Adam, 0.01, 32

Chart, scatter chart

Description automatically generatedChart, line chart

Description automatically generated

Epoch:1 1.360242247581482

Epoch:1 1.2583472728729248

Epoch:1 1.2631202936172485

Epoch:1 1.1570249795913696

Epoch:1 0.9530516862869263

Epoch:1 0.7633883953094482

Epoch:1 0.8508515954017639

Epoch:1 0.7874570488929749

Epoch:1 0.8863977193832397

Epoch:1 0.821689248085022

Epoch:2 0.795646071434021

Epoch:2 0.673907995223999

Epoch:2 0.7425679564476013

Epoch:2 0.7150318622589111

Epoch:2 0.8836520314216614

Epoch:2 0.6272002458572388

Epoch:2 0.7642608880996704

Epoch:2 0.7194086909294128

Epoch:2 0.4773893356323242

Epoch:2 0.725387692451477

Epoch:3 0.7070223093032837

Epoch:3 0.5416519641876221

Epoch:3 0.6404468417167664

Epoch:3 0.7120315432548523

Epoch:3 0.40898165106773376

Epoch:3 0.6560152769088745

Epoch:3 0.7774635553359985

Epoch:3 0.5889471769332886

Epoch:3 0.38110461831092834

Epoch:3 0.5682987570762634

Epoch:4 0.6378199458122253

Epoch:4 0.3680324852466583

Epoch:4 0.4104813039302826

Epoch:4 0.603563666343689

Epoch:4 0.36584359407424927

Epoch:4 0.5783026218414307

Epoch:4 0.5545521974563599

Epoch:4 0.5851872563362122

Epoch:4 0.5165594220161438

Epoch:4 0.24780698120594025

Epoch:5 0.5317520499229431

Epoch:5 0.35913434624671936

Epoch:5 0.5332276821136475

Epoch:5 0.3175981342792511

Epoch:5 0.2595749497413635

Epoch:5 0.27395662665367126

Epoch:5 0.32166343927383423

Epoch:5 0.4508189857006073

Epoch:5 0.5933049917221069

Epoch:5 0.6076890826225281

Epoch:6 0.5402725338935852

Epoch:6 0.3387046754360199

Epoch:6 0.32968670129776

Epoch:6 0.2118057757616043

Epoch:6 0.29079166054725647

Epoch:6 0.28488457202911377

Epoch:6 0.39249342679977417

Epoch:6 0.260413259267807

Epoch:6 0.574618399143219

Epoch:6 0.6411306262016296

Epoch:7 0.2886696755886078

Epoch:7 0.292611300945282

Epoch:7 0.3129056990146637

Epoch:7 0.15807989239692688

Epoch:7 0.5072903037071228

Epoch:7 0.35040581226348877

Epoch:7 0.30032652616500854

Epoch:7 0.48208877444267273

Epoch:7 0.4068385660648346

Epoch:7 0.40810248255729675

Epoch:8 0.2539065182209015

Epoch:8 0.2883877456188202

Epoch:8 0.27883416414260864

Epoch:8 0.255669504404068

Epoch:8 0.2856835722923279

Epoch:8 0.26969340443611145

Epoch:8 0.2893933951854706

Epoch:8 0.45783472061157227

Epoch:8 0.17036700248718262

Epoch:8 0.27913638949394226

Epoch:9 0.3597375750541687

Epoch:9 0.2180805802345276

Epoch:9 0.2922615706920624

Epoch:9 0.3859323263168335

Epoch:9 0.18521612882614136

Epoch:9 0.30503401160240173

Epoch:9 0.4105828106403351

Epoch:9 0.308086097240448

Epoch:9 0.3037138283252716

Epoch:9 0.22161242365837097

Epoch:10 0.28544145822525024

Epoch:10 0.2773495316505432

Epoch:10 0.14891992509365082

Epoch:10 0.15362538397312164

Epoch:10 0.3271579146385193

Epoch:10 0.24836739897727966

Epoch:10 0.19796597957611084

Epoch:10 0.22193004190921783

Epoch:10 0.15253883600234985

Epoch:10 0.26799845695495605

The accuracy is: 92.53%

Adam, 16 original, 32 test, lr0.01

Chart

Description automatically generatedChart, line chart

Description automatically generated

Epoch:1 1.4085562229156494

Epoch:1 1.368708848953247

Epoch:1 1.237087368965149

Epoch:1 0.9100220799446106

Epoch:1 1.020209550857544

Epoch:1 1.0498420000076294

Epoch:1 1.2199482917785645

Epoch:1 0.8649749159812927

Epoch:1 1.4068764448165894

Epoch:1 0.8264723420143127

Epoch:1 1.4612970352172852

Epoch:1 1.038461685180664

Epoch:1 0.8021280765533447

Epoch:1 0.6066323518753052

Epoch:1 1.1157805919647217

Epoch:1 0.7667537927627563

Epoch:1 0.9013031721115112

Epoch:1 0.7960042357444763

Epoch:1 1.0031967163085938

Epoch:2 0.6737332940101624

Epoch:2 0.5669064521789551

Epoch:2 0.5975155234336853

Epoch:2 0.9556426405906677

Epoch:2 0.27840250730514526

Epoch:2 0.6940404176712036

Epoch:2 0.8125150203704834

