PROGRAM

INdAM WORKSHOP

"Mathematical Methods for Objects Reconstruction: from 3D Vision to 3D Printing"

February 10-12, 2021, ONLINE

The invited talks last 40 min + 5 min discussion. The timing reported is in Italian time (GMT+1).

WEDNESDAY, February 10, 2021

09:15 – 09:30   Introduction

<u>Chair: M. Falcone</u>

09:30 – 10:15   **Jakob Andreas Bærentzen** (Applied Mathematics and Computer Science Technical University of Denmark)

Reconstruction from 3D Point Clouds: Subtle Deformations and Tiny Features

10:20 – 11:05   **Alexander Bronstein** (Dept. of Computer Science, Technion)

Geometric approach to matrix completion

11:05 – 11:30   Virtual Coffee Break

<u>Chair: S. Tozza</u>

11:30 – 12:15   **Ron Kimmel** (CS Dept Technion)

Learning Geometry

12:20 – 13:05   **William A. P. Smith** (Dept. of Computer Science, University of York)

Self-supervised inverse rendering

13:05 – 14:30   Real Lunch Break

<u>Chair: E. Cristiani</u>

14:30 – 15:15   **Elisabetta Rocca** (Mathematical Department, University of Pavia)

A phase-field-based graded-material topology optimization with stress constraint

15:20 – 16:05   **Lorenzo Tamellini** (IMATI CNR)

Parametric shape optimization for combined additive-subtractive manufacturing

16:05 – 16:30   Virtual Coffee Break

THURSDAY, February 11, 2021

09:30 – 10:15   **Charles Dapogny** (Laboratoire Jean Kuntzmann CNRS)

Shape optimization and additive manufacturing: some new constraints and challenges

10:20 – 11:05   **Nicola Ferro** (MOX - Department of Mathematics Politecnico di Milano)

Anisotropic mesh adaptation for 3D printing-oriented structural design

11:05 – 11:30   Virtual Coffee Break

11:30 – 12:15   **Matthijs Langelaar** (Precision and Microsystems Engineering, Delft University of Technology)

Different ways to impose 3D printing overhang restrictions in topology optimization

12:20 – 13:05   **Francesco Mezzadri** (Dipartimento di Ingegneria "Enzo Ferrari" Università di Modena e Reggio Emilia)

Density derivative-based approaches for overhang control in topology optimization for 3D printing

13:05 – 14:30   Real Lunch Break

14:30 – 15:15   **Adrien Bartoli** (Institut Pascal Université Clermont Auvergne)

Seeing in 3D from a single image with geometric priors

15:20 – 16:20   **Contributed talks** (25 min + 5 discussion):

Giuseppe Rodriguez (Department of Mathematics and Computer Science University of Cagliari)
On the solution of the photometric stereo problem with unknown lighting

Francesco Colibazzi (Department of Mathematics University of Bologna)
Thermal-Net: Convolutional neural network for 3D printing.

16:20 – 16:45   Virtual Coffee Break

FRIDAY, February 12, 2021

<u>Chair: G. Allaire</u>

09:30 – 10:15   **Ferdinando Auricchio** (Dip. Ingegneria Civile e Architettura, Univ. di Pavia)

Additive Manufacturing: from object reconstruction to component production. A world full of geometrical and modeling challenges!!

10:20 – 11:05   **Michael Breuss** (Institute for Mathematics BTU Cottbus-Senftenberg)

Mathematics for Printing Metallic Structures

11:05 – 11:30   Virtual Coffee Break

<u>Chair: F. Lauze</u>

11:30 – 12:15   **Emanuele Rodolà** (Sapienza University of Rome)

Spectral Perturbations and Generative Models in Geometric Deep Learning

12:20 – 13:05   **Yvain Quéau** (GREYC, Univ. of Caen Normandy CNRS)

Fine-scale 3D-copying for Culturage Heritage

13:05 – 14:30   Real Lunch Break

<u>Chair: M. Falcone</u>

14:30 – 15:15   **Edwin Hancock** (Computer Science University of York)

Shape-from-Polarisation

15:20 – 16:05   **Francois Lauze** (Computer Science University of Copenhagen)

Invariant shape priors and optimization on fiber bundles

16:05 – 16:20   Conclusions

16:20 – 16:45   Virtual Coffee Break