



Department of Engineering for Innovation
University of Salento
Lecce, Italy



Virtual and Augmented Reality Applications

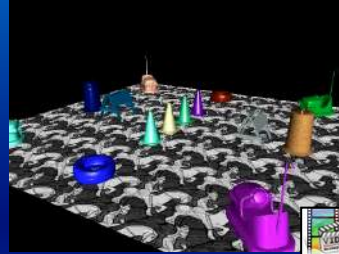
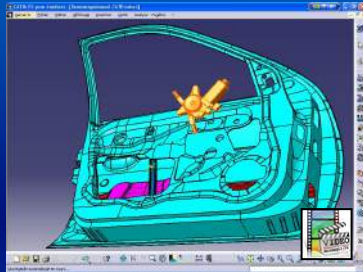
Lucio Tommaso De Paolis

Augmented and Virtual Reality Laboratory (AVR Lab)

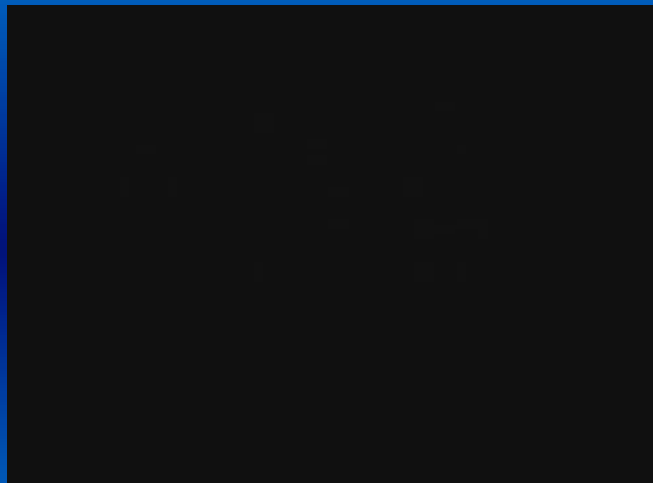


Collision Detection

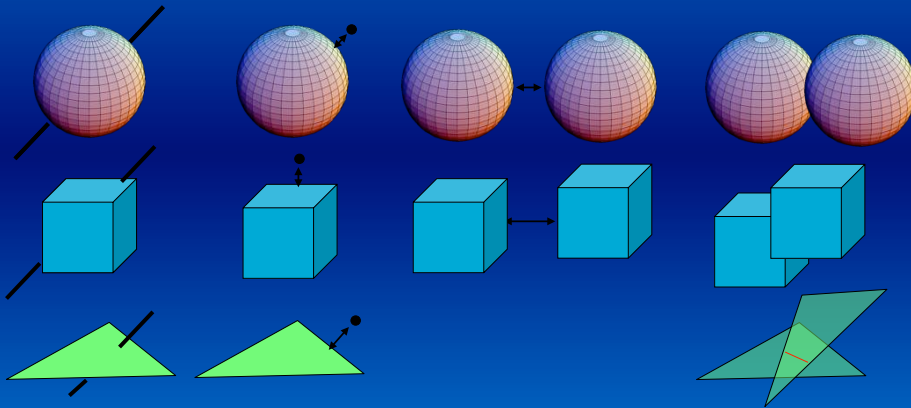
Examples of Collision Detection



Examples of Collision Detection



Tests



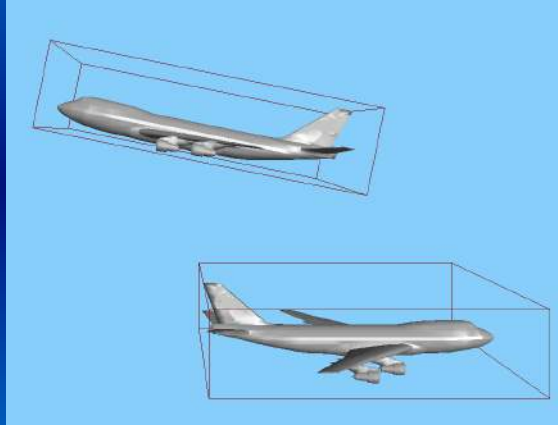
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Bounding Volume Hierarchies