Epoch:2 0.9483240842819214

Epoch:2 0.39566680788993835

Epoch:2 0.3203026056289673

Epoch:2 0.7735890746116638

Epoch:2 0.5151735544204712

Epoch:2 0.6640896797180176

Epoch:2 0.7193867564201355

Epoch:2 0.9824315905570984

Epoch:2 0.3394109308719635

Epoch:2 0.8706555366516113

Epoch:2 0.7702401876449585

Epoch:2 0.8212578892707825

Epoch:3 0.7978227734565735

Epoch:3 1.0083210468292236

Epoch:3 0.43952280282974243

Epoch:3 0.2338467389345169

Epoch:3 0.5123775601387024

Epoch:3 1.112015962600708

Epoch:3 0.3804816007614136

Epoch:3 0.6340851187705994

Epoch:3 0.899658203125

Epoch:3 0.37842366099357605

Epoch:3 0.7907306551933289

Epoch:3 0.9702956676483154

Epoch:3 0.5615102052688599

Epoch:3 0.7402721643447876

Epoch:3 0.9604714512825012

Epoch:3 0.5007304549217224

Epoch:3 0.732683539390564

Epoch:3 0.9460597634315491

Epoch:3 0.743074893951416

Epoch:4 0.5620771646499634

Epoch:4 0.5337356328964233

Epoch:4 0.8063514828681946

Epoch:4 0.47327786684036255

Epoch:4 0.35296592116355896

Epoch:4 0.5390284061431885

Epoch:4 0.38045060634613037

Epoch:4 1.8413671255111694

Epoch:4 0.6984018683433533

Epoch:4 0.5913527011871338

Epoch:4 0.5219518542289734

Epoch:4 0.7663751244544983

Epoch:4 0.670599639415741

Epoch:4 0.7057114243507385

Epoch:4 0.5762486457824707

Epoch:4 0.541630744934082

Epoch:4 1.1353206634521484

Epoch:4 0.5936091542243958

Epoch:4 0.38154587149620056

Epoch:5 0.526461660861969

Epoch:5 0.26267004013061523

Epoch:5 0.7133083939552307

Epoch:5 0.43663549423217773

Epoch:5 0.6874769926071167

Epoch:5 0.3916028141975403

Epoch:5 0.31729087233543396

Epoch:5 0.22750504314899445

Epoch:5 0.7761222124099731

Epoch:5 0.6619277596473694

Epoch:5 0.41302549839019775

Epoch:5 0.6204137206077576

Epoch:5 0.3617331087589264

Epoch:5 0.43731507658958435

Epoch:5 0.6155807375907898

Epoch:5 0.7727954387664795

Epoch:5 0.45783546566963196

Epoch:5 0.2651190161705017

Epoch:5 0.8184252977371216

Epoch:6 0.40333816409111023

Epoch:6 0.2167069911956787

Epoch:6 0.3105567395687103

Epoch:6 0.4538540542125702

Epoch:6 0.4726850390434265

Epoch:6 0.5233057737350464

Epoch:6 0.5355141758918762

Epoch:6 0.28280121088027954

Epoch:6 0.3469461500644684

Epoch:6 0.40015143156051636

Epoch:6 0.32780951261520386

Epoch:6 0.778890073299408

Epoch:6 0.5324934720993042

Epoch:6 2.0179026126861572

Epoch:6 0.9860990643501282

Epoch:6 0.5223203897476196

Epoch:6 0.5297019481658936

Epoch:6 0.4601675868034363

Epoch:6 0.4877612888813019

Epoch:7 1.0791581869125366

Epoch:7 0.6724860668182373

Epoch:7 0.1645604968070984

Epoch:7 0.4835242033004761

Epoch:7 0.24215778708457947

Epoch:7 0.5545112490653992

Epoch:7 0.4270068407058716

Epoch:7 0.4431975483894348

Epoch:7 0.7570545673370361

Epoch:7 0.7906110286712646

Epoch:7 0.23051069676876068

Epoch:7 0.623780369758606

Epoch:7 0.6702114343643188

Epoch:7 0.3237709105014801

Epoch:7 0.49932026863098145

Epoch:7 0.5816320180892944

Epoch:7 0.03640752285718918

Epoch:7 0.7936882376670837

Epoch:7 0.6059659123420715

Epoch:8 0.5990968346595764

Epoch:8 1.1262311935424805

Epoch:8 0.5504169464111328

Epoch:8 0.32298049330711365

Epoch:8 0.36007118225097656

Epoch:8 0.2697255611419678

Epoch:8 0.37355756759643555

Epoch:8 1.0925133228302002

Epoch:8 0.17357297241687775

Epoch:8 0.865949809551239

Epoch:8 0.5031578540802002

Epoch:8 0.31786462664604187

Epoch:8 0.1390073001384735

Epoch:8 0.578210711479187

Epoch:8 0.2735440731048584

Epoch:8 0.35683301091194153

Epoch:8 0.7822681665420532

Epoch:8 0.34729838371276855

Epoch:8 0.15213394165039062

Epoch:9 0.5489374399185181

Epoch:9 0.47795310616493225

Epoch:9 0.26574286818504333

Epoch:9 0.17375551164150238

Epoch:9 0.5753936171531677

Epoch:9 0.2780328094959259

Epoch:9 0.3513110280036926

Epoch:9 0.22166511416435242

Epoch:9 0.35094785690307617

Epoch:9 0.5314699411392212

Epoch:9 0.2537505328655243

