

Computer Vision and Digital Image Processing

Dr. Mohamed Mostafa

College of Informatics
AI 612

Lecture 0

Course Introduction & Plan





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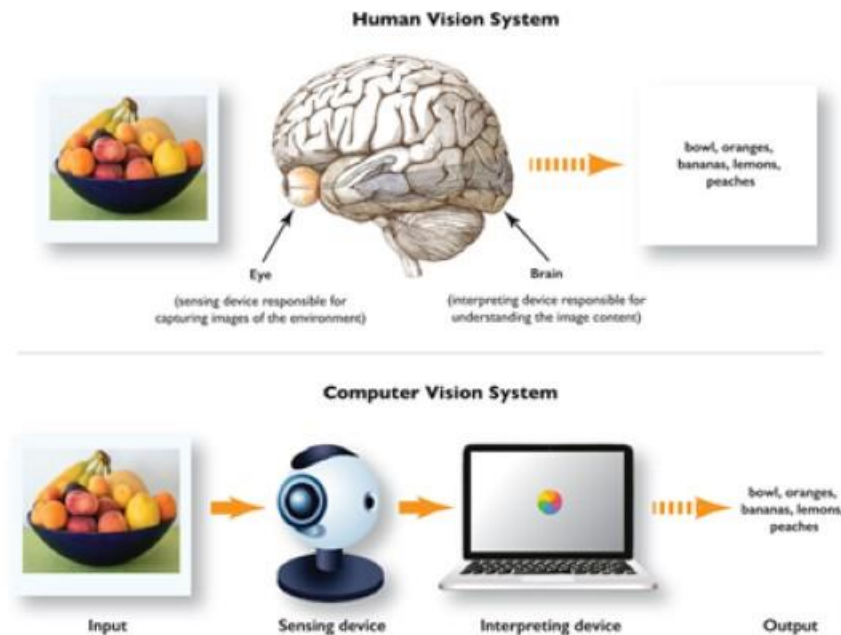
About the Instructor

Short Bio:

Dr. Mohamed Mostafa received his M.Sc. and PhD in Computer Science from Helwan University in the Arab Republic of Egypt's Faculty of Computers and Information. He also did a post-doctoral scientific mission in the Europe Union in an IT4Innovation Project. He is currently employed as an Associate Professor. Palo Alto International has qualified Dr. Mohamed as a Cyber Security Trainer. He is also a certified artificial intelligence trainer from the French College of Engineering and Applications, as part of the Egyptian Ministry of Communications' drive to localize artificial intelligence technology. His research interests include; AI algorithms optimization, AI applications in different domains, WBNs, and Wireless Sensor Networks security.

Definition of Computer Vision:

Computer vision is a field of **artificial intelligence (AI)** enabling computers to derive information from images, videos and other inputs. (IBM)



Source: [Manning](#)

Definition of Digital Image Processing:

The manipulation of digital images using algorithms to improve their quality or extract information.



(a)



Main Application Domains for Digital Image Processing:

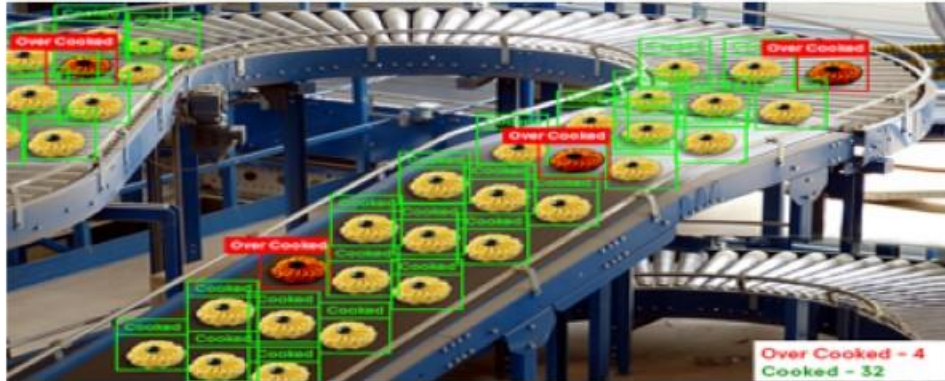


Medical Imaging

Computer Vision



Main Application Domains for Digital Image Processing:



