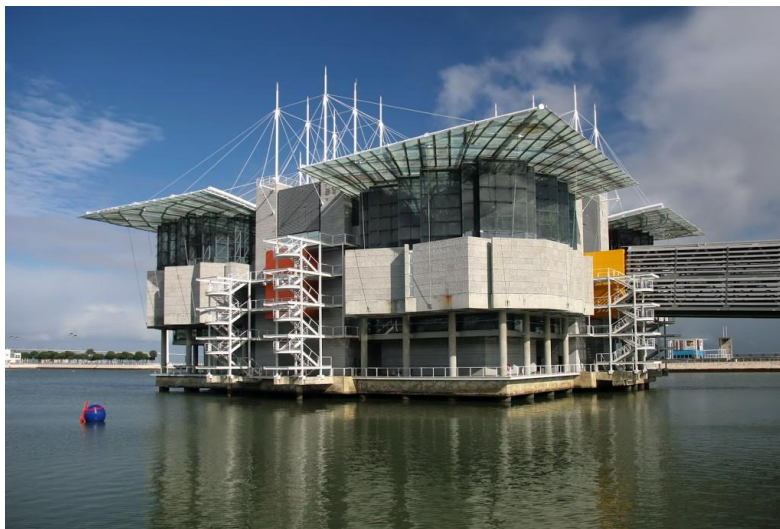




EUVIP 2022

**10th European Workshop on
Visual Information Processing**

Technical Program



***12-14 September 2022
Lisbon, Portugal***

EUVIP 2022 Program at Glance

Lisbon Oceanarium, Parque das Nações

	12-Sep Monday		13-Sep Tuesday		14-Sep Wednesday
8:00	Reception open	8:30	Reception open	8:30	Reception open
08:45-9:00	Opening Session				
9:00-10:00	Keynote 1 - Michael Elad "Image Denoising – Not What You Think"	9:00-10:00	Keynote 2 - Aljosa Smolic "Volumetric Video Content Creation for Immersive XR Experiences"	9:00-10:00	Keynote 4 -Min Wu "Visual Processing and Data Science for Physiological Forensics"
10:00-11:20	Special Session (oral) - Current Standardization Activities on Dynamic Mesh Compression	10:00-11:20	Special Session (oral)- Biometric Recognition Explainability	10:00-11:20	Special Session (oral)- Advances in Point Cloud Technology
11:20-11:40	Coffee break	11:20-11:40	Coffee break	11:20-11:40	Coffee break
11:40-13:00	Oral Session 1 - Image and Video Coding	11:40-13:00	Oral Session 3 - Image and Video Processing	11:40-13:00	Poster Session
13:00-14:00	Lunch	13:00-14:00	Lunch	13:00-14:00	Lunch
14:00-15:20	Project Dissemination	14:00-15:00	Keynote 3 - Matthias Nießner "The Revolution of Neural Rendering"	14:00-15:20	Oral Session 6 - Quality Assessment
15:20-15:40	Coffee break	15:00-16:20	Oral Session 4 -3D Image Processing	15:20-15:40	Coffee break
15:40-17:00	Special Session (oral)- Machine Learning for Immersive Content Processing	16:20-16:40	Coffee break	15:40-18:00	Industry Session
17:00-18:20	Oral Session 2 - Image and Video Segmentation	16:40-18:00	Oral Session 5- Biometrics and Medical Imaging		
18:30 -	Welcome Reception				
		20:00 -	Banquet and Awards		

Note: the tutorials will be held on Sunday, September 11, at Instituto Superior Técnico (IST).

Sunday, 11th September

9:30 – Tutorial 1 (Part 1)

“Signal Processing Methods for Light Field Displays”

by Erdem Sahin (Tampere University, Finland), Robert Bregovic (Tampere University, Finland), Atanas Gotchev (Tampere University, Finland)

11:00 – Coffee Break

11:20 – Tutorial 1 (Part 2)

“Signal Processing Methods for Light Field Displays”

by Erdem Sahin (Tampere University, Finland), Robert Bregovic (Tampere University, Finland), Atanas Gotchev (Tampere University, Finland)

12:50 – Lunch break

14:30 – Tutorial 2 (Part 1)

“Deep Learning for Image and Video Compression”

by Murat Tekalp (Koç University, Turkey)

