

# Bilgisayarda Görü

## Kullanılan İçerikler:

### Görüntü Atıfları

#### 1 - 1 - Sayısal Görüntü İşleme nedir

- 0:0 - 0:13 [https://www.youtube.com/watch?v=i3\\_n3lbf1c&t=0s](https://www.youtube.com/watch?v=i3_n3lbf1c&t=0s)
- 0:38 - 1:02 [https://www.youtube.com/watch?v=i3\\_n3lbf1c&t=0s](https://www.youtube.com/watch?v=i3_n3lbf1c&t=0s)

#### 1 - 2 - Sayısal Görüntü İşleme nerelerde kullanılır

- 0:01 - 0:16
  - [https://www.youtube.com/watch?v=u\\_R47LDdlZM](https://www.youtube.com/watch?v=u_R47LDdlZM)
  - <https://www.nobelprize.org/prizes/medicine/1979/summary/>
- 0:17 - 0:36 <https://www.nasa.gov/content/hubbles-mirror-flaw>
- 0:45 - 1:06 [https://www.youtube.com/watch?v=H72\\_4i2\\_bjE](https://www.youtube.com/watch?v=H72_4i2_bjE)
- 1:07 - 1:21
  - <https://iboostup.com/app/org.bravecloud.imageenhanceandrestore#>
  - <https://www.npr.org/sections/thetwo-way/2017/12/19/571954455/facebook-expands-use-of-facial-recognition-to-id-users-in-photos>
  - [https://www.freepik.com/free-vector/man-face-scan-biometric-digital-technology\\_5597121.htm#query=face%20recognition&position=6#position=6&query=face%20recognition](https://www.freepik.com/free-vector/man-face-scan-biometric-digital-technology_5597121.htm#query=face%20recognition&position=6#position=6&query=face%20recognition)
- 1:22 - 1:46 <https://www.youtube.com/watch?v=pNf4-d6fDoY>
- 1:47 - 2:05 <https://twitter.com/i/status/1109741811310837760>

#### 2 - Görüntü oluşumu

- 0:04 - 0:13 [https://www.youtube.com/watch?v=i3\\_n3lbf1c&t=0s](https://www.youtube.com/watch?v=i3_n3lbf1c&t=0s)

- 0:38 - 1:02 [https://www.youtube.com/watch?v=i3\\_n3lbf1c&t=0s](https://www.youtube.com/watch?v=i3_n3lbf1c&t=0s)
- 2:55 - 3:33 [Gonzalez& Woods, Digital Image Processing \(2002\)](#)
- 3:35 - 4:07 <http://www.artdreamguide.com/arti/van-gogh/opus/518.htm>
- 4:08 - 5:05 [Gonzalez& Woods, Digital Image Processing \(2002\)](#)
- 5:06 - 5:21
  - <https://www.pexels.com/tr-tr/fotograf/adam-ask-insanlar-gevseme-4982528/>
  - <https://giphy.com/gifs/math-thinking-APqEbxBSVlkWSuFpth>
- 5:22 - 5:59 [Gonzalez& Woods, Digital Image Processing \(2002\)](#)

