Statistical Applications in Computer Vision

UCF Center for Research in Computer Vision

MOTIVATION AND EDUCATIONAL GOALS

- obesity health factors
- AP Statistics students with a real world application for g and testing data
- nd importance of statistics when testing a hypothesis
- e similarities between the Gaussian Distribution and istribution Density Curve

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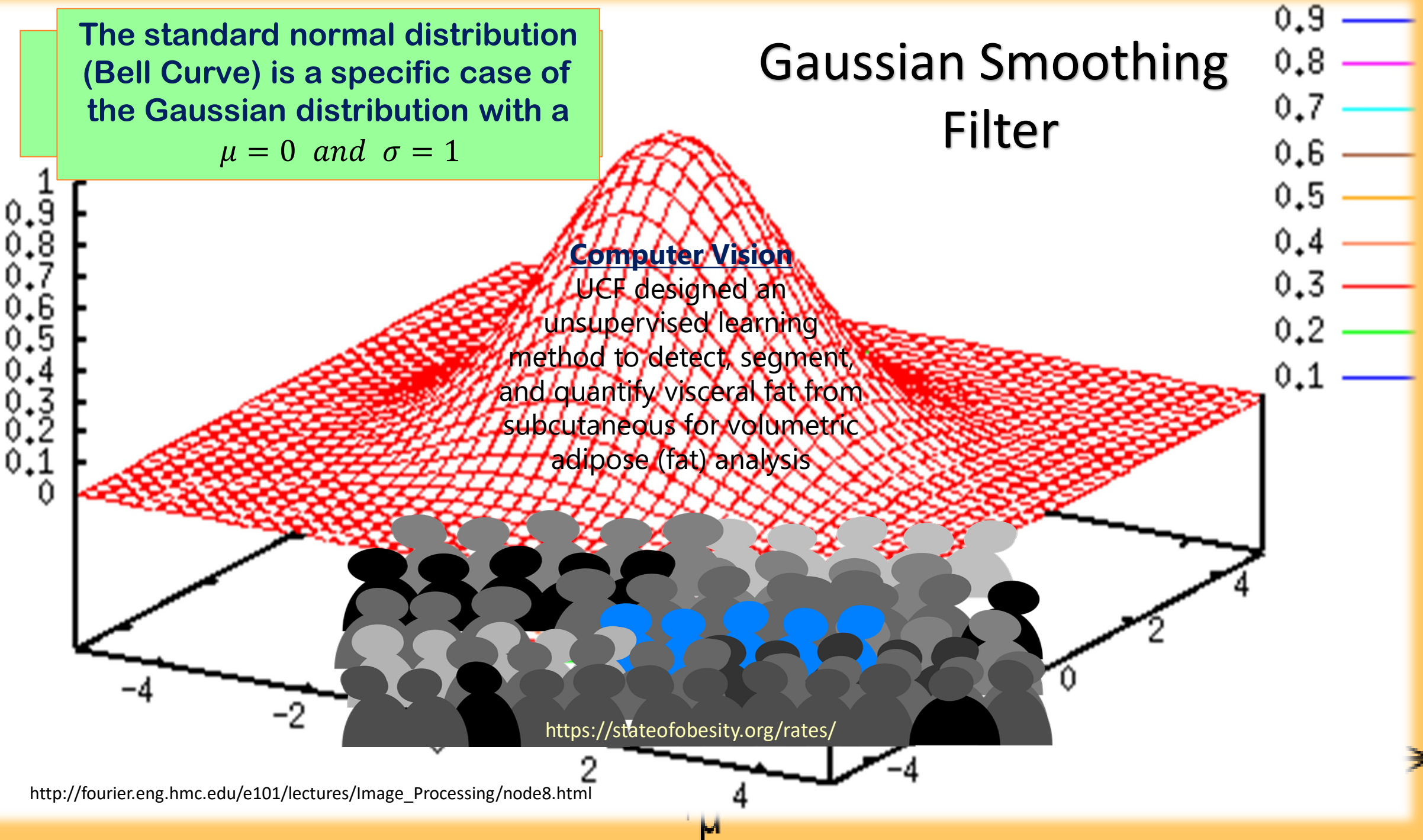
AP Statistics

RET 2018

Gaussian Smoothing Filter

The standard normal distribution (Bell Curve) is a specific case of the Gaussian distribution with a

$$\mu = 0 \;\; and \;\; \sigma = 1$$



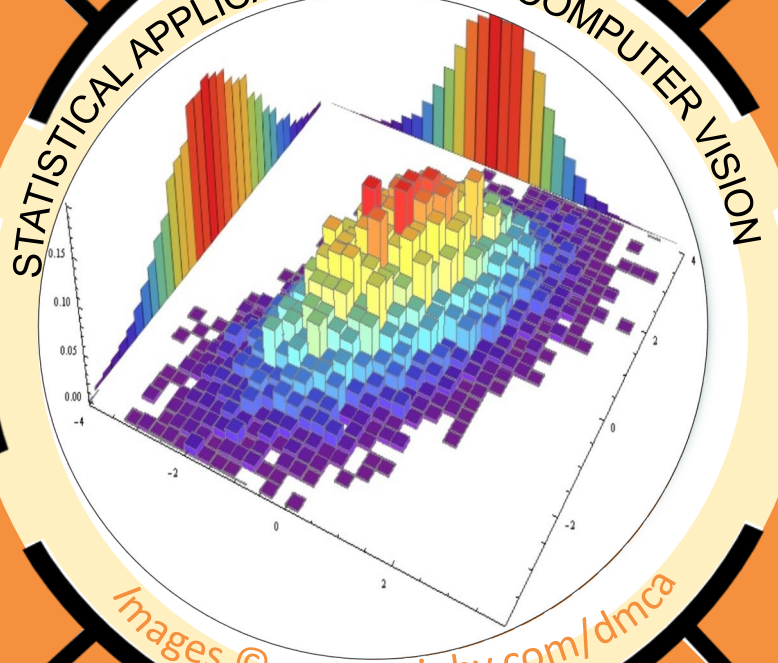
Computer Vision

UCF designed an unsupervised learning method to detect, segment, and quantify visceral fat from subcutaneous for volumetric adipose (fat) analysis

https://stateofobesity.org/rates/

http://fourier.eng.hmc.edu/e101/lectures/Image_Processing/node8.html

STATISTICAL APPLICATION UISING COMPUTER VISION



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STAGE 1 MISSION



Objective

Introduce computer vison applications in radiology and overview of lesson

ANTICIPATORY SET

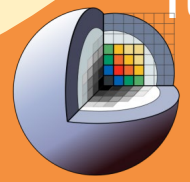
Types of Fat



Objective

To familiarize students with social, emotional, and physical effects of obesity.

STAGE 2 3D SLICER TUTORIAL



Objective

Students will learn how to navigate through the basic of the 3D Slicer Program

STAGE 3 GATHERING DATA



Objective

3D Slicer modeling for segmenting volume of visceral and subcutaneous fat

STAGE 4 FIELD REPORT & STATISTICAL ANAYLSIS



Objective

Identify the null/ alternative hypothesis, state assumptions/conditions, and conclusion decision based on p-value

STAGE 5 EXPLORATION



Objective

Explore Neural Networking, Back Propagation, Edge Detection, and Python Coding


Thank You