16:00 – Coffee Break

16:20 – Tutorial 2 (Part 2)

“Deep Learning for Image and Video Compression”

by Murat Tekalp (Koç University, Turkey)

17:50 – End of the Tutorial Day

Monday, 12th September

8:45 – Opening Session

Fernando Pereira (Instituto Superior Técnico – Instituto de Telecomunicações, Portugal), EUVIP 2022 General Chair

9:00 – Keynote Talk 1

Chair: Elena Alshina (Huawei, Germany)

“Image Denoising – Not What You Think”

by Michael Elad (Technion – Israel Institute of Technology, Israel)

10:00 – Special Session 1 (Oral)

Chair: Ruxandra Tapu (Institute Mines-Telecom, Telecom SudParis / University Politehnica of Bucharest)

Current Standardization Activities on Dynamic Mesh Compression

1. **Award candidate:** *Compression of Time-Varying Textured Meshes using Patch Tiling and Image-based Tracking*, Jean-Eudes Marvie (InterDigital)*; Maja Krivokuca (InterDigital); Celine Guede (InterDigital); Julien Ricard (InterDigital); Olivier Mocquard (InterDigital); Francois-Louis Tariolle (InterDigital)
2. *V3C-based Coding of Dynamic Meshes*, Patrice Rondao Alface (Nokia Technologies)*; Aleksei Martemianov (Nokia Technologies); Lauri Ilola (Nokia Technologies); Lukasz Kondrad (Nokia Technologies); Christoph Bachhuber (Nokia Technologies); Sebastian Schwarz (Nokia Technologies)
3. **Award candidate:** *Video and Subdivision based Mesh Coding*, Khaled Mammou (Apple Inc.)*; Jungsun Kim (Apple Inc.); Alexis Tourapis (Apple, Inc.); Dimitri Podborski (Apple Inc.); David Flynn (Apple Inc.)
4. **Award candidate:** *Formal Visual Evaluation and Study of Objective Metrics for MPEG Dynamic Mesh Coding*, Mathias Wien (RWTH Aachen University)*; Joel Jung (Tencent Media Lab); Vittorio Baroncini (GBTech)

11:20 – Coffee Break

11:40 – Oral Session I

Chair: Mathias Wien (RWTH Aachen University)

Image and Video Coding

1. **Award candidate:** *Ensemble Learning for Efficient VVC Bitrate Ladder Prediction*, Fatemeh NASIRI (INSA)*; Luce Morin (INSA Rennes); Wassim Hamidouche (INSA Rennes); Nicolas Dhollande (Awiwest); Jean-Yves Aubié (IRT b-com)
2. *Features Denoising for Learned Image Coding*, Daniele Mari (Università degli studi di Padova)*; Simone Milani (Università degli studi di Padova)
3. *Overfitting Multiplier Parameters for Content-Adaptive Post-Filtering in Video Coding*, Maria Santamaria (Nokia Technologies)*; Ruiying Yang (Nokia Technologies); Francesco Cricri (Nokia Technologies); Honglei Zhang (Nokia Technologies); Jani Lainema (Nokia Technologies); Ramin Ghaznavi Youvalari (Nokia Technologies); Hamed Rezazadegan Tavakoli (Nokia Technologies); Miska Hannuksela (Nokia Technologies)
4. *Lossless Coding of Multimodal Image Pairs Based on Image-to-Image Translation*, João Oliveira Parracho (Instituto de Telecomunicações)*; Lucas Thomaz (Instituto de Telecomunicações); Luis Tavora (Instituto de Telecomunicações); Pedro Amado Assuncao (Instituto de Telecomunicacoes, Politécnico de Leiria); Sergio Faria (Instituto de Telecomunicações)

13:00 – Lunch

Lunch box provided

14:00 – Project Dissemination Session

Chairs: Nuno Rodrigues (Polytechnic of Leiria, Portugal) and Azeddine Beghdadi (USPN, France)