Epoch:9 0.6380994319915771

Epoch:9 0.5381007194519043

Epoch:9 0.15015915036201477

Epoch:9 0.2500179409980774

Epoch:9 0.2636680006980896

Epoch:9 0.3914060890674591

Epoch:9 0.6191924810409546

Epoch:9 0.5619583129882812

Epoch:10 0.04972792789340019

Epoch:10 0.4170583188533783

Epoch:10 0.4106525480747223

Epoch:10 0.2541966438293457

Epoch:10 0.44332176446914673

Epoch:10 0.14469929039478302

Epoch:10 0.5179427862167358

Epoch:10 0.3148084282875061

Epoch:10 0.29786017537117004

Epoch:10 0.7049224376678467

Epoch:10 0.2821824550628662

Epoch:10 0.7950259447097778

Epoch:10 0.8201021552085876

Epoch:10 0.19104662537574768

Epoch:10 0.4146868884563446

Epoch:10 1.9937437772750854

Epoch:10 0.2913563549518585

Epoch:10 0.7916948199272156

Epoch:10 0.4241904616355896

The accuracy is: 79.7%

The accuracy of the new test set is: 9.5%

SGD, 32 original, 32 test, lr0.01, maxpool以上都是

Chart, line chart

Description automatically generatedChart

Description automatically generated

Epoch:1 1.4045623540878296

Epoch:1 1.3643616437911987

Epoch:1 1.38670015335083

Epoch:1 1.319774866104126

Epoch:1 1.3449444770812988

Epoch:1 1.3742154836654663

Epoch:1 1.3153268098831177

Epoch:1 1.2989392280578613

Epoch:1 1.270268201828003

Epoch:1 1.318169355392456

Epoch:2 1.2909737825393677

Epoch:2 1.2575502395629883

Epoch:2 1.208126187324524

Epoch:2 1.3150171041488647

Epoch:2 1.2630407810211182

Epoch:2 1.2318862676620483

Epoch:2 1.1653003692626953

Epoch:2 1.1962255239486694

Epoch:2 1.3505576848983765

Epoch:2 1.1548306941986084

Epoch:3 1.1012020111083984

Epoch:3 1.1751221418380737

Epoch:3 1.094710111618042

Epoch:3 1.0903979539871216

Epoch:3 1.145395278930664

Epoch:3 1.1390430927276611

Epoch:3 1.0128300189971924

Epoch:3 1.0745306015014648

Epoch:3 1.0133379697799683

Epoch:3 1.0026514530181885

Epoch:4 0.9418151378631592

Epoch:4 1.0850028991699219

Epoch:4 1.109068512916565

Epoch:4 1.0145207643508911

Epoch:4 1.0399798154830933

Epoch:4 0.9141033291816711

Epoch:4 0.9832020998001099

Epoch:4 1.013481616973877

Epoch:4 1.0715266466140747

Epoch:4 1.0144121646881104

Epoch:5 0.7294667959213257

Epoch:5 0.7734280228614807

Epoch:5 0.868220865726471

Epoch:5 0.8608781695365906

Epoch:5 1.0211864709854126

Epoch:5 0.9152050018310547

Epoch:5 0.6784129738807678

Epoch:5 0.8439753651618958

Epoch:5 0.7490231394767761

Epoch:5 0.803630530834198

Epoch:6 0.7212702631950378

Epoch:6 0.919511616230011

Epoch:6 0.9829889535903931

Epoch:6 0.9062121510505676

Epoch:6 0.8734430074691772

Epoch:6 0.8352304100990295

Epoch:6 0.8096672892570496

Epoch:6 0.8714361190795898

Epoch:6 0.9110749363899231

Epoch:6 0.7649528980255127

Epoch:7 0.7905198931694031

Epoch:7 0.6990923285484314

Epoch:7 0.657310426235199

Epoch:7 0.8043606877326965

Epoch:7 0.7011432647705078

Epoch:7 0.7890495657920837

Epoch:7 0.9871471524238586

Epoch:7 0.6203960180282593

Epoch:7 0.8480936288833618

Epoch:7 0.7112486362457275

Epoch:8 0.8332013487815857

Epoch:8 0.8525722622871399

Epoch:8 0.8313041925430298

Epoch:8 0.9092009663581848

Epoch:8 0.8203784227371216

Epoch:8 0.7635247707366943

Epoch:8 0.9375004172325134

Epoch:8 0.5155717730522156

Epoch:8 0.7382068634033203

Epoch:8 0.9085301160812378

Epoch:9 0.532990038394928

Epoch:9 0.7848423719406128

Epoch:9 0.815478503704071

Epoch:9 0.8448964953422546

Epoch:9 0.8207755088806152

Epoch:9 0.871234118938446

Epoch:9 0.7729973793029785

Epoch:9 0.7032477259635925

Epoch:9 0.7154072523117065

Epoch:9 0.9863008856773376

Epoch:10 1.159998893737793

Epoch:10 0.5949578881263733

Epoch:10 0.5284330248832703

Epoch:10 0.7516880035400391

Epoch:10 0.6227104663848877

Epoch:10 0.5621609687805176

Epoch:10 0.37460198998451233

Epoch:10 0.7817896008491516

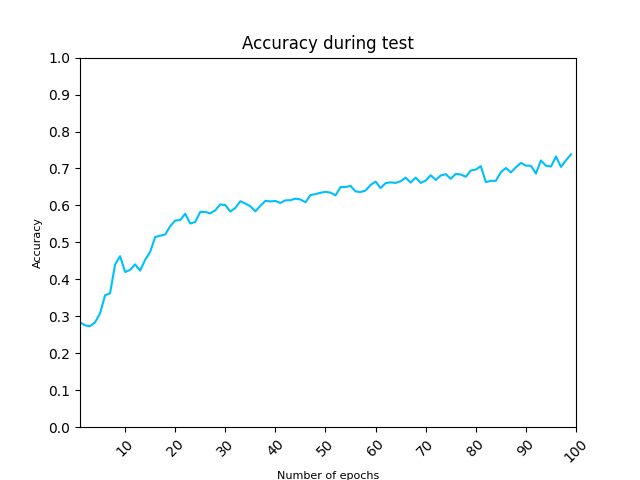
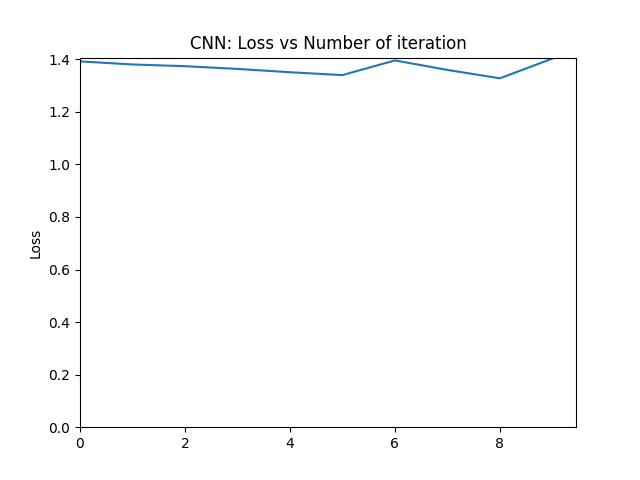
Epoch:10 0.5976079106330872