### 3 - 1 - OpenCV Kütüphanesi

- 0:01 - 0:17
  - <https://logos-download.com/10695-java-logo-download.html>
  - [https://commons.wikimedia.org/wiki/File:Matlab\\_Logo.png](https://commons.wikimedia.org/wiki/File:Matlab_Logo.png)
  - [https://commons.wikimedia.org/wiki/File:ISO\\_C%2B%2B\\_Logo.svg#/media/File:ISO\\_C++\\_Logo.svg](https://commons.wikimedia.org/wiki/File:ISO_C%2B%2B_Logo.svg#/media/File:ISO_C++_Logo.svg)
  - <https://www.python.org/community/logos/>
- 0:18 - 0:38
  - <http://simplecv.org/>
  - <https://opencv.org/resources/media-kit/>
  - <https://python-pillow.org/#>
- 0:55 - 1:06
  - [https://commons.wikimedia.org/wiki/File:Google\\_2015\\_logo.svg#/media/File:Google\\_2015\\_logo.svg](https://commons.wikimedia.org/wiki/File:Google_2015_logo.svg#/media/File:Google_2015_logo.svg)
  - [https://commons.wikimedia.org/wiki/File:Yahoo!\\_\(2019\).svg#/media/File:Yahoo!\\_\(2019\).svg](https://commons.wikimedia.org/wiki/File:Yahoo!_(2019).svg#/media/File:Yahoo!_(2019).svg)
  - [https://commons.wikimedia.org/wiki/File:Microsoft\\_logo\\_\(2012\).svg#/media/File:Microsoft\\_logo\\_\(2012\).svg](https://commons.wikimedia.org/wiki/File:Microsoft_logo_(2012).svg#/media/File:Microsoft_logo_(2012).svg)
  - [https://commons.wikimedia.org/wiki/File:IBM\\_logo.svg#/media/File:IBM\\_Logo.svg](https://commons.wikimedia.org/wiki/File:IBM_logo.svg#/media/File:IBM_Logo.svg)
  - [https://commons.wikimedia.org/wiki/File:Sony\\_logo.svg#/media/File:Sony\\_logo.svg](https://commons.wikimedia.org/wiki/File:Sony_logo.svg#/media/File:Sony_logo.svg)
  - [https://commons.wikimedia.org/wiki/File:Toyota\\_carlogo.svg#/media/File:Toyota\\_carlogo.svg](https://commons.wikimedia.org/wiki/File:Toyota_carlogo.svg#/media/File:Toyota_carlogo.svg)
  - [https://en.wikipedia.org/wiki/File:Honda\\_logo.svg](https://en.wikipedia.org/wiki/File:Honda_logo.svg)
- 1:07 - 1:20 <https://medium.com/ai-techsystems/auto-image-captioning-8efcfa517402>

- 1:21 - 1:43
  - <https://catarinoconsulting.com.au/articles/2019/6/13/facial-detection-vs-facial-recognition>
  - <https://www.kdnuggets.com/2018/09/object-detection-image-classification-yolo.html>
- 1:44 - 1:58 <https://www.youtube.com/watch?v=lryYC6wgVpA>

## 5 - 1 - Renk uzayları

- 0:00 - 0:49 <https://youtu.be/LjCzPp-MK48>
- 0:50 - 0:59 <https://www.pexels.com/tr-tr/fotograf/vucut-boyama-ile-kisi-1209843/>
- 1:00 - 1:19 <https://youtu.be/--b1F6jUx44>
- 1:20 - 0:23
  - [https://commons.wikimedia.org/wiki/File:CMY\\_ideal\\_version.svg#/media/File:CMY\\_ideal\\_version.svg](https://commons.wikimedia.org/wiki/File:CMY_ideal_version.svg#/media/File:CMY_ideal_version.svg)
- 1:24 - 0:38 <https://www.animations.physics.unsw.edu.au/labs/colour-mixing/colour-mixing.html>
- 1:39 - 2:09 [https://youtu.be/l8\\_fZPHasdo](https://youtu.be/l8_fZPHasdo)
- 2:10 - 2:24
  - [https://people.eecs.berkeley.edu/~sequin/CS184/TOPICS/ColorSpaces/spectrum\\_a.jpg](https://people.eecs.berkeley.edu/~sequin/CS184/TOPICS/ColorSpaces/spectrum_a.jpg)
- 2:25 - 2:50
  - [https://commons.wikimedia.org/wiki/File:HSV\\_color\\_solid\\_cone\\_chroma\\_gamma.png](https://commons.wikimedia.org/wiki/File:HSV_color_solid_cone_chroma_gamma.png)
  - [https://commons.wikimedia.org/wiki/File:RGB\\_color\\_solid\\_cube.png](https://commons.wikimedia.org/wiki/File:RGB_color_solid_cube.png)
  - [https://commons.wikimedia.org/wiki/File:CMYK\\_color\\_swatches.svg#/media/File:CMYK\\_color\\_swatches.svg](https://commons.wikimedia.org/wiki/File:CMYK_color_swatches.svg#/media/File:CMYK_color_swatches.svg)
- 2:51 - 3:03 <https://ai.stanford.edu/~syueung/cvweb/tutorial1.html>
- 3:05 - 3:15 <http://obsessive-coffee-disorder.com/rgb-to-grayscale-using-cimg/>  
[https://en.wikipedia.org/wiki/File:Lenna\\_\(test\\_image\).png#/media/File:Lenna\\_\(test\\_image\).png](https://en.wikipedia.org/wiki/File:Lenna_(test_image).png#/media/File:Lenna_(test_image).png)
- 3:16 - 3:40 <https://g.co/kgs/Z4iipi>
- 3:41 - 3:49
  - [https://commons.wikimedia.org/wiki/File:CMY\\_ideal\\_version.svg#/media/File:CMY\\_ideal\\_version.svg](https://commons.wikimedia.org/wiki/File:CMY_ideal_version.svg#/media/File:CMY_ideal_version.svg)
- 3:50 - 4:02 <https://youtu.be/9hirYMZ7PQc>
- 4:03 - 4:17 <https://specsyste.ms.co.za/why-do-printers-use-cmyk/>
- 4:45 - 4:50 <https://smbw.com.au/2017/04/24/automotive-paint-matching-why-is-it-so-difficult/>
- 4:51 - 4:56 <https://laptrinhx.com/hsv-color-space-2772855043/>