1. *ATLANTIS – Indoor Planning with Augmented and Diminished Reality*, Werner Bailer, Georg Thallinger (DIGITAL, JOANNEUM RESEARCH); Vasileios Gkitsas, Petros Drakoulis, Antonis Karakottas, Dimitrios Pattas, Dimitris Zarpalas (ITI, Centre for Research and Technology Hellas); Brita Piovesan, Robert Huemer (Roomle GmbH); Richard Whitehand, Per Ström (Usability Partners).
2. *TailoredMedia – Automated Metadata Creation for Searching Audiovisual Content*, Werner Bailer, Georg Thallinger (DIGITAL, JOANNEUM RESEARCH); Gernot Rottermann (St. Pölten University of Applied Sciences); Thomas Kurz, Jakob Frank (Redlink GmbH); Christoph Bauer (Austrian Broadcasting Corporation); Gabriele Fröschl, Michael Batlogg (Austrian Mediathek)
3. *XAIface: Measuring and Improving Explainability for AI-based Face Recognition*, Chiara Galdi* (EURECOM); Paulo Lobato Correia* (IST-IT); Yuhang Lu* (EPFL); Jonas Pfister* (University of Vienna); Martin Winter* (JOANNEUM RESEARCH)
4. *Towards JPEG AIC Part 3: Call for Contributions on Subjective Image Quality Assessment*, Michela Testolina (EPFL); Evgeniy Upenik (Audiovisual Technology Laboratory); Jon Sneyers (Media Technology Research Cloudinary); Touradj Ebrahimi (EPFL)

15:20 – Coffee Break

15:40 – Special Session 2 (Oral)

Chairs: Hadi Amirpour (Alpen-Adria-Universität Klagenfurt)

Machine Learning for Immersive Content Processing

1. **Award candidate:** *Computational Hyperspectral Imaging with Diffractive Optics and Deep Residual Learning*, Ayoung Kim (Tampere University)*; Ugur Akpınar (Tampere University); Erdem Sahin (Tampere University); Atanas Gotchev (Tampere University)
2. *Deep 3D Model Optimization for Immersive and Interactive Applications*, Elena Camuffo (University of Padova)*; Federica Battisti (University of Padova); Francesco Pham (University of Padova); Simone Milani (University of Padova)
3. *FuRA: Fully Random Access Light Field Image Compression*, Hadi Amirpour (Alpen-Adria-Universität Klagenfurt)*; Christine Guillemot (INRIA); Christian Timmerer (Alpen-Adria-Universität Klagenfurt)
4. *Double Deep Learning-Based Point Cloud Geometry Coding with Adaptive Super-Resolution*, Manuel Ruivo (Instituto Superior Técnico – Instituto de Telecomunicações)*; André F. R. Guarda (Instituto de Telecomunicações); Fernando Pereira (Instituto Superior Técnico – Instituto de Telecomunicações)

17:00 – Oral Session 2

Chair: Marco Carli (Università degli Studi Roma Tre)

Image and Video Segmentation

1. **Award candidate:** *Opto-UNet: Optimized UNet for Segmentation of Varicose Veins in Optical Coherence Tomography*, Maryam Viqar (Institute of Optical Materials and Technologies – Bulgarian Academy of Sciences)*; Violeta Madjarova (Institute of Optical Materials and Technologies – Bulgarian Academy of Sciences); Vipul Baghel (Dept. of Electronics Engineering, Aligarh Muslim University); Elena Stoykova (IOMT, Bulgarian Academy of Sciences)
2. *Semantic-SRF: Sparse Multi-view Indoor Semantic Segmentation with Stereo Neural Radiance Fields*, Cem Eteke (Technical University of Munich)*; Jinpeng Zhang (Technical University of Munich); Eckehard Steinbach (TUM)
3. *Change Detection in Moving-Camera Videos Using a Shift-Invariant Dissimilarity Metric*, Thadeu L Barbosa Dias (Federal University of Rio de Janeiro)*; Lucas Thomaz (Instituto de Telecomunicações); Sergio Netto (Federal University of Rio de Janeiro); Eduardo A. B. da Silva (Federal University of Rio de Janeiro)
4. *Transfer Learning Based Retinal Layer and Fluid Segmentation using Fully Convolutional Networks*, Esther M Parra-Mora (University of Coimbra)*; Alex Cazañas-Gordon (University of Coimbra); Luis A da Silva Cruz (University of Coimbra)

18:20 – End of the First Day

18:30 – **EUVIP 2022 Welcome Reception**

Sea the Future, Parque das Nações

Tuesday, 13th September

9:00 – Keynote Talk 2

Chair: João Ascenso (Instituto Superior Técnico – Instituto de Telecomunicações, Portugal)