Epoch:10 0.4589553475379944

The accuracy is: 69.97%

The accuracy of the new test set is: 62.0%

SGD, 32 original, 32 test, lr0.01, maxpool以上都是

Epoch:1 1.3919872045516968

Epoch:1 1.3802244663238525

Epoch:1 1.3737092018127441

Epoch:1 1.3632978200912476

Epoch:1 1.3506972789764404

Epoch:1 1.3398033380508423

Epoch:1 1.3956776857376099

Epoch:1 1.3594446182250977

Epoch:1 1.3276348114013672

Epoch:1 1.4026237726211548

Epoch:2 1.354731559753418

Epoch:2 1.3613418340682983

Epoch:2 1.337801456451416

Epoch:2 1.3166083097457886

Epoch:2 1.340043544769287

Epoch:2 1.331751823425293

Epoch:2 1.3481942415237427

Epoch:2 1.290649175643921

Epoch:2 1.3349144458770752

Epoch:2 1.274807333946228

Epoch:3 1.2854022979736328

Epoch:3 1.2396472692489624

Epoch:3 1.2420307397842407

Epoch:3 1.2513103485107422

Epoch:3 1.2023924589157104

Epoch:3 1.279607892036438

Epoch:3 1.1795616149902344

Epoch:3 1.150312900543213

Epoch:3 1.1806753873825073

Epoch:3 1.1959445476531982

Epoch:4 1.1898983716964722

Epoch:4 1.3317773342132568

Epoch:4 1.0990772247314453

Epoch:4 1.1170862913131714

Epoch:4 1.1561839580535889

Epoch:4 1.139261245727539

Epoch:4 1.0386472940444946

Epoch:4 1.1556531190872192

Epoch:4 1.0682438611984253

Epoch:4 1.3391165733337402

Epoch:5 1.120651125907898

Epoch:5 1.0802925825119019

Epoch:5 1.1507304906845093

Epoch:5 1.1356875896453857

Epoch:5 0.9373480677604675

Epoch:5 1.0449146032333374

Epoch:5 0.9916018843650818

Epoch:5 0.8725990056991577

Epoch:5 0.9483925700187683

Epoch:5 0.9544685482978821

Epoch:6 1.0564621686935425

Epoch:6 0.8666083812713623

Epoch:6 1.1542677879333496

Epoch:6 0.9933460354804993

Epoch:6 1.1770087480545044

Epoch:6 0.9898892641067505

Epoch:6 0.8858172297477722

Epoch:6 1.0445746183395386

Epoch:6 1.2699494361877441

Epoch:6 0.9466521739959717

Epoch:7 0.8346492648124695

Epoch:7 1.1576688289642334

Epoch:7 0.8114055395126343

Epoch:7 0.8417407870292664

Epoch:7 1.076423168182373

Epoch:7 0.6661014556884766

Epoch:7 0.764982283115387

Epoch:7 0.8940638303756714

Epoch:7 0.9421037435531616

Epoch:7 0.7799758315086365

Epoch:8 0.9491860270500183

Epoch:8 0.75288325548172

Epoch:8 1.0107675790786743

Epoch:8 0.7803284525871277

Epoch:8 0.8455396890640259

Epoch:8 0.8208348751068115

Epoch:8 0.8630415797233582

Epoch:8 0.9257742166519165

Epoch:8 0.5939891338348389

Epoch:8 0.7591853737831116

Epoch:9 0.8285588622093201

Epoch:9 0.7836753129959106

Epoch:9 0.9227764010429382

Epoch:9 1.1397850513458252

Epoch:9 1.0597517490386963

Epoch:9 0.5839279294013977

Epoch:9 0.6617351174354553

Epoch:9 0.5297598242759705

Epoch:9 0.76108717918396

Epoch:9 0.6275662183761597

Epoch:10 0.5742082595825195

Epoch:10 0.7891784310340881

Epoch:10 0.8384252786636353

Epoch:10 0.7063573598861694

Epoch:10 0.791817843914032

Epoch:10 0.6157851815223694

Epoch:10 0.7352486848831177

Epoch:10 0.6997835040092468

Epoch:10 0.8126636743545532

Epoch:10 0.8249329924583435

The accuracy is: 68.67%

The accuracy of the new test set is: 62.0%

adam, 32 original, 32 test, lr0.01, avgpool

Chart, scatter chart

Description automatically generatedChart, line chart

Description automatically generated

Epoch:1 1.4106799364089966

Epoch:1 1.2825008630752563

Epoch:1 1.1091855764389038

Epoch:1 1.0013341903686523

Epoch:1 0.9800693988800049

Epoch:1 1.138214349746704

Epoch:1 1.1224631071090698

Epoch:1 1.0051569938659668

Epoch:1 0.8310138583183289

Epoch:1 1.0470874309539795

Epoch:2 0.7990080714225769

Epoch:2 0.9315094351768494

Epoch:2 0.6976986527442932

Epoch:2 1.1477230787277222

Epoch:2 0.9474454522132874

Epoch:2 0.7071519494056702

Epoch:2 1.092254638671875

Epoch:2 0.8830727338790894

Epoch:2 0.5330110192298889

Epoch:2 0.8449477553367615

Epoch:3 0.899048388004303

Epoch:3 0.37164756655693054

