Program in detail:

**Monday, June 04, 2018**

<table>
<thead>
<tr>
<th>Registration</th>
<th>08:30</th>
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<td>18:30</td>
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**Mon1 - Opening Session**
- Maria Gabriela Queiroz, Vive-Rector of the University of the Azores
- Bruno Pacheco, Regional Director for Science and Technology
- José Manuel Bolieiro, Mayor of Ponta Delgada
- José Boaventura Cunha, Vice-President of APCA
- Alberto Cardoso, CONTROLO2018 General Chair, University of Coimbra

<table>
<thead>
<tr>
<th>Mon2 – Plenary Session</th>
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<tbody>
<tr>
<td>“Micro-Data Learning for Animal-Like Adaptation in Robots”</td>
</tr>
<tr>
<td>Keynote Speaker: Jean-Baptiste Mouret (INRIA, FR)</td>
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<tr>
<td>Chairs: Hélia Guerra and Fernando Lobo Pereira</td>
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<tr>
<th>Mon3A - Parallel Session</th>
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<tbody>
<tr>
<td>SS-ADG2EPI: Special Session on Applications of Differential Geometry to Engineering Problems (I)</td>
</tr>
<tr>
<td>Chairs: Fátima Silva Leite and Luís Machado</td>
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<tr>
<td>Papers:</td>
</tr>
<tr>
<td>#03 - Controllability of the kinematic equations describing pure rolling of Grassmannians</td>
</tr>
<tr>
<td>Authors: Fátima Pina and Fátima Silva Leite</td>
</tr>
<tr>
<td>#33 - Controllability of Rolling Symmetric Spaces</td>
</tr>
<tr>
<td>Authors: Krzysztof Krakowski and Fátima Silva Leite</td>
</tr>
<tr>
<td>#48 - Real Stiefel Manifolds: an Extrinsic Point of View</td>
</tr>
<tr>
<td>Authors: Knut Hueper and Florian Ulrich</td>
</tr>
<tr>
<td>#57 - Constructive Proof for Complete Controllability of a Rolling Pseudo-Hyperbolic Space</td>
</tr>
<tr>
<td>Authors: André Marques and Fátima Silva Leite</td>
</tr>
</tbody>
</table>
### Mon3B - Parallel Session
SS-ACE(I): Special Session on Advances in Control Education (I)

**Chairs:** Katarina Zakova and Mikulas Huba

**Papers:**

1. **#12 - Description of a New Servo Motor Optimized for Educational Robotic Applications**
   - **Authors:** João Silva, Paulo Costa and José Gonçalves
   - **Time:** 11:20 - UAc

2. **#19 - FTsim: a 3D tool for teaching automation concepts**
   - **Authors:** Nejc Ilc and Uros Lotric
   - **Time:** 12:40 - Aud. S.

3. **#38 - Flexy: An Open-source Device for Control Education**
   - **Authors:** Martin Kaluz, Lubos Cirka and Miroslav Fikar

4. **#46 - The secrets of Segway revealed to students: revisiting the inverted pendulum**
   - **Authors:** Teresa Azevedo Perdicoulis and Paulo Lopes dos Santos
   - **Time:** 12:40 - UAc

**Lunch break**

**Time:** 12:40 - 14:00 - UAc

### Mon4A - Parallel Session
Control Theory & Applications and Optimal Control (I)

**Chairs:** Bertinho A. Costa and Paulo Oliveira

**Papers:**

1. **#32 - On Unknown-input Observer Design for Linear Discrete-time Positive Systems**
   - **Authors:** Dusan Krokavec and Anna Filasova
   - **Time:** 14:00 - UAc

2. **#35 - Robust control of a Thermal Unstable PDE system**
   - **Authors:** José Igreja and João Miranda Lemos
   - **Time:** 16:00 - Aud. N.