“Volumetric Video Content Creation for Immersive XR Experiences”

by Aljosa Smolic (Hochschule Luzern, Switzerland)

10:00 – Special Session 3 (Oral)

Chair: Paulo L. Correia (Instituto Superior Técnico – Instituto de Telecomunicações, Portugal)

Biometric Recognition Explainability

1. **Award candidate:** *Demystifying Face-Recognition with Locally Interpretable Boosted Features (LIBF)*, Martin Winter (JOANNEUM RESEARCH)*; Werner Bailer (JOANNEUM RESEARCH); Georg Thallinger (JOANNEUM RESEARCH)
2. *Impact of Digital Face Beautification in Biometrics*, Nélida Mirabet-Herranz (Eurecom)*; Chiara Galdi (Eurecom); Jean-Luc Dugelay (Eurecom)
3. *A Novel Framework for Assessment of Deep Face Recognition Systems in Realistic Conditions*, Yuhang Lu (EPFL)*; Luca Barras (EPFL); Touradj Ebrahimi (EPFL)
4. *Impact of Conventional and AI-based Image Coding on AI-based Face Recognition Performance*, Naima Bousnina (Instituto de Telecomunicações)*; Joao Ascenso (Instituto Superior Técnico – Instituto de Telecomunicações); Paulo L Correia (Instituto Superior Técnico – Instituto de Telecomunicações); Fernando Pereira (Instituto Superior Técnico – Instituto de Telecomunicações)

11:20 – Coffee Break

11:40 – Oral Session 3

Chair: Lina Karam (Arizona State University)

Image and Video Processing

1. **Award candidate:** *EGAIN: Extended GAN Inversion*, Wassim Kabbani (Technical University of Denmark)*
2. *Multilayer Perceptron to Boost Colorimetric Capacities of 2D RGB and Hyperspectral Snapshot Cameras*, Eric Lopez-Lopez (AIMEN)*; Roi Mendez-Rial (AIMEN)
3. *Residual Swin Transformer Channel Attention Network for Image Demosaicing*, Wenzhu Xing (Tampere University)*; Karen Egiazarian (Tampere University)
4. *CNN-based Euler’s Elastica Inpainting with Deep Energy and Deep Image Prior*, Karl Schrader (Saarland University)*; Tobias Alt (Saarland University); Joachim Weickert (Saarland University); Michael Ertel (Saarland University)

13:00 – Lunch

Lunch box provided

14:00 – Keynote Talk 3

Chair: Fernando Pereira (Instituto Superior Técnico – Instituto de Telecomunicações, Portugal)

“The Revolution of Neural Rendering”

by Matthias Nießner (Technical University of Munich, Germany)

15:00 – Oral Session 4

Chair: Touradj Ebrahimi (EPFL, Switzerland)

3D Image Processing

1. *Visually Relevant Point Clouds Features Extraction by Radial Angular Point Cloud Filtering*, Tiziana Cattai (Sapienza); Azeddine Beghdadi (L2TI, University Sorbonne Paris Nord); Gaetano Scarano (University of Rome, “La Sapienza”); Stefania Colonnese (Sapienza Università di Roma, Italy)*
2. *Incorporating Spatio-Temporal Information in Frustum-ConvNet for Improved 3D Object Detection in Instrumented Vehicles*, Venkatesh G M (Insight Centre for Data Analytics)*; Suzanne Little (Dublin City University, Ireland); Noel O Connor (Home)
3. *Enhanced Local Optimization Framework for Light Field Disparity Estimation*, Rui Lourenco (Instituto de Telecomunicações)*; Lucas Thomaz (Instituto de Telecomunicações); Eduardo A. B. da Silva (Federal University of Rio de Janeiro); Sergio Faria (Instituto de Telecomunicações)
4. *3D Object Detection On Synthetic Point Clouds For Railway Applications*, Michael Neri (Università degli Studi Roma Tre)*; Federica Battisti (University of Padova)

16:20 – Coffee Break

16:40 – Oral Session 5

Chair: Hugo Proença (University of Beira Interior- Instituto de Telecomunicações)

