.78%', ' test error: 82.25%')

Total error: 0.0172085009526

('epoch: 4', ' train error: 2.78%', ' test error: 79.65%')

Total error: 0.0156507850376

('epoch: 5', ' train error: 2.78%', ' test error: 71.86%')

Total error: 0.014832985356

('epoch: 6', ' train error: 2.78%', ' test error: 77.49%')

Total error: 0.0141090274412

('epoch: 7', ' train error: 2.78%', ' test error: 80.52%')

Total error: 0.0139253930222

('epoch: 8', ' train error: 2.78%', ' test error: 75.76%')

Total error: 0.0134589212972

('epoch: 9', ' train error: 2.35%', ' test error: 71.43%')

Total error: 0.0132356517544

('epoch: 10', ' train error: 2.56%', ' test error: 74.03%')

Backprop NN With Original Data Results:

Total error: 0.0662688685337

('epoch: 1', ' train error: 8.97%', ' test error: 12.12%')

Total error: 0.0340627954507

('epoch: 2', ' train error: 5.34%', ' test error: 8.66%')

Total error: 0.0223183224232

('epoch: 3', ' train error: 4.49%', ' test error: 8.23%')

Total error: 0.0176737032913

('epoch: 4', ' train error: 3.63%', ' test error: 6.49%')

Total error: 0.0149939274116

('epoch: 5', ' train error: 3.63%', ' test error: 6.06%')

Total error: 0.0134777344895

('epoch: 6', ' train error: 3.42%', ' test error: 6.06%')

Total error: 0.0122135340313

('epoch: 7', ' train error: 3.42%', ' test error: 6.06%')

Total error: 0.0115796198726

('epoch: 8', ' train error: 3.21%', ' test error: 6.06%')

Total error: 0.0112055246258

('epoch: 9', ' train error: 2.56%', ' test error: 5.63%')

Total error: 0.0104257762181

('epoch: 10', ' train error: 2.56%', ' test error: 5.63%')

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