- 5:07 - 5:14 <https://www.pexels.com/tr-tr/fotograf/aktif-volkanin-gri-tonlamali-fotografi-689451/>
- 5:15 - 5:30 <https://codeburst.io/50-shades-of-dark-mode-gray-d3e9907b1194>
- 5:31 - 5:53 <https://g.co/kgs/Z4iipi>
- 5:54 - 6:10  
[https://commons.wikimedia.org/wiki/File:Animation\\_of\\_the\\_NCS\\_Colour\\_System.gif#/media/File:Animation\\_of\\_the\\_NCS\\_Colour\\_System.gif](https://commons.wikimedia.org/wiki/File:Animation_of_the_NCS_Colour_System.gif#/media/File:Animation_of_the_NCS_Colour_System.gif)

## 6 - Morfolojik İşlemler

- 0:01 - 0:13 [https://www.freepik.com/free-vector/big-data-analysis-isometric-landing-page-banner\\_9828066.htm#page=1&query=data%20processing&position=0](https://www.freepik.com/free-vector/big-data-analysis-isometric-landing-page-banner_9828066.htm#page=1&query=data%20processing&position=0)
- 0:14 - 0:30 <https://learn.alwaysai.co/object-detection>
- 0:31 - 0:44 <https://morfoloji.nedir.org/>  
<https://medium.com/@devanshvarshney/object-detection-and-tracking-using-opencv-4f68aa41dd3a>
- 0:45 - 1:06
  - <https://medium.com/hackernoon/an-introduction-to-morphological-operations-for-digital-image-text-classification-79cb14bab2d7>
  - <https://homepages.inf.ed.ac.uk/rbf/HIPR2/morops.htm>

## 7 - Görüntü Yumuşatma

- 0:08 - 0:22  
[https://saksagan.ceng.metu.edu.tr/courses/ceng466/lecture\\_notes/L1.html](https://saksagan.ceng.metu.edu.tr/courses/ceng466/lecture_notes/L1.html)
- 0:28 - 0:44 Gonzalez, R. C. [Digital Image Processing](#)
- 0:46 - 0:58
  - <https://pharmaphorum.com/wp-content/uploads/2017/03/Google-AI-breast-cancer.png>
  - <https://www.micronetsolutions.in/wp-content/uploads/2017/09/Satellite-Image-Processing.jpg>

## 8 - Gürültü Giderme

- 0:04 - 0:14 <https://hearingconservation.org.uk/wp-content/uploads/2019/08/Noise-levels.png>

- 0:15 - 0:30 [https://en.wikipedia.org/wiki/File:Lenna\\_\(test\\_image\).png#/media/File:Lenna\\_\(test\\_image\).png](https://en.wikipedia.org/wiki/File:Lenna_(test_image).png#/media/File:Lenna_(test_image).png)
- 0:31 - 0:49 [https://img1.10bestmedia.com/Images/Photos/211501/p-831-picture3-image\\_55\\_660x440\\_201404232011.jpeg](https://img1.10bestmedia.com/Images/Photos/211501/p-831-picture3-image_55_660x440_201404232011.jpeg)