Epoch:3 0.7745106816291809

Epoch:3 0.7938531041145325

Epoch:3 0.5429136753082275

Epoch:3 0.576779305934906

Epoch:3 0.6751261949539185

Epoch:3 0.5925617218017578

Epoch:3 0.7939656972885132

Epoch:3 0.4238036870956421

Epoch:4 0.2757267653942108

Epoch:4 0.6142712831497192

Epoch:4 0.5378042459487915

Epoch:4 0.7228313088417053

Epoch:4 0.5705839991569519

Epoch:4 0.6423935294151306

Epoch:4 0.5572107434272766

Epoch:4 0.7973119616508484

Epoch:4 0.5374237895011902

Epoch:4 0.7010409235954285

Epoch:5 0.4164420962333679

Epoch:5 0.5362833738327026

Epoch:5 0.526857852935791

Epoch:5 0.4394455850124359

Epoch:5 0.40937426686286926

Epoch:5 0.5566156506538391

Epoch:5 0.7827438712120056

Epoch:5 0.6664833426475525

Epoch:5 0.6887673735618591

Epoch:5 0.37615078687667847

Epoch:6 0.5293043851852417

Epoch:6 0.45183348655700684

Epoch:6 0.36559468507766724

Epoch:6 0.24414995312690735

Epoch:6 0.60277259349823

Epoch:6 0.32914572954177856

Epoch:6 0.3300482928752899

Epoch:6 0.6663475036621094

Epoch:6 0.473575621843338

Epoch:6 0.28357964754104614

Epoch:7 0.5828763842582703

Epoch:7 0.23381492495536804

Epoch:7 0.5973427891731262

Epoch:7 0.5536203384399414

Epoch:7 0.5859464406967163

Epoch:7 0.43885338306427

Epoch:7 0.6762034296989441

Epoch:7 0.408770352602005

Epoch:7 0.32301953434944153

Epoch:7 0.635369598865509

Epoch:8 0.6211181282997131

Epoch:8 0.4650729298591614

Epoch:8 0.5096664428710938

Epoch:8 0.41923975944519043

Epoch:8 0.2516181170940399

Epoch:8 0.4613417685031891

Epoch:8 0.7509604692459106

Epoch:8 0.8113151788711548

Epoch:8 0.5309816598892212

Epoch:8 0.32567185163497925

Epoch:9 0.40342143177986145

Epoch:9 0.2016214281320572

Epoch:9 0.4144294857978821

Epoch:9 0.4919327199459076

Epoch:9 0.42828187346458435

Epoch:9 0.4383583068847656

Epoch:9 0.3262070119380951

Epoch:9 0.4825372099876404

Epoch:9 0.19041875004768372

Epoch:9 0.1773369163274765

Epoch:10 0.10097937285900116

Epoch:10 0.34270933270454407

Epoch:10 0.39402443170547485

Epoch:10 0.2615390419960022

Epoch:10 0.46804279088974

Epoch:10 0.15002767741680145

Epoch:10 0.46254798769950867

Epoch:10 0.36627286672592163

Epoch:10 0.3231740891933441

Epoch:10 0.3209601044654846

The accuracy is: 86.77%

The accuracy of the new test set is: 46.0%

adam, 32 original, 32 test, lr0.01, avgpool

Chart

Description automatically generated Chart, line chart

Description automatically generated

Epoch:1 1.3888826370239258

Epoch:1 1.494913101196289

Epoch:1 1.2731750011444092

Epoch:1 1.1325862407684326

Epoch:1 1.0900379419326782

Epoch:1 0.9868494868278503

Epoch:1 0.8237737417221069

Epoch:1 0.9160075783729553

Epoch:1 1.0782800912857056

Epoch:1 0.8506641387939453

Epoch:2 0.8285740613937378

Epoch:2 0.7713695168495178

Epoch:2 1.1115115880966187

Epoch:2 0.9802007675170898

Epoch:2 0.7321577668190002

Epoch:2 0.7808576226234436

Epoch:2 0.7369014620780945

Epoch:2 1.0246630907058716

Epoch:2 0.7496033906936646

Epoch:2 0.8337731957435608

Epoch:3 0.8403802514076233

Epoch:3 0.8102434873580933

Epoch:3 0.7065572142601013

Epoch:3 0.5343266725540161

Epoch:3 0.47198623418807983

Epoch:3 0.5318621397018433

Epoch:3 0.5640830993652344

Epoch:3 0.5290743112564087

Epoch:3 0.3666728734970093

Epoch:3 1.1013706922531128

Epoch:4 0.5221277475357056

Epoch:4 0.8267921209335327

Epoch:4 0.3542464077472687

Epoch:4 0.8978543281555176

Epoch:4 0.7580028176307678

Epoch:4 0.5818312168121338

Epoch:4 0.3761017620563507

Epoch:4 0.5622757077217102

Epoch:4 0.428957462310791

Epoch:4 0.34896329045295715

Epoch:5 0.4620967507362366

Epoch:5 0.6347553133964539

Epoch:5 0.5728162527084351

Epoch:5 0.4052916467189789

Epoch:5 0.464298278093338

Epoch:5 0.5730010271072388

Epoch:5 0.5664047002792358

Epoch:5 0.40483903884887695

Epoch:5 0.5234110951423645

