

International Conference on Climbing and Walking Robots
Madrid, Spain, September 22-24, 2004

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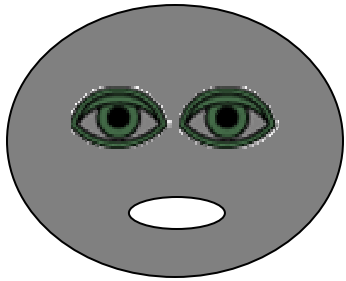
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Robot Vision: A Holistic View

Ming Xie

Nanyang Technological University, Singapore

Locomotion → Perception/Cognition → Autonomy



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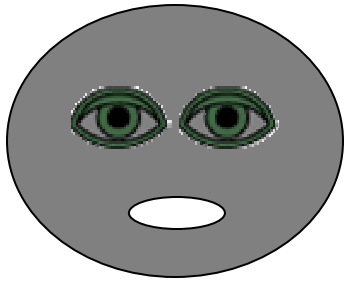
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- In this talk, I intend to give a new look at robot vision.
- Here, I advocate a new way to re-organize various concepts, principles and algorithms of robot vision into five related, but distinct, topics.
- For each topics in this talk, I place the emphasis on two things:
 - a) the fundamentals of achievements, and
 - b) the nature of remaining problems or challenges.



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Now, I will start with a brief introduction, followed by the presentation about:

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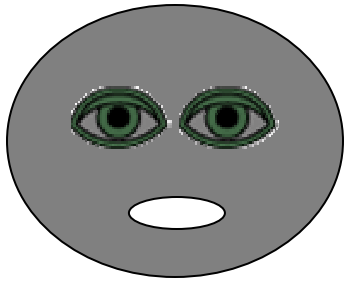
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In conclusion, I would like to say:

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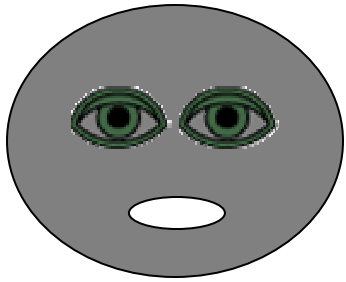
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- Vision research has extensively explored the “bottom-up” paradigm (Marr’s theory), which did not generate much success.
- To a great extent, vision research has also explored the “top-down” paradigm (Brooks’s and Ullman’s theories), which did not generate much success.
- Now, it’s time to adopt the new paradigm called “developmental approach”, which advocates the “bottom-up” process for visual learning, and the “top-down” process for visual understanding.
- In particular, cognitive vision is the must for a robot to be intelligent and autonomous in undertaking manipulation, locomotion, learning, and social interactions.



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Thank You!