3. **#37 - Optimization conditions for some fractional problems**
   - **Authors:** Ricardo Almeida

4. **#44 - On the state-space realization of 2-periodic image behaviors**
   - **Authors:** Diego Napp, Ricardo Pereira, Raquel Pinto, Paula Rocha and José Aleixo

5. **#51 - A Novel Control Strategy Based on Predictive Control for a Bidirectional Interleaved Three-Phase Converter**
   - **Authors:** Vitor Monteiro, Tiago Sousa, Júlio Martins, João Aparício Fernandes and João L. Afonso

6. **#55 - A Short Survey on Measure-Driven Optimal Control Problems**
   - **Authors:** Aram Arutyunov, Dmitry Karamzin and Fernando Lobo Pereira

**Time:** 14:00 - UAc
### Monday, June 04, 2018

**Mon4B - Parallel Session**  
SS-CI4DPC: Special Session on Computational Intelligence for Data Processing and Control  
**Chairs: Miguel Barão and César Teixeira**  
**Papers:**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Authors</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>08</td>
<td>Iterative Design of a Mamdani Fuzzy Controller</td>
<td>Jérôme Mendes, António Craveiro and Rui Araújo</td>
<td>14:00</td>
<td>UAc</td>
</tr>
<tr>
<td>09</td>
<td>Adaptive Control Learning Based on a Similarity Measure</td>
<td>Teresa Rocha, Simão Paredes, Jorge Henriques, Paulo Carvalho, Alberto Cardoso and Paulo Gil</td>
<td>15:30</td>
<td>UAc</td>
</tr>
<tr>
<td>14</td>
<td>Combination of Deep and Shallow Networks for Cyclic Alternating Patterns Detection</td>
<td>Sheikh Shanawaz Mostafa, Fábio Mendonça, Antonio Ravelo and F. Morgado Dias</td>
<td>16:00</td>
<td>UAc</td>
</tr>
<tr>
<td>42</td>
<td>Fuzzy logic model to support innovation risk assessment in ecosystems</td>
<td>António Abreu, José Martins and João Calado</td>
<td>16:30</td>
<td>UAc</td>
</tr>
<tr>
<td>124</td>
<td>Multi-Kalman filter to wind power forecasting</td>
<td>Paulo Salgado, Getúlio Igrejas and Paulo Afonso</td>
<td>17:00</td>
<td>UAc</td>
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**Coffee break**

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<thead>
<tr>
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<tr>
<td>16:00</td>
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<td>16:30</td>
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**Mon5A - Parallel Session**  
SS-AHE&ESC: Special Session on Applications on Health, Environment and Earth Sciences  
**Chairs: Rosalina Gabriel and Rui Carneiro Barros**  
**Papers:**

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Authors</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>Expert Crowdsourcing for Semantic Annotation of Atmospheric Phenomena</td>
<td>Hugo Paredes, Arsenio Reis, Paulo Martins, João Barroso and Margarida Liberato</td>
<td>16:00</td>
<td>UAc</td>
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<tr>
<td>68</td>
<td>Optimal control of rodent populations</td>
<td>João Miguel Ferreira</td>
<td>16:30</td>
<td>UAc</td>
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<tr>
<td>71</td>
<td>Theoretical Approach for How Species Abundance Distributions Change Across Scales</td>
<td>Saeid Alirezazadeh, Luís Borda-De-Água, Paulo Borges, Francisco Dionísio, Rosalina Gabriel, Henrique M. Pereira and Pedro Cardoso</td>
<td>17:00</td>
<td>UAc</td>
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<tr>
<td>73</td>
<td>Predictive Data Mining in Nutrition Therapy</td>
<td>Diana Ferreira, Hugo Peixoto, António Abelha and José Machado</td>
<td>17:30</td>
<td>Aud. N.</td>
</tr>
<tr>
<td>74</td>
<td>Affordable instrument design for seismic monitoring, Early Warning Systems and control actions to risk mitigation</td>
<td>Arturo Garcia and Antonio Aguilar</td>
<td>18:00</td>
<td>Aud. N.</td>
</tr>
</tbody>
</table>
**Monday, June 04, 2018**

