

1. Exercises, Quizzes, Flashcards & Glossary

Number of Questions

2. Expert Instructor-Led Training

3. ADA Compliant & JAWS Compatible Platform

4. State of the Art Educator Tools

5. Award Winning Learning Platform (LMS)

6. Chapter & Lessons

Syllabus

Chapter 1: Preface

Chapter 2: Introduction

Chapter 3: Image formation

Chapter 4: Image processing

Chapter 5: Model fitting and optimization

Chapter 6: Deep Learning

Chapter 7: Recognition

Chapter 8: Feature detection and matching

Chapter 9: Image alignment and stitching

Chapter 10: Motion estimation

Chapter 11: Computational photography

Chapter 12: Structure from motion and SLAM

Chapter 13: Depth estimation

Chapter 14: 3D reconstruction

Chapter 15: Image-based rendering

Chapter 16: Appendix A: Linear algebra and numerical techniques

Chapter 17: Appendix B: Bayesian modeling and inference

Chapter 18: Appendix C: Supplementary material

Videos and How To

7. Performance Based labs

Lab Tasks

Here's what you get

1. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

111
EXERCISES

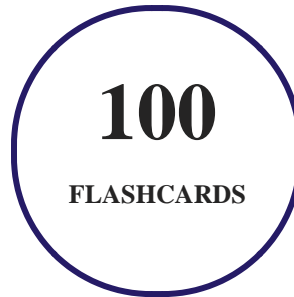
2. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.

180
QUIZ

3. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



4. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



5. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

6. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

7. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

8. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
 1. Best Postsecondary Learning Solution
- **2015**
 1. Best Education Solution

2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

9. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Preface

- Notes on the Second Edition

Chapter 2: Introduction

- What is computer vision?
- A brief history
- Course overview
- Sample syllabus
- A note on notation

- Additional reading

Chapter 3: Image formation

- Geometric primitives and transformations
- Photometric image formation
- The digital camera
- Additional reading
- Exercises

Chapter 4: Image processing

- Point operators
- Linear filtering
- More neighborhood operators
- Fourier transforms
- Pyramids and wavelets
- Geometric transformations
- Additional reading
- Exercises

Chapter 5: Model fitting and optimization

- Scattered data interpolation
- Variational methods and regularization
- Markov random fields
- Additional reading
- Exercises

Chapter 6: Deep Learning

- Supervised learning
- Unsupervised learning
- Deep neural networks
- Convolutional neural networks
- More complex models
- Additional reading
- Exercises

Chapter 7: Recognition

- Instance recognition

- Image classification
- Object detection
- Semantic segmentation
- Video understanding
- Vision and language
- Additional reading
- Exercises

Chapter 8: Feature detection and matching

- Points and patches
- Edges and contours
- Contour tracking
- Lines and vanishing points
- Segmentation
- Additional reading
- Exercises

Chapter 9: Image alignment and stitching

- Pairwise alignment

- Image stitching
- Global alignment
- Compositing
- Additional reading
- Exercises

Chapter 10: Motion estimation

- Translational alignment
- Parametric motion
- Optical flow
- Layered motion
- Additional reading
- Exercises

Chapter 11: Computational photography

- Photometric calibration
- High dynamic range imaging
- Super-resolution, denoising, and blur removal

- Image matting and compositing
- Texture analysis and synthesis
- Additional reading
- Exercises

Chapter 12: Structure from motion and SLAM

- Geometric intrinsic calibration
- Pose estimation
- Two-frame structure from motion
- Multi-frame structure from motion
- Simultaneous localization and mapping (SLAM)
- Additional reading
- Exercises

Chapter 13: Depth estimation

- Epipolar geometry
- Sparse correspondence
- Dense correspondence
- Local methods

- Global optimization
- Deep neural networks
- Multi-view stereo
- Monocular depth estimation
- Additional reading
- Exercises

Chapter 14: 3D reconstruction

- Shape from X
- 3D scanning
- Surface representations
- Point-based representations
- Volumetric representations
- Model-based reconstruction
- Recovering texture maps and albedos
- Additional reading
- Exercises

Chapter 15: Image-based rendering

- View interpolation
- Layered depth images
- Light fields and Lumigraphs
- Environment mattes
- Video-based rendering
- Neural rendering
- Additional reading
- Exercises

Chapter 16: Appendix A: Linear algebra and numerical techniques

- A1 Matrix decompositions
- A2 Linear least squares
- A3 Non-linear least squares
- A4 Direct sparse matrix techniques
- A5 Iterative techniques

Chapter 17: Appendix B: Bayesian modeling and inference

- B1 Estimation theory

- B2 Maximum likelihood estimation and least squares
- B3 Robust statistics
- B4 Prior models and Bayesian inference
- B5 Markov random fields
- B6 Uncertainty estimation (error analysis)

Chapter 18: Appendix C: Supplementary material

- C1 Datasets and benchmarks
- C2 Software
- C3 Slides and lectures

10. Performance Based Labs

uCertify's performance-based labs are simulators that provides virtual environment. Labs deliver hands on experience with minimal risk and thus replace expensive physical labs. uCertify Labs are cloud-based, device-enabled and can be easily integrated with an LMS. Features of uCertify labs:

- Provide hands-on experience in a safe, online environment
- Labs simulate real world, hardware, software & CLI environment
- Flexible and inexpensive alternative to physical Labs
- Comes with well-organized component library for every task
- Highly interactive - learn by doing
- Explanations and remediation available
- Videos on how to perform

Lab Tasks

- Understanding What is Computer Vision?
- Evaluating Camera-Based Perception for Autonomous Hospital Robots
- Understanding Image Processing
- Reconstructing Visual Data
- Exploring Machine Learning and Deep Learning for Computer Vision
- Recognition in Computer Vision
- Understanding Image Features
- Aligning Images Using Geometric Image Registration
- Estimating Motion in Video Using Classical and Learning-Based Techniques
- Enhancing Images Using Computational Photography Techniques
- Structure from Motion and SLAM
- Estimating Scene Depth Using Stereo Vision Techniques
- Reconstructing 3D Shape and Appearance
- Exploring Image-Based Rendering for Immersive Media

Here's what you get



You can't stay away! Get