## 11 - Görüntünün kenarlarını bulma

- 0:12 - 0:58 <https://www.pexels.com/tr-tr/fotograf/bir-grup-insan-gri-dizustu-bilgisayar-izliyor-1595387/>

## İçerik Atıfları

### 1 - 1 - Sayısal Görüntü İşleme nedir

- Gonzalez, R. C. [Digital Image Processing](#)

### 1 - 2 - Sayısal Görüntü İşleme nerelerde kullanılır

- Gonzalez, R. C. [Digital Image Processing](#)

## 2 - Görüntü oluşumu

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://opencv-python-tutroals.readthedocs.io/en/latest/py\\_tutorials/py\\_tutorials.html](https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html)

### 3 - 1 - OpenCV Kütüphanesi

- [https://opencv-python-tutroals.readthedocs.io/en/latest/py\\_tutorials/py\\_tutorials.html](https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html)
- <https://opencv.org/>

### 5 - 1 - Renk uzayları

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://en.wikipedia.org/wiki/Color\\_space](https://en.wikipedia.org/wiki/Color_space)
- <https://medium.com/@hafizegungor/opencv-g%C3%B6r%C3%BCnt%C3%BC-ve-renk-uzay%C4%B1-1a76562ff715>
- [https://www.ted.com/talks/colm\\_kelleher\\_how\\_we\\_see\\_color/transcript?language=tr#t-1101](https://www.ted.com/talks/colm_kelleher_how_we_see_color/transcript?language=tr#t-1101)
- [https://www.ted.com/talks/colm\\_kelleher\\_what\\_is\\_color#t-178794](https://www.ted.com/talks/colm_kelleher_what_is_color#t-178794)

## 6 -Morfolojik İşlemler

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://docs.opencv.org/master/d9/d61/tutorial\\_py\\_morphological\\_ops.html](https://docs.opencv.org/master/d9/d61/tutorial_py_morphological_ops.html)
- <https://homepages.inf.ed.ac.uk/rbf/HIPR2/morops.htm>

## 7 - Görüntü Yumuşatma

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://opencv-python-tutroals.readthedocs.io/en/latest/py\\_tutorials/py\\_tutorials.html](https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html)

## 8 - Gürültü giderme

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://opencv-python-tutroals.readthedocs.io/en/latest/py\\_tutorials/py\\_tutorials.html](https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_tutorials.html)

## 9 - Görüntüde karşıtlık ve parlaklık ayarı

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://docs.opencv.org/3.4/d3/dc1/tutorial\\_basic\\_linear\\_transform.html](https://docs.opencv.org/3.4/d3/dc1/tutorial_basic_linear_transform.html)
- [https://docs.opencv.org/3.4/d5/daf/tutorial\\_py\\_histogram\\_equalization.html](https://docs.opencv.org/3.4/d5/daf/tutorial_py_histogram_equalization.html)
- [https://en.wikipedia.org/wiki/Contrast\\_\(vision\)](https://en.wikipedia.org/wiki/Contrast_(vision))
- <https://en.wikipedia.org/wiki/Brightness>

## 10 - Eşikleme yöntemi

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://docs.opencv.org/master/d7/d4d/tutorial\\_py\\_thresholding.html](https://docs.opencv.org/master/d7/d4d/tutorial_py_thresholding.html)
- <https://pythonprogramming.net/thresholding-image-analysis-python-opencv-tutorial/>

## 11 - Görüntünün kenarlarını bulma

- Gonzalez, R. C. [Digital Image Processing](#)
- [https://docs.opencv.org/master/da/d22/tutorial\\_py\\_canny.html](https://docs.opencv.org/master/da/d22/tutorial_py_canny.html)

## 12 - Görüntüdeki yüzlerin tespiti

- [https://docs.opencv.org/3.4/db/d28/tutorial\\_cascade\\_classifier.html](https://docs.opencv.org/3.4/db/d28/tutorial_cascade_classifier.html)

### 13 - Görüntüdeki nesneleri tanıma

- <https://pixellib.readthedocs.io/en/latest/>
- <https://github.com/ayoolaolafenwa/PixelLib/blob/master/docs/index.rst>