**Mon5B - Parallel Session**  
Mobile Robotics  
*Chairs: Sofia Lopes and Paulo Lopes dos Santos*

### Papers:

**#21 - EKF and Computer Vision for Mobile Robot Localization**  
**Authors:** Fabricio Coelho, João Pedro Carvalho de Souza, Milena Faria Pinto and André Luís Marcato

**#40 - Direct-DRRT*: A RRT Improvement Proposal**  
**Authors:** Fabricio Coelho, João Pedro Carvalho de Souza, Milena Faria Pinto and André Luís Marcato

**#59 - Navigation System for Mobile Robots Using PCA-based Localization from Ceiling Depth Images: Experimental Validation**  
**Authors:** Fernando Carreira, João Calado, Carlos Cardeira and Paulo Oliveira

**#63 - On barycentric coordinates in control of a thruster driven spacecraft**  
**Authors:** Janusz Jakubiak

**#78 - A Stabilizing Controller for Hopping Motions**  
**Authors:** André S. Carvalho and Jorge M. Martins

**#81 - Optimal Reorganization of a Formation of Nonholonomic Agents Using Shortest Paths**  
**Authors:** Amelia C. D. Caldeira, Luis Tiago Paiva, Dalila B M Fontes and Fernando A. C. C. Fontes

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*Welcome Reception with “Pico de Honra” at “Salão Nobre da Câmara Municipal de Ponta Delgada”*  
**Time:** 19:30  
**Location:** CMCPD
**Tuesday, June 05, 2018**

**Registration**
08:30 UAc
18:30 Atrium

**Tue1A - Parallel Session**
**SS-MSR:T&A:** Special Session on Marine Systems and Robotics: Theory and Applications
**Chairs:** Fernando Fontes and Ricardo Pereira

**Papers:**
#22 - A Model Predictive Cloud-based Control Scheme for Trajectory-Tracking: Effects of Round-trip Time Over-estimates
**Authors:** Andrea Alessandretti and A. Pedro Aguiar

#43 - Cooperative Moving Path Following using Event based Control and Communication
**Authors:** R Pravee Kumar Jain, Andrea Alessandretti, A. Pedro Aguiar and João Borges de Sousa

#77 - A Model Predictive Control Scheme for Autonomous Underwater Vehicle Formation Control
**Authors:** Rui Gomes and Fernando Lobo Pereira

#83 - Formation control of surface marine vehicles for an underwater target tracking using range information
**Authors:** David Moreno-Salinas, Naveena Crasta, António M. Pascoal and Joaquin Aranda

**Tue1B - Parallel Session**
**SS-ADG2EP(II):** Special Session on Applications of Differential Geometry to Engineering Problems (II)
**Chairs:** Knut Hueper and Krzysztof Krakowski

**Papers:**
#18 - Fast cosine transform for FCC lattices
**Authors:** Bastian Seifert, Knut Hueper and Christian Uhl

#27 - The geometry of quasi-geodesics on Stiefel manifolds
**Authors:** Velimir Jurdjevic, Fátima Silva Leite and Krzysztof Krakowski

#36 - Path planning trajectories in fluid environments
**Authors:** Luís Machado, Fátima Silva Leite and Teresa Monteiro

#45 - A New Approach to the Essential Manifold
**Authors:** Thomas Bendokat and Knut Hueper

**Coffee break**
10:20 UAc
10:40 Atrium
**Tuesday, June 05, 2018**

**Tue2A - Parallel Session**

**SS-ACE(II): Special Session on Advances in Control Education (II)**

**Chairs:** José Boaventura da Cunha and Jérôme Mendes

**Papers:**

- **#10** - Posicast Based Experiments to Motivate Undergraduates to Control Engineering  
  **Authors:** Stefan Vidal, Paulo Moura Oliveira, Josenalde Oliveira, Tatiana Pinho and José Boaventura Cunha

- **#61** - Flipping the Courses on Automatic Control: Why and How  
  **Authors:** Mikulas Huba, Katarina Zakova and Pavol Bistak