Biometrics and Medical Imaging

1. *Fusion of Deep Features for Differential Face Morphing Attack Detection at Automatic Border Control Gates*, Jag Mohan Singh (Norwegian University of Science and Technology (NTNU) Gjøvik)*; Raghavendra Ramachandra (NTNU, Norway)
2. *HEROES: a Video-Based Human Emotion Recognition Database*, Ilaria Mannocchi (Università degli Studi Roma Tre); Kamal Lamichhane (Roma Tre University)*; Federica Battisti (University of Padova); Marco Carli (Università degli Studi Roma Tre)
3. *Real-time Style Transfer for Videos to Enhance the Realism of Simulation of Laparoscopic Surgeries*, Marine Y Shao (UWE)*; James Clark (Royal Cornwall Hospital NHS Trust); David A Huson (UWE); Jon Yngve Hardeberg (NTNU)
4. *Hybrid Attention Mechanism for Liver Tumor Segmentation in CT Images*, Ming Gong (University of Strathclyde)*; Baixaing Zhao (University of Strathclyde); John Soraghan (University of Strathclyde); Gaetano Di-Caterina (University of Strathclyde); Derek Grose (Beatson West of Scotland Cancer Centre)

18:00 – End of the Second Day

20:00 – **EUVIP 2022 Dinner**

Tacho do Pescador restaurant, Parque das Nações

Wednesday, 14th September

9:00 – Keynote Talk 4

Chair: Moncef Gabbouj (Tampere University, Finland)

“Visual Processing and Data Science for Physiological Forensics”

by Min Wu (University of Maryland, USA)

10:00 – Special Session 4 (Oral)

Chair: António Pinheiro (University of Beira Interior- Instituto de Telecomunicações)

Challenges in Point Cloud Technology

1. *Subjective and Objective Testing in Support of the JPEG Pleno Point Cloud Compression Activity*, Stuart Perry (University of Technology Sydney)*; Antonio Pinheiro (University of Beira Interior- Instituto de Telecomunicações); Davi Lazzarotto (École Polytechnique Fédérale de Lausanne); Luis A da Silva Cruz (Dep. Electrical and Computer Engineering – Univ. of Coimbra); João P.C Prazeres (University of Beira Interior); Touradj Ebrahimi (EPFL); Emil Dumic (University North, Varazdin)
2. *Influence of Spatial Rendering on the Performance of Point Cloud Objective Quality Metrics*, Davi Lazzarotto (École Polytechnique Fédérale de Lausanne)*; Michela Testolina (École polytechnique fédérale de Lausanne); Touradj Ebrahimi (EPFL)
3. *Explorations on 3D Point Clouds Coding Using Transformers and Patches*, Luis A da Silva Cruz (Dep. Electrical and Computer Engineering – Univ. of Coimbra)*; Miguel Marques (Dep. Electrical and Computer Engineering – Univ. of Coimbra)
4. *On The Stability of Point Cloud Machine Learning Based Coding*, João P.C Prazeres (University of Beira Interior)*; Rafael Rodrigues (Instituto de Telecomunicações – University of Beira Interior); Manuela Pereira (University of Beira Interior, Portugal); Antonio Pinheiro (University of Beira Interior- Instituto de Telecomunicações)

11:20 – Coffee Break

11:40 – Poster Session

Chair: Paulo Nunes (ISCTE-IUL-IT, Portugal)

1. *Deep Learning based Aerial Image Segmentation for Computing Green Area Factor*, G M Atiqur Rahaman (Örebro University)*; Martin Längkvist (Örebro University); Amy Loufti (Orebro University)
2. *Active Speaker Recognition using Cross Attention Audio-Video Fusion*, Ruxandra G TAPU (Institute Mines-Telecom, Telecom SudParis / University Politehnica of Bucharest)*; Bogdan Cosmin Mocanu (University Politehnica of Bucharest)
3. *ParalMGC Multiple Audio Representations for Synthetic Human Speech Attribution*, Michael Neri (Università degli Studi Roma Tre)*; Anna Ferrarotti (Università degli Studi Roma Tre); Luca De Luisa (Roma Tre University); Andrea Salimbeni (Università Degli Studi Roma Tre); Marco Carli (Università degli Studi Roma Tre)
4. *Invertebrates Detection With YOLOv5: Towards Study of Soil Organisms Using Deep Learning*, Ghulam Sakhi Shokouh (IMT Mines Ales)*; Emma Pruvost (IMT Mines Ales); Etienne Delort (IMT Mines Ales); hadrien tulet (IMT Mines Ales); Philippe Montesinos (EMA); Baptiste Magnier (IMT Mines Ales CERIS); Mickael Hedde (IMT Mines Ales); Emma BELAUD (IMT Mines Ales); Jourdan Christophe (IMT Mines Ales)
5. *ITER-Tag: An Adaptable Framework for Robust Uncoded Fiducial Marker Detection and Identification*, Laura Goncalves Ribeiro (Tampere University)*; Olli J Suominen (Tampere University); Sari Peltonen (Tampere University); Emilio Ruiz Morales (F4E); Atanas Gotchev (Tampere University, Finland)
6. *Stabilised Inverse Flowline Evolution for Anisotropic Image Sharpening*, Kristina Schaefer (Saarland University)*; Joachim Weickert (Saarland University)