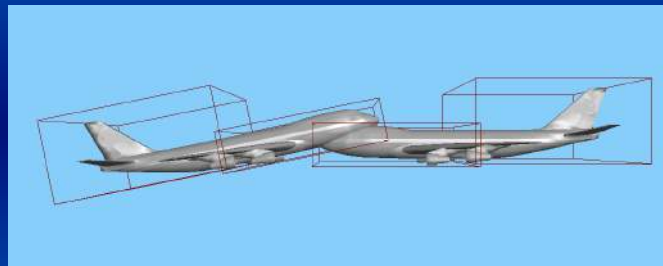
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Bounding Volume Hierarchies



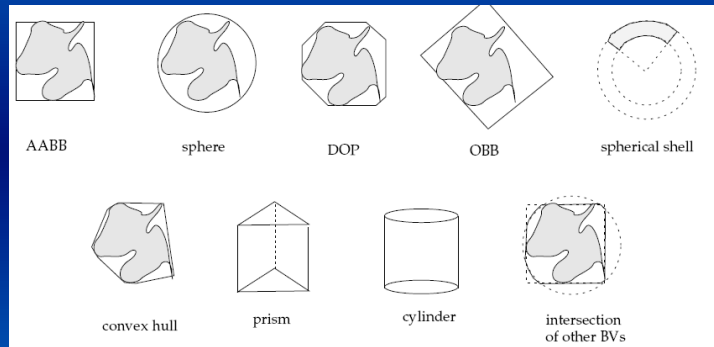
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Bounding Volume Hierarchies



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Bounding Volumes



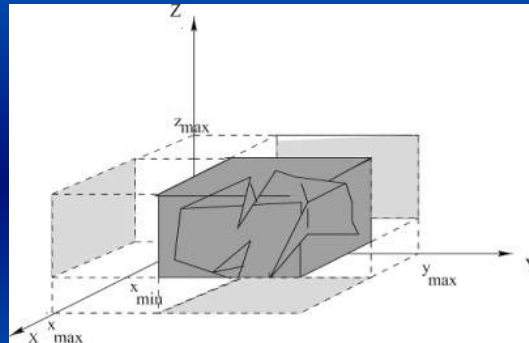
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Bounding Volume Hierarchies



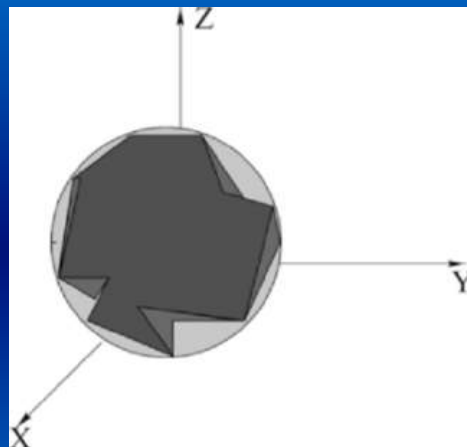
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Axis Aligned Bounding Boxes



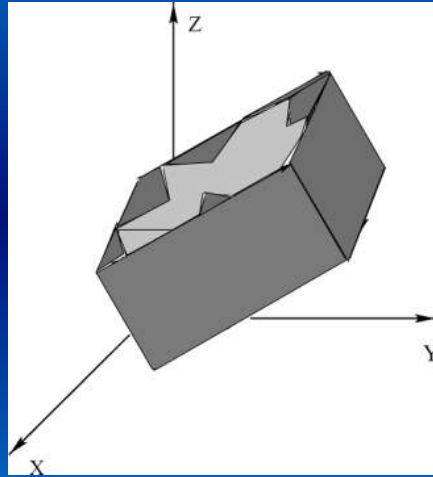
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Bounding Spheres