- **#62** - Design of Control Education Interactive Examples via Web Service for OpenModelica  
  **Authors:** Katarina Zakova and Michal Cech

- **#123** - ELSA-Py - Open-Source extension for communication and data management in interactive remote experimentation under iLab Shared Architecture  
  **Authors:** Thiago Schaedler Uhlmann, Pedro Henrique dos Santos Sbais and Luciano António Mendes

**Tue2B - Parallel Session**

**Optimization**

**Chairs:** Teresa Azevedo Perdicoulis and Ricardo Almeida

**Papers:**

- **#05** - Improving Household’s Efficiency via Scheduling of Water and Energy Appliances  
  **Authors:** Joaquim Leitão, Paulo Gil, Bernardete Ribeiro and Alberto Cardoso

- **#25** - Soft computing optimization for the biomass supply chain operational planning  
  **Authors:** Tatiana M. Pinho, João Paulo Coelho, Germano Veiga, Antonio P. Moreira and José Boaventura Cunha

- **#58** - Simulation-optimization approach for the decision-support on the planning and scheduling of automated assembly lines  
  **Authors:** Miguel Vieira, Samuel Moniz, Tânia Pinto-Varela and Ana P. Barbosa-Póvoa

- **#67** - Hydroponic Greenhouse Crop Optimization  
  **Authors:** Miguel Fernandes, Bertinho A. Costa and João M. Lemos

**Tue3 – Plenary Session**

**“Present and Future of Automatic Control”**

**Keynote Speaker:** João Miranda Lemos (INESC-ID/IST/Univ. of Lisbon, PT)

**Chairs:** Fátima Silva Leite and António Dourado

**Lunch break**
### Tuesday, June 05, 2018

#### Tue4A - Parallel Session

Control Theory & Applications and Optimal Control (II)

**Chairs:** Dusan Krokavec and José Igreja

**Papers:**

- **#06 -** Swarm Design of Series PID Cascade Controllers  
  **Authors:** Paulo Moura Oliveira and Damir Vrancic

- **#64 -** Control of a prostate cancer model using intermittent androgen suppression  
  **Authors:** Bertinho A. Costa and J. M. Lemos

- **#75 -** A Recursive Algorithm Based on the Maximum Principle of Pontryagin  
  **Authors:** Fernando Lobo Pereira, Silvio Gama, Nagwa Arafa and Roman Chertovskih

- **#76 -** Maximum Principle for the Optimal Control of the Obukhov Model  
  **Authors:** Nagwa Arafa, Silvio Gama and Fernando Lobo Pereira

- **#82 -** Optimal Control of Irrigation with field capacity modes: characterizing the minimal water consumption solution  
  **Authors:** Sofia Lopes, Fernando A C C Fontes, Amélia Caldeira and Rui Pereira

#### Tue4B - Parallel Session

PID Based Control Systems

**Chairs:** Luciano António Mendes and José Gonçalves

**Papers:**

- **#02 -** Dynamic Performance Analysis of PID and Fuzzy Logic Controllers Applicable in Electrohydraulic Servo Actuator  
  **Authors:** Karem Abuowda, David Dyke, Siamak Noroozi and Ivan Okhotnikov

- **#15 -** Evolutionary based tuning approach of PI$^D$ fractional-order speed controller for multirotor UAVs  
  **Authors:** Wojciech Giernacki and João Coelho

- **#16 -** Instrumentation and Control of an Industrial Sewing Station  
  **Authors:** João Coelho, Pedro Santos, Tatiana M. Pinho, José Boaventura Cunha and Josenalde Oliveira

- **#53 -** Performance Evaluation of a Proportional-Integral with Proportional-Derivative Feedforward Voltage Control for UPSs  
  **Authors:** Tiago Sousa, Vitor Monteiro, Júlio Martins, João Aparício Fernandes and João L. Afonso

- **#56 -** Optimizing disturbance rejection by using model-based compensator with user-defined high-frequency gains  
  **Authors:** Damir Vrancic, Paulo Moura Oliveira and Mikulas Huba