Epoch:5 0.44341349601745605

Epoch:6 0.35971638560295105

Epoch:6 0.3692750036716461

Epoch:6 0.8070134520530701

Epoch:6 0.35584142804145813

Epoch:6 0.2945067584514618

Epoch:6 0.31852632761001587

Epoch:6 0.3583722412586212

Epoch:6 0.2588720917701721

Epoch:6 0.6500377058982849

Epoch:6 0.38163718581199646

Epoch:7 0.515543520450592

Epoch:7 0.7531259059906006

Epoch:7 0.38276803493499756

Epoch:7 0.4227727949619293

Epoch:7 0.2594504654407501

Epoch:7 0.2813728451728821

Epoch:7 0.4485875964164734

Epoch:7 0.6312164664268494

Epoch:7 0.39355435967445374

Epoch:7 0.28132352232933044

Epoch:8 0.40969470143318176

Epoch:8 0.2647791802883148

Epoch:8 0.3539961278438568

Epoch:8 0.39145973324775696

Epoch:8 0.5520487427711487

Epoch:8 0.23302000761032104

Epoch:8 0.2689800262451172

Epoch:8 0.5102992057800293

Epoch:8 0.2918379008769989

Epoch:8 0.5972068905830383

Epoch:9 0.28576868772506714

Epoch:9 0.2092728465795517

Epoch:9 0.39579033851623535

Epoch:9 0.25183409452438354

Epoch:9 0.2515546381473541

Epoch:9 0.48721060156822205

Epoch:9 0.6134464740753174

Epoch:9 0.45469215512275696

Epoch:9 0.4960242807865143

Epoch:9 0.15917670726776123

Epoch:10 0.3927057385444641

Epoch:10 0.2385074645280838

Epoch:10 0.1851987987756729

Epoch:10 0.15339334309101105

Epoch:10 0.2950352132320404

Epoch:10 0.23079624772071838

Epoch:10 0.5126594305038452

Epoch:10 0.41394758224487305

Epoch:10 0.20660905539989471

Epoch:10 0.46600258350372314

The accuracy is: 89.9%

The accuracy of the new test set is: 23.5%

adam, 32 original, 32 test, lr0.01, avgpool

Chart

Description automatically generated Chart, line chart

Description automatically generated

Epoch:1 1.3898752927780151

Epoch:1 1.2909713983535767

Epoch:1 1.0878119468688965

Epoch:1 1.0228593349456787

Epoch:1 0.8048642873764038

Epoch:1 0.9450948238372803

Epoch:1 0.7149003148078918

Epoch:1 0.5224019289016724

Epoch:1 0.6426926255226135

Epoch:1 0.9724266529083252

Epoch:2 0.698549747467041

Epoch:2 0.9034097194671631

Epoch:2 0.6989428997039795

Epoch:2 0.7164705991744995

Epoch:2 0.612097442150116

Epoch:2 0.7418520450592041

Epoch:2 0.5539825558662415

Epoch:2 0.777463972568512

Epoch:2 0.5222100615501404

Epoch:2 0.5022024512290955

Epoch:3 0.3919787108898163

Epoch:3 0.6397594809532166

Epoch:3 0.46144962310791016

Epoch:3 0.9018998742103577

Epoch:3 0.6727791428565979

Epoch:3 0.5529091954231262

Epoch:3 0.37782999873161316

Epoch:3 0.782260537147522

Epoch:3 0.5625442266464233

Epoch:3 0.35650327801704407

Epoch:4 0.35548242926597595

Epoch:4 0.8960403203964233

Epoch:4 0.3953639268875122

Epoch:4 0.2689064145088196

Epoch:4 0.43023836612701416

Epoch:4 0.588660717010498

Epoch:4 0.38827624917030334

Epoch:4 0.47078678011894226

Epoch:4 0.8583083748817444

Epoch:4 0.8833518624305725

Epoch:5 1.3080024719238281

Epoch:5 0.4544907212257385

Epoch:5 0.43668225407600403

Epoch:5 0.41953548789024353

Epoch:5 0.40126779675483704

Epoch:5 0.344232439994812

Epoch:5 0.4049209654331207

Epoch:5 0.5166139006614685

Epoch:5 0.48602166771888733

Epoch:5 0.41062888503074646

Epoch:6 0.28783780336380005

Epoch:6 0.4405007064342499

Epoch:6 0.36778849363327026

Epoch:6 0.3465195298194885

Epoch:6 0.2955957055091858

Epoch:6 0.4488820731639862

Epoch:6 0.25325536727905273

Epoch:6 0.41460689902305603

Epoch:6 0.30324047803878784

Epoch:6 0.3713515102863312

Epoch:7 0.3762954771518707

Epoch:7 0.4658064544200897

Epoch:7 0.3996964395046234

Epoch:7 0.7285351157188416

Epoch:7 1.3175370693206787

Epoch:7 0.7035847902297974

Epoch:7 0.9694790244102478

Epoch:7 0.8918060064315796

Epoch:7 0.6768172979354858

Epoch:7 0.8921455144882202

Epoch:8 0.5791846513748169

Epoch:8 0.7082055807113647

Epoch:8 0.5363056063652039

Epoch:8 0.5733183026313782

Epoch:8 0.42882004380226135