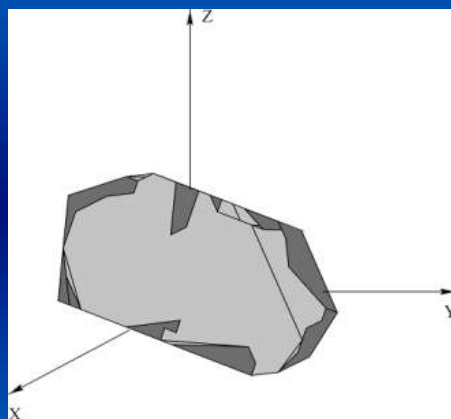
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Oriented Bounding Boxes



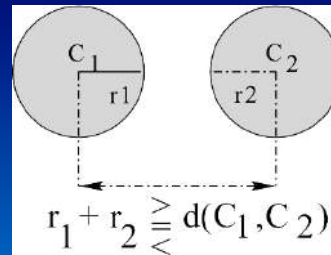
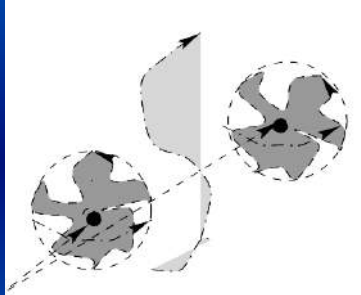
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Discrete Orientation Polytopes



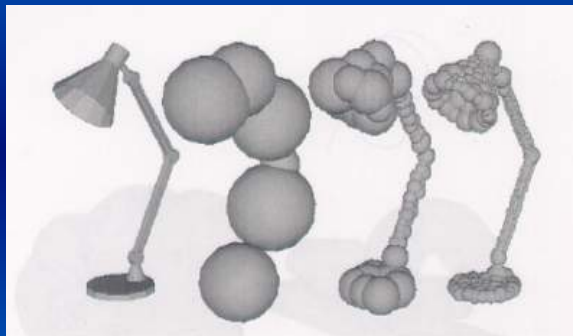
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Bounding Spheres



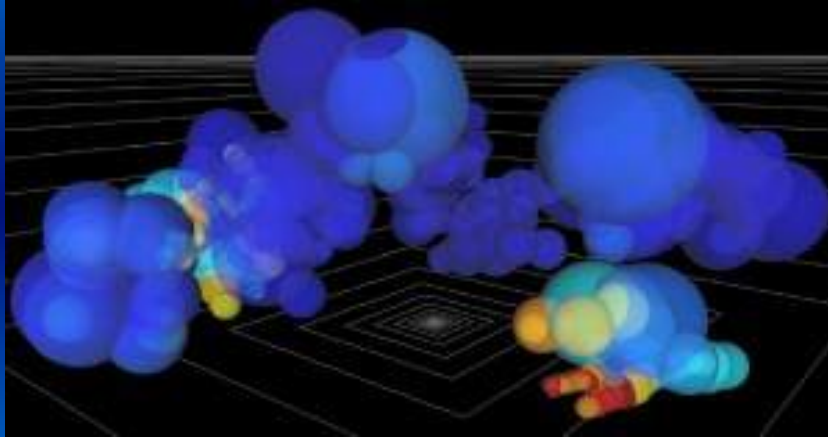
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Bounding Spheres Hierarchies



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Bounding Spheres Hierarchies



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Algorithms of Collision Detection

RAPID (1997)

Polygon soup, OBBTree, oggetti deformabili
www.cs.unc.edu/geom/OBB/OBBT.html

OPCODE OPTimized COLLision Detection

Versione moderna e alleggerita di RAPID (usato da ODE)
<http://www.codercorner.com/Opcode.htm>

QHULL

Sistema per la decomposizione di poliedri in poliedri convessi
www.comlab.ox.ac.uk/oucl/users/stephen.cameron/distance.html

I-Collide

Collision detection tra poliedri convessi
http://www.cs.unc.edu/~geom/I_COLLIDE/index.html

V-Collide (1998)

Sfrutta RAPID, su qualunque modello poligonale
http://www.cs.unc.edu/~geom/V_COLLIDE/

SOLID (Jan 2004)

Libreria generica per la collision, varie rappresentazioni e deformabile
<http://www.win.tue.nl/~ajno/solid/>

Sphere Tree Construction Kit

Un tool per costruire gerarchie di sfere
<http://isg.cs.tcd.ie/spheretree/>

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