Industrial Inspection

Biometrics

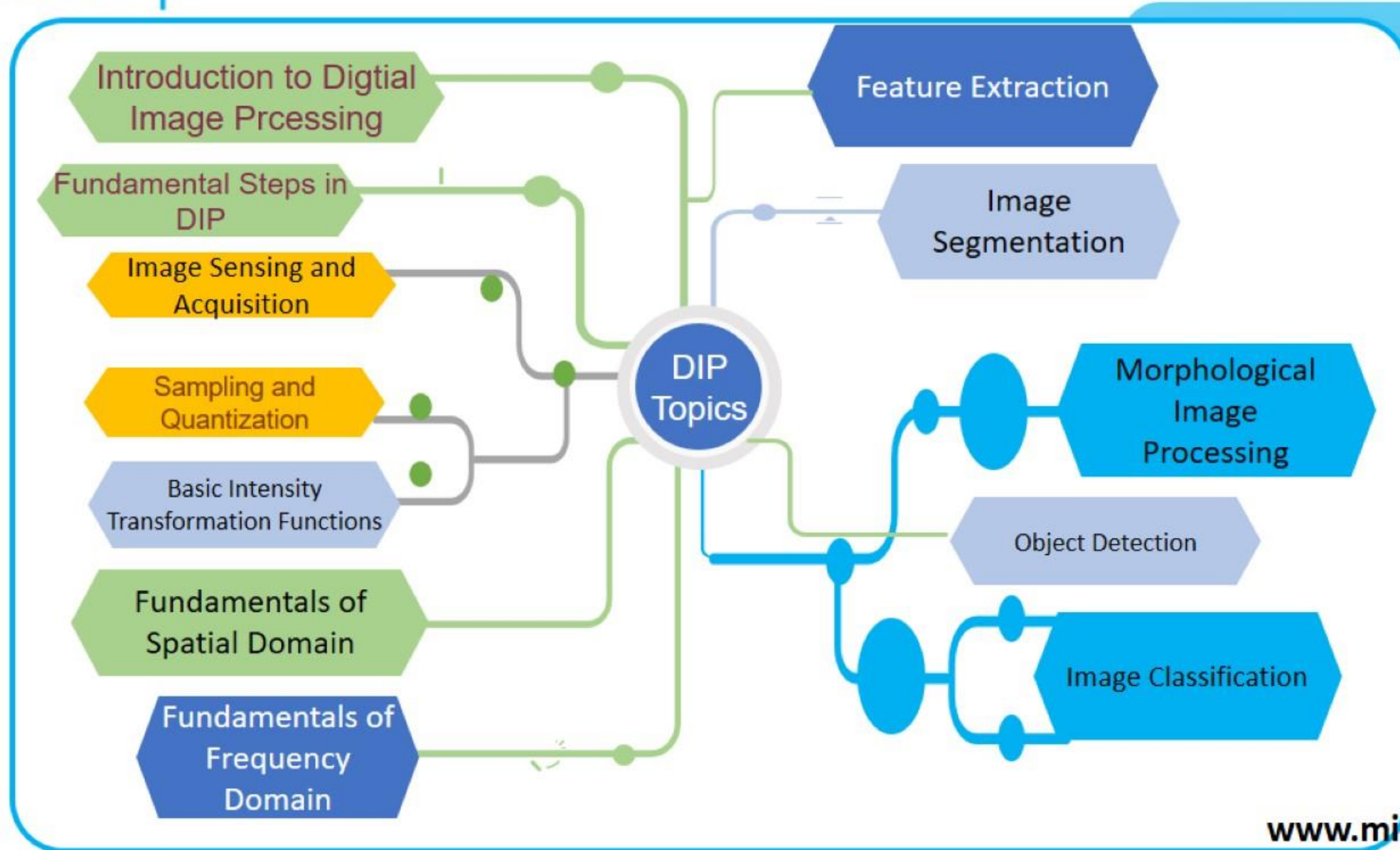


Main Application Domains for Digital Image Processing:

