Computational perception using multimodal sensors

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Cursus

Génie électrique

Sem. Obl.

Language English

Credits 4

Session Multiple

Exam

Workload 120h

Hours 56

Lecture 32

Practical work 24

Number of positions 20

Frequency

Every 2 years

Remarque

Every 2 years. Postponed to next spring 2020.

Summary

The course will cover perceptual modalities in computers, models for analyzing people (representation, detection and localization, segmentation, tracking, recognition).

Content


Keywords

Artificial perception, human representation, multi-modalities, audio, video, probabilistic model, graphical models.

Learning Prerequisites

Recommended courses
Undergraduate-level knowledge of linear algebra, statistics, image and signal processing.

Assessment methods
• written exam
• homeworks (includes practical work)
• paper presentation

Resources

Bibliography

• C. Bishop, Pattern Recognition and Machine Learning, Springer, 2008
• M. Brandstein and D. Ward (eds.), Microphone Arrays, Springer, 2001
• D. Forsyth and J. Ponce, Computer Vision: a Modern Approach, Prentice Hall, 2002
• B. Gold and N. Morgan, Speech and Audio Processing, Wiley, 1999
• M. I. Jordan (ed.), Learning in Graphical Models, MIT Press, 1999

The library recommends:

• "Microphone arrays : signal processing techniques and applications / Michael Brandstein ... [et al.](eds.)." Year:2001. ISBN:978-3-540-41953-2
• "Speech and audio signal processing / Ben Gold, Nelson Morgan, Dan Ellis ; with contrib. by Hervé Bourlard ... [et al.]." Year:2011. ISBN:978-0-470-19536-9

Ressources en bibliothèque

• Pattern Recognition and Machine Learning / Bishop
• Microphone Arrays / Brandstein
• Speech and Audio Processing / Gold
• Learning in Graphical Models / Jordan
• Computer Vision: a Modern Approach / Forsyth