Epoch:8 0.45805466175079346

Epoch:8 0.6708095073699951

Epoch:8 0.8432818055152893

Epoch:8 0.6979176998138428

Epoch:8 0.5091502070426941

Epoch:9 0.5470296740531921

Epoch:9 0.6608206033706665

Epoch:9 0.848271369934082

Epoch:9 0.5061033368110657

Epoch:9 0.7422487139701843

Epoch:9 0.5069065093994141

Epoch:9 0.33384761214256287

Epoch:9 0.4243498742580414

Epoch:9 0.5781194567680359

Epoch:9 0.4045471251010895

Epoch:10 0.6397773027420044

Epoch:10 0.5487648248672485

Epoch:10 0.5776650309562683

Epoch:10 0.608238697052002

Epoch:10 0.538187563419342

Epoch:10 0.5097087621688843

Epoch:10 0.43009328842163086

Epoch:10 0.34655725955963135

Epoch:10 0.5399163961410522

Epoch:10 0.5403574109077454

The accuracy is: 84.83%

The accuracy of the new test set is: 74.5%

adam, 32 original, 32 test, lr0.001, max\_pool

Chart

Description automatically generated Chart, line chart

Description automatically generated

Epoch:1 1.417392611503601

Epoch:1 1.1916215419769287

Epoch:1 1.1532002687454224

Epoch:1 1.0973368883132935

Epoch:1 0.8967417478561401

Epoch:1 0.875339150428772

Epoch:1 0.890392005443573

Epoch:1 0.9817814826965332

Epoch:1 0.9904709458351135

Epoch:1 0.840972363948822

Epoch:2 0.712721586227417

Epoch:2 0.7376570701599121

Epoch:2 0.7706912159919739

Epoch:2 0.7876911163330078

Epoch:2 0.8162707090377808

Epoch:2 0.7732749581336975

Epoch:2 0.7863377332687378

Epoch:2 0.8171698451042175

Epoch:2 0.8293760418891907

Epoch:2 0.7272815108299255

Epoch:3 0.7203372716903687

Epoch:3 0.7793496251106262

Epoch:3 0.517119824886322

Epoch:3 0.6795005202293396

Epoch:3 0.8267630934715271

Epoch:3 0.552731990814209

Epoch:3 0.7202670574188232

Epoch:3 0.5904045104980469

Epoch:3 0.6151160001754761

Epoch:3 0.7068192958831787

Epoch:4 0.6637765169143677

Epoch:4 0.690011203289032

Epoch:4 0.6321564316749573

Epoch:4 0.3512267768383026

Epoch:4 0.4584779441356659

Epoch:4 0.5347121953964233

Epoch:4 0.4710296094417572

Epoch:4 0.4086029529571533

Epoch:4 0.43767181038856506

Epoch:4 0.46479469537734985

Epoch:5 0.4672432541847229

Epoch:5 0.47582322359085083

Epoch:5 0.5452501773834229

Epoch:5 0.41303330659866333

Epoch:5 0.3089253902435303

Epoch:5 0.29671892523765564

Epoch:5 0.5143994092941284

Epoch:5 0.48233339190483093

Epoch:5 0.2703441381454468

Epoch:5 0.29825565218925476

Epoch:6 0.2923588454723358

Epoch:6 0.2900737226009369

Epoch:6 0.3749294877052307

Epoch:6 0.2467464655637741

Epoch:6 0.39510735869407654

Epoch:6 0.25420325994491577

Epoch:6 0.3557572364807129

Epoch:6 0.2646116614341736

Epoch:6 0.4122885465621948

Epoch:6 0.4357999861240387

Epoch:7 0.3807748854160309

Epoch:7 0.20450498163700104

Epoch:7 0.27823832631111145

Epoch:7 0.2819690406322479

Epoch:7 0.25842368602752686

Epoch:7 0.2867256700992584

Epoch:7 0.23542124032974243

Epoch:7 0.7374892234802246

Epoch:7 0.2937789857387543

Epoch:7 0.22533680498600006

Epoch:8 0.22219738364219666

Epoch:8 0.29093921184539795

Epoch:8 0.23203377425670624

Epoch:8 0.32659682631492615

Epoch:8 0.307325154542923

Epoch:8 0.1584669053554535

Epoch:8 0.23739340901374817

Epoch:8 0.2542334198951721

Epoch:8 0.3471645414829254

Epoch:8 0.3904796540737152

Epoch:9 0.28622785210609436

Epoch:9 0.1606956124305725

Epoch:9 0.31588733196258545

Epoch:9 0.37599244713783264

Epoch:9 0.17349131405353546

Epoch:9 0.29817286133766174

Epoch:9 0.15272700786590576

Epoch:9 0.5745432376861572

Epoch:9 0.4750590920448303

Epoch:9 0.3752845227718353

Epoch:10 0.10571678727865219

Epoch:10 0.30740681290626526

Epoch:10 0.2191915214061737

Epoch:10 0.32799455523490906

Epoch:10 0.12781256437301636

Epoch:10 0.20630702376365662

Epoch:10 0.13338860869407654

Epoch:10 0.21450428664684296

Epoch:10 0.1597914844751358

Epoch:10 0.24410274624824524

The accuracy is: 94.3%

