



Eurographics 2013

May 6-10, Girona (Spain)



Symmetry in Shapes – Theory and Practice

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Presenters



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Course Webpage

Course Webpage

- Tutorial slides
- Literature & references

Linked from:

- <http://www.mpi-inf.mpg.de/~mwand/>

EG 2012 STAR Report

State-of-the-Art Report from EG 2012

- Symmetry in 3D Geometry: Extraction and Applications
Niloy J. Mitra, Mark Pauly, Michael Wand, Duygu Ceylan
State-of-the-art Report EUROGRAPHICS 2012
- STAR Report webpage:
http://vecg.cs.ucl.ac.uk/Projects/SmartGeometry/symmetry_survey/symmetrySurvey_12.html
- Journal version:
<http://onlinelibrary.wiley.com/doi/10.1111/cgf.12010/abstract>

Provides many more details

What we cover

Topics

- **Part I:** What is symmetry?
- **Part II:** Extrinsic symmetry detection
- **Part III:** Intrinsic symmetries
- **Part IV:** Representations & applications
- Conclusions, wrap-up

Part I

What is Symmetry?

- Symmetry in nature
- Formalization:
Symmetry groups
- Symmetry is the
absence of information



Dyugu / Mark

Part II

Extrinsic Symmetry Detection

- Geometric matching
- Types of symmetry
- Stages:
 - Feature selection
 - Aggregation
 - Extraction
- Example algorithms



Niloy

Part III

Intrinsic Symmetry Detection

- Overview: intrinsic geometry
- Intrinsic symmetries, specific problems
- Overview of algorithms
- Spectral view



Maks

Part IV

Representations and Applications

- From pairwise matching to regularity
- Representations of symmetry
 - Pairwise equivalence
 - Permutation groups
 - Transformation groups
- Applications based on this classification



Michael