7. *Exploring Temporal Consistency in Image-Based Rendering for Immersive Video Transmission*, Smitha Lingadahalli Ravi (Orange Labs)*; Félix Henry (Orange Labs); Luce Morin (INSA Rennes); Matthieu Gendrin (Orange Labs)
8. *Watermarking for Large-Scale Video Distribution through Out-of-the-Loop Frame Replacement*, Hannes Mareen (Ghent University)*; Francis Valcke (Ghent University); Aaron Hallaert (Ghent University); Glenn Van Wallendael (Ghent University); Peter Lambert (Ghent University)
9. *A Light Weight Convolution Neural Network for Automatic Disasters Recognition*, Muhammad Munsif (Islamia college Peshawar); Hina Afridi (NTNU); Mohib Ullah (NTNU)*; Sultan Daud Khan (National University of Technology); Faouzi Alaya-Chekh (NTNU at Gjovik, Norway); Muhammad Sajjad (NTNU)
10. *Computing Particle Size Distribution of Mineral Rocks using Deep Learning-based Instance Segmentation*, Andrei Cristian Baraian (VTT Technical Research Center of Finland)*; Vili Kellokumpu (VTT Technical Research Center of Finland)
11. *IDALib: a Python Library for Efficient Image Data Augmentation*, Nicolás Vila-Blanco (Universidade de Santiago de Compostela)*; Raquel Rodríguez-Vilas (Universidade de Santiago de Compostela); María José Carreira (Universidade de Santiago de Compostela)
12. *Autoencoder Model Exploration for Multi-Layer Video Compression*, Luiz Henrique Cancellier (Federal University of Santa Catarina)*; Mateus Grellert (Federal University of Santa Catarina); José Luís Güntzel (Federal University of Santa Catarina); Luis A da Silva Cruz (Dep. Electrical and Computer Engineering – Univ. of Coimbra)

13:00 – Lunch

Lunch box provided

14:00

Oral Session 6

Chair: Paula Queluz (Instituto Superior Técnico – Instituto de Telecomunicações, Portugal)

Quality Assessment

1. *Holography Challenges on Coding and Quality Assessment*, Manuela Pereira (University of Beira Interior, Portugal)*; Raquel Guerra (University of Beira Interior); Elsa Fonseca (University of Beira Interior); Antonio Pinheiro (University of Beira Interior-Instituto de Telecomunicações)
2. *Does Personal Interests Affect Visual Attention? – An Eye Tracking Study*, Julie Fournier (Université de Rennes 1)*
3. *Parametric Quality Models for Multiscreen Video Systems*, Yuriy Reznik (Brightcove, Inc.)*; Nabajeet Barman (Brightcove UK, Ltd.); Rahul Vanam (Brightcove, Inc.)
4. *Visual Quality Assessment of Adversarially Attacked Images*, Ali Mezher (Lebanese American University); Yingpeng Deng (Arizona State University); Lina Karam (Arizona State University)*

15:20 – Coffee Break

15:40 - Industry Session

Chair: Nuno Couto (Worten, Portugal)

Present and Future of TV Services & Video Streaming

Keynote: *“Engineering and operating a large-scale OTT service – a view from the Streaming Industry”, by Pedro Geada (Senior Engineering Leader)*

Speakers: Pedro Geada (Senior Engineering Leader)

João Miguel Ferreira (Innovation Services Director @ NOS Inovação, Portugal)

Miguel Jardim (Head of MEO TV Services Engineering & Operations @ Altice, Portugal)

Pedro Neto (Head of TV Product Development @ Vodafone, Portugal)

18:00 - End of the Third Day

Location