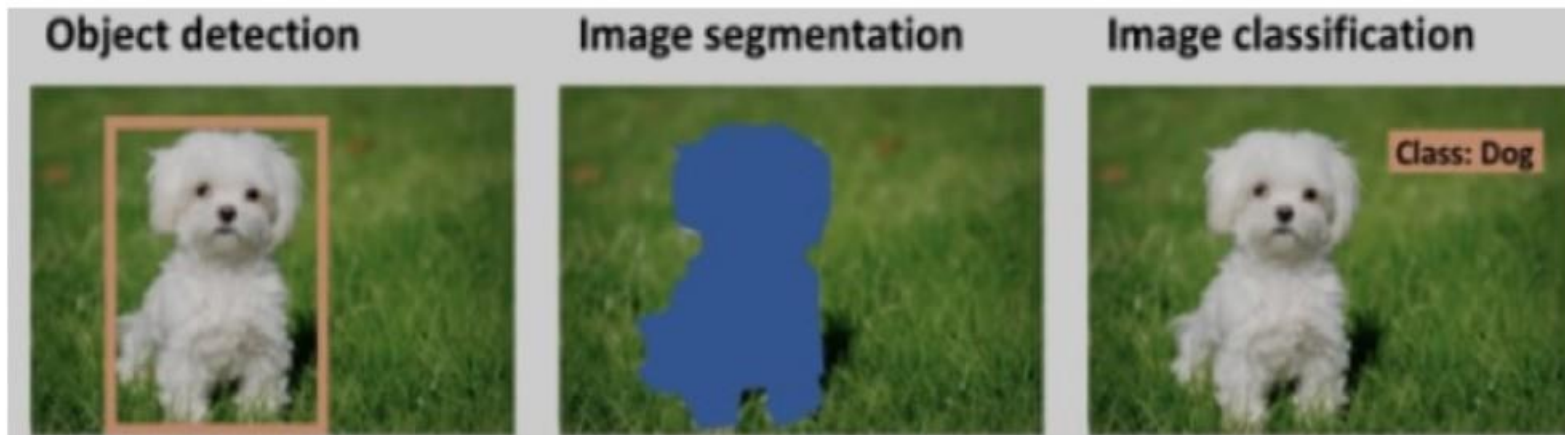


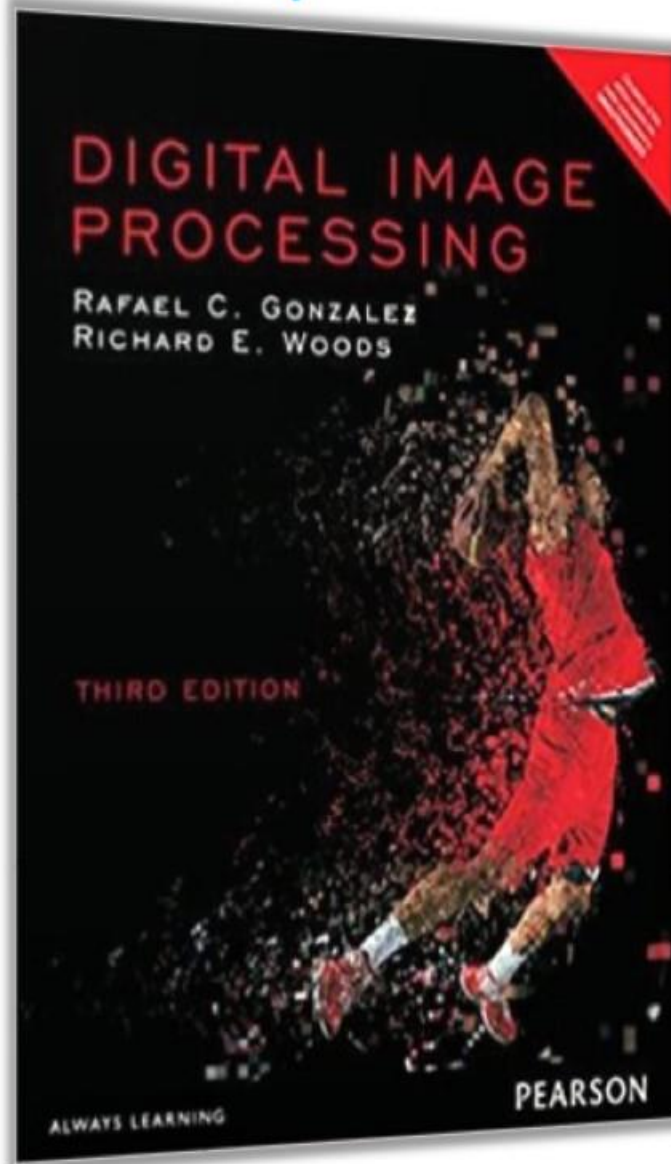
Augmented Reality

Source: [Basemark](#)



Some of the main techniques used in Digital Image Processing:





Reading List

- ❑ Gonzalez, Rafael C. Digital image processing. Pearson education India, 2009.
- ❑ D. A. Forsyth and J. Ponce. Computer Vision: A Modern Approach Prentice Hall
- ❑ R. Hartley and A. Zisserman. Multiple View Geometry in Computer Vision. Cambridge University Press.
- ❑ Manas Kamal Bhuyan, Computer Vision and Image Processing: Fundamentals and Applications, CRC Press

Grading

80% Short Exams

20% Final Exam





Thank You