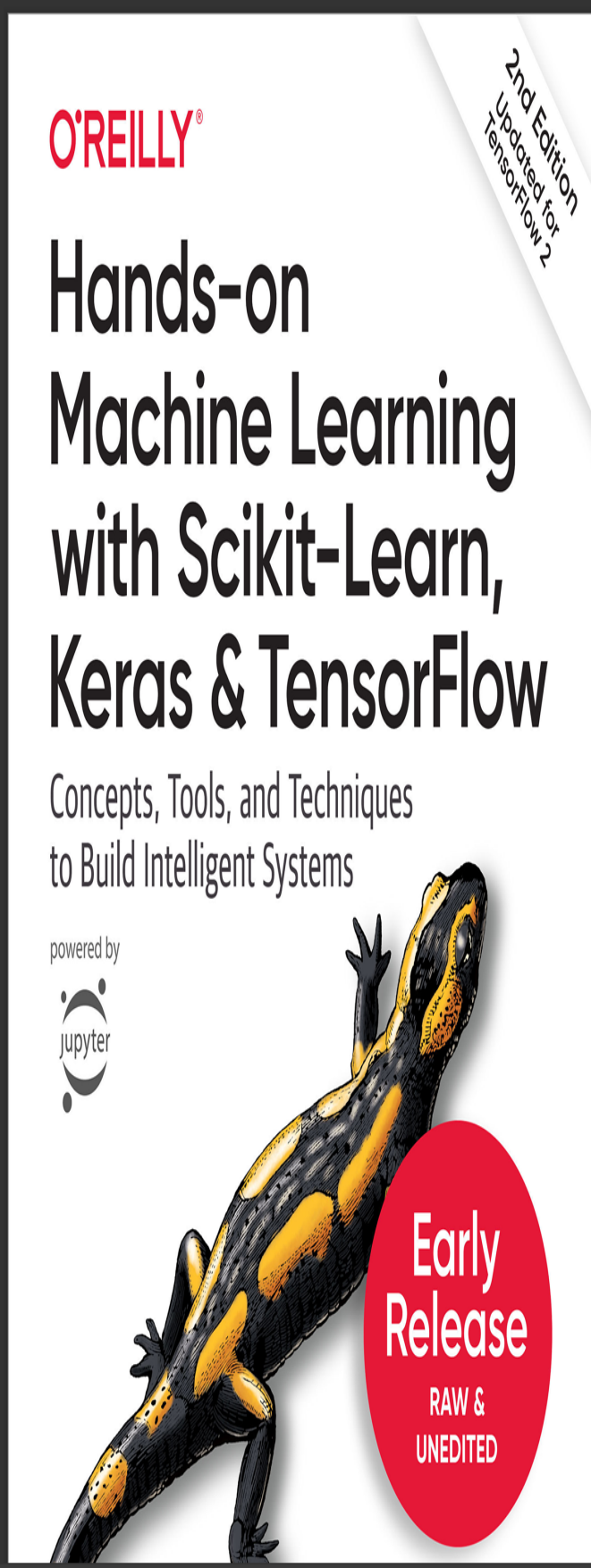


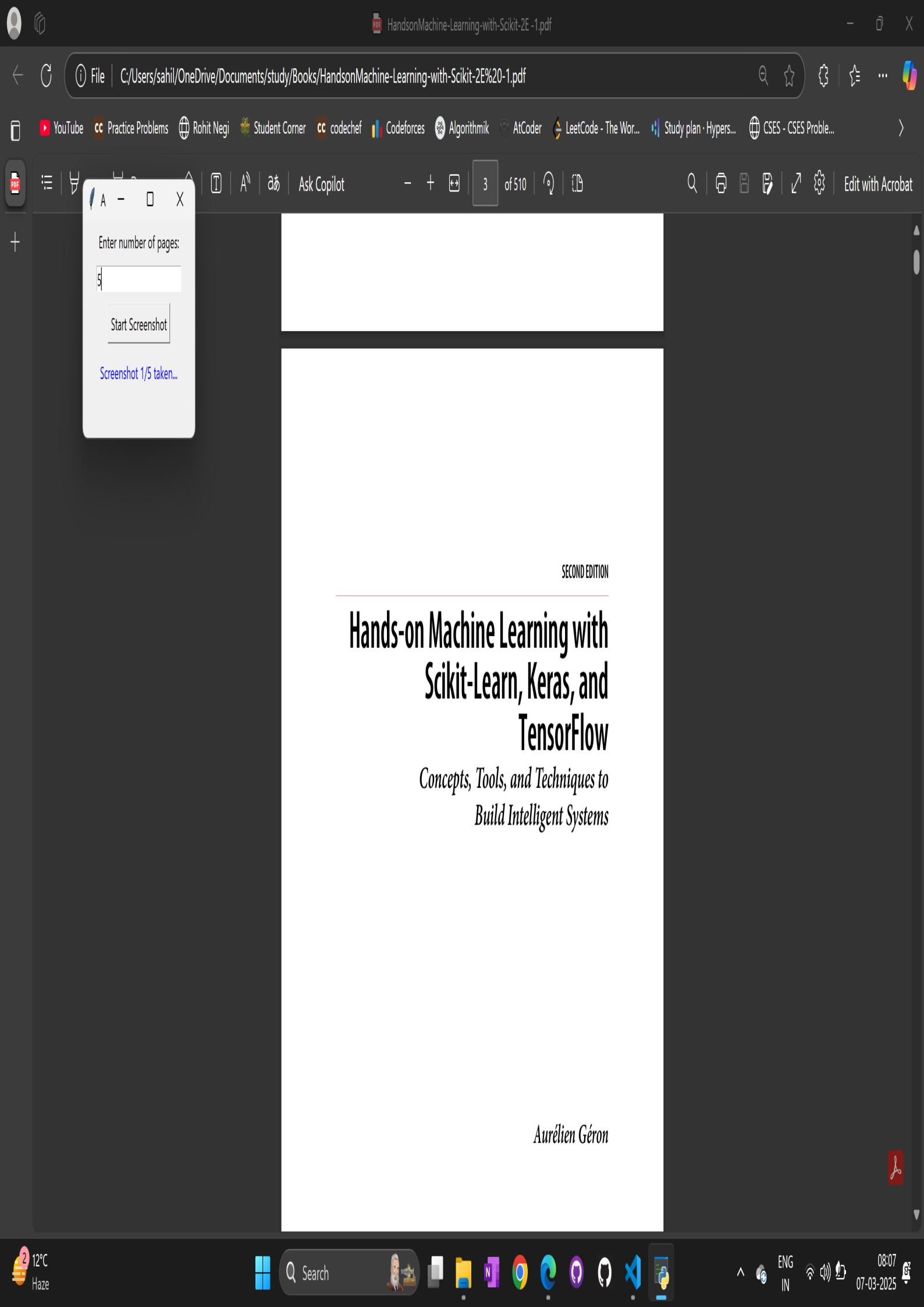
Enter number of pages:

5

Start Screenshot

Taking screenshots...