The accuracy of the new test set is: 87.5%

adam, 32 original, 32 test, lr0.001, max\_pool

Chart, scatter chart

Description automatically generated Chart, line chart

Description automatically generated

Epoch:1 1.3760360479354858

Epoch:1 1.231378436088562

Epoch:1 1.1388046741485596

Epoch:1 1.0983155965805054

Epoch:1 1.059993863105774

Epoch:1 1.0508143901824951

Epoch:1 0.9380971193313599

Epoch:1 1.164074420928955

Epoch:1 1.064357876777649

Epoch:1 0.79457688331604

Epoch:2 0.806222677230835

Epoch:2 0.709427535533905

Epoch:2 0.5462039709091187

Epoch:2 0.7670049071311951

Epoch:2 0.8143656849861145

Epoch:2 0.7930654287338257

Epoch:2 0.820410966873169

Epoch:2 0.8225765228271484

Epoch:2 0.769128143787384

Epoch:2 0.6207879781723022

Epoch:3 0.4969322383403778

Epoch:3 0.8201265335083008

Epoch:3 0.6770926713943481

Epoch:3 0.5656829476356506

Epoch:3 0.5457375645637512

Epoch:3 0.745176374912262

Epoch:3 0.6250788569450378

Epoch:3 0.567936360836029

Epoch:3 0.6590818166732788

Epoch:3 0.597061038017273

Epoch:4 0.5227078199386597

Epoch:4 0.5507990717887878

Epoch:4 0.33299845457077026

Epoch:4 0.573989987373352

Epoch:4 0.7578974962234497

Epoch:4 0.6060858368873596

Epoch:4 0.6737386584281921

Epoch:4 0.5282589793205261

Epoch:4 0.49447035789489746

Epoch:4 0.6628082990646362

Epoch:5 0.38773733377456665

Epoch:5 0.329757958650589

Epoch:5 0.6575055122375488

Epoch:5 0.4689643979072571

Epoch:5 0.4196779131889343

Epoch:5 0.44347748160362244

Epoch:5 0.44661223888397217

Epoch:5 0.6678423285484314

Epoch:5 0.4097725749015808

Epoch:5 0.4489269554615021

Epoch:6 0.2589555084705353

Epoch:6 0.46578049659729004

Epoch:6 0.5055516362190247

Epoch:6 0.35192763805389404

Epoch:6 0.5092045068740845

Epoch:6 0.40133997797966003

Epoch:6 0.5245894193649292

Epoch:6 0.1580631583929062

Epoch:6 0.42605099081993103

Epoch:6 0.4244758188724518

Epoch:7 0.44127100706100464

Epoch:7 0.3316946029663086

Epoch:7 0.26110270619392395

Epoch:7 0.6986240744590759

Epoch:7 0.31683099269866943

Epoch:7 0.26749300956726074

Epoch:7 0.2757044732570648

Epoch:7 0.347951740026474

Epoch:7 0.508020281791687

Epoch:7 0.3564167320728302

Epoch:8 0.22607219219207764

Epoch:8 0.46330496668815613

Epoch:8 0.2981462776660919

Epoch:8 0.4073043167591095

Epoch:8 0.13612863421440125

Epoch:8 0.2521754801273346

Epoch:8 0.18626876175403595

Epoch:8 0.21329233050346375

Epoch:8 0.3728834092617035

Epoch:8 0.42844945192337036

Epoch:9 0.2602488100528717

Epoch:9 0.24682247638702393

Epoch:9 0.4653705954551697

Epoch:9 0.14228090643882751

Epoch:9 0.21379391849040985

Epoch:9 0.1524088829755783

Epoch:9 0.5238229036331177

Epoch:9 0.3880206346511841

Epoch:9 0.271782785654068

Epoch:9 0.177376389503479

Epoch:10 0.291911780834198

Epoch:10 0.18572798371315002

Epoch:10 0.25677230954170227

Epoch:10 0.19880715012550354

Epoch:10 0.21240222454071045

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Accuracy | Original Model | Optimizer SDG | Pool Avg | Batch Size 16 | Batch Size 64 | Batch Size 128 | Batch  Size 256 |
| Training | 96.20% | 56.00% | 93.93% | 98.90% | 97.88% | 95.73% | 93.23% |
| Test | 86.50% | 53.50% | 98.90% | 86.50% | 88.50% | 87.64% | 83% |

Epoch:10 0.32497966289520264

Epoch:10 0.21038468182086945

Epoch:10 0.4177749454975128

Epoch:10 0.3911469876766205

Epoch:10 0.1593971848487854

The accuracy is: 94.27%

The accuracy of the new test set is: 89.0%

Process finished with exit code 0

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attempt | Accuracy | Criterion | Max\_depth | Max\_ feature | Accuracy (Test) |
| 1 | 85.89% | gini | 13 | auto | 68% |
| 2 | 86.11% | gini | 13 | log2 | 78% |
| 3 | 88.89% | gini | 13 | auto | 78% |
| 4 | 86.22% | gini | 12 | auto | 76% |
| Avg | 86.78% | / | / | / | 75% |