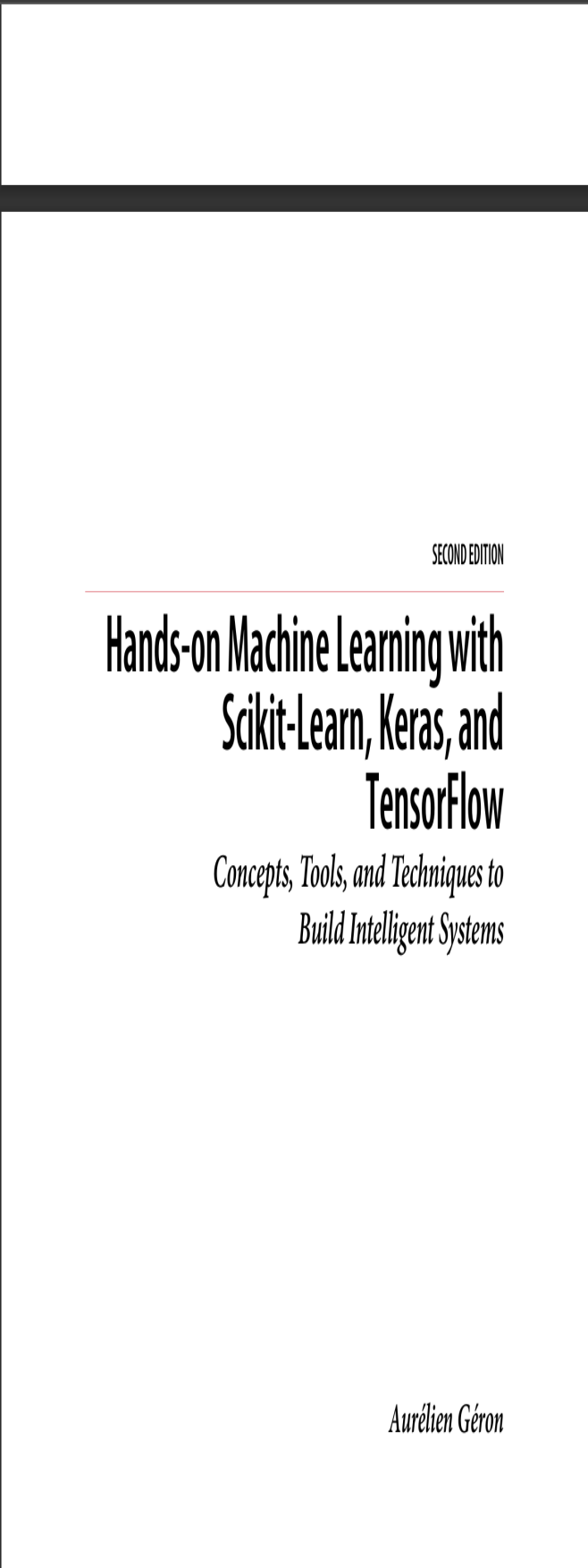


Enter number of pages:

5

Start Screenshot

Screenshot 1/5 taken...



Enter number of pages:

5

Start Screenshot

Screenshot 2/5 taken...

978-1-492-03264-9

[LSI]

Table of Contents

Preface..... xi

Part I. The Fundamentals of Machine Learning

1. The Machine Learning Landscape.....	3
What Is Machine Learning?	4
Why Use Machine Learning?	4
Types of Machine Learning Systems	8
Supervised/Unsupervised Learning	8
Batch and Online Learning	15
Instance-Based Versus Model-Based Learning	18
Main Challenges of Machine Learning	24
Insufficient Quantity of Training Data	24
Nonrepresentative Training Data	26
Poor-Quality Data	27
Irrelevant Features	27

Enter number of pages:

5

Start Screenshot

Screenshot 3/5 taken...

3. Classification.....	87
MNIST	87
Training a Binary Classifier	90
Performance Measures	90
Measuring Accuracy Using Cross-Validation	91
Confusion Matrix	92
Precision and Recall	94
Precision/Recall Tradeoff	95
The ROC Curve	99
Multiclass Classification	102
Error Analysis	104

iv | Table of Contents

Multilabel Classification	108
Multioutput Classification	109
Exercises	110
4. Training Models.....	113
Linear Regression	114
The Normal Equation	116
Computational Complexity	119
Gradient Descent	119
Batch Gradient Descent	123
Stochastic Gradient Descent	126
Mini-batch Gradient Descent	129
Polynomial Regression	130
Learning Curves	132
Regularized Linear Models	136
Ridge Regression	137
Lasso Regression	139
Elastic Net	142
Early Stopping	142
Logistic Regression	144
Estimating Probabilities	144
Training and Cost Function	145
Decision Boundaries	146
Softmax Regression	149
Exercises	153

Enter number of pages:

5

Start Screenshot

Screenshot 4/5 taken...

Gradient Boosting	205
Stacking	210
Exercises	213
8. Dimensionality Reduction.....	215
The Curse of Dimensionality	216
Main Approaches for Dimensionality Reduction	218
Projection	218
Manifold Learning	220
PCA	222
Preserving the Variance	222
Principal Components	223
Projecting Down to d Dimensions	224
Using Scikit-Learn	224
Explained Variance Ratio	225
Choosing the Right Number of Dimensions	225
PCA for Compression	226

Randomized PCA	227
Incremental PCA	227
Kernel PCA	228
Selecting a Kernel and Tuning Hyperparameters	229
LLE	232
Other Dimensionality Reduction Techniques	234
Exercises	235
9. Unsupervised Learning Techniques.....	237
Clustering	238
K-Means	240
Limits of K-Means	250
Using clustering for image segmentation	251
Using Clustering for Preprocessing	252
Using Clustering for Semi-Supervised Learning	254
DBSCAN	256
Other Clustering Algorithms	259
Gaussian Mixtures	260
Anomaly Detection using Gaussian Mixtures	266