*Coffee break*

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<tr>
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<td>UAc Aud. S.</td>
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<td>16:10</td>
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Tuesday, June 05, 2018

Tue5A - Parallel Session
System Identification
Chairs: F. Morgado Dias and José Machado
Papers:
#04 - Exploring tissue characterization by temperature-dependent changes on ultrasound backscattered energy, a computer simulation
Authors: André Pedrosa, Mario Pastrana-Chalco, Wagner Pereira and César Teixeira
#07 - Modeling Abstract Concepts For Internet of Everything: A Cognitive Artificial System
Authors: Rahul Sharma, Bernardete Ribeiro, Alexandre Miguel Pinto and Amílcar F. Cardoso
#34 - An Iterative MOLI-ZOFT Apprroach for the Identification of MISO LTI Systems
Authors: Patrícia Gomes Saraiva, Paulo Lopes dos Santos, Felipe Pait, Rodrigo Alvite Romano and Teresa Paula Perdicoulis
#41 - Clustering of Gaussian Random Vector Fields in Multiple Trajectory Modelling
Authors: Miguel Barão and Jorge S. Marques

16:10 17:30  UAc Aud. N.

Tue5B - Parallel Session
SS-SC&HMS: Special Session on Structural Control and Health Monitoring Systems
Chairs: Arturo Garcia and Anna Filasova
Papers:
#79 - Numerical simulation of torsional response control of a plan-eccentric mass distribution building by using Magnetorheological dampers
Authors: Manuel Braz-César, Pedro Folhento and Rui Barros
#80 - Fuzzy controller optimization using a genetic algorithm for non-collocated semi-active MR based control of a three-DOF framed struture
Authors: Manuel Braz-César, Pedro Folhento and Rui Barros
#86 - Seismic and Wind Response Control of Cantilevered Highway Sign Support using a TMD
Authors: Rui Barros and Fábio Paiva
#87 - The Minimization of Vortex Shedding Vibrations in Telecommunication Towers
Authors: Rui Barros and Dário Vieira
#120 - Study of Structural Response due to Earthquake Excitations: A Hardware Experimental Setup Approach
Authors: Manuel Braz-César, António M. V. Paula, José Gonçalves and Rui Barros
#121 - Evolutionary based BEL controller applied to a magneto-rheological actuator
Authors: Manuel Braz-César, João Coelho and José Gonçalves

16:10 18:10  UAc Aud. S.
Tuesday, June 05, 2018

APCA General Assembly
17:30 UAc Aud. N.
19:30 Azoris Garden Hotel

Conference Dinner
20:00 Azoris Garden Hotel

Wednesday, June 06, 2018

Departure to Lagoa
09:00 UAc N. Entry

Wed1A - Parallel Session
UAVs - Avionics
Chairs: Damir Vrancic and Janusz Jakubiak
Papers:
#24 - LQR/MMAE Height Control System of a Quadrotor for Constant Unknown Load Transportation
Authors: Pedro Outeiro, Paulo Oliveira and Carlos Cardeira
#26 - Sense and Avoid implementation in a small Unmanned Aerial Vehicle
Authors: Marta Marques, Adriano Brum and João Gomes Mota
#29 - An Autopilot to Make Circular Loops: from Vertical to Horizontal Circular Loops
Authors: José Barahona da Fonseca
#30 - EKF Design for Online Trajectory Prediction of a Moving Object Detected Onboard of a UAV
Authors: Milena Pinto, Fabricio Coelho, João Pedro Souza, Aurélio Melo, André Marcato and Cristina Urdiales

Wed1B - Parallel Session
Cyber Physical Systems
Chairs: João Miranda Lemos and Manuel Braz-César
Papers:
#13 - A Dual Reality Simulation Environment for Cyber-Physical Systems
Authors: Fábio Januário, Alberto Cardoso and Paulo Gil
#23 - An overview on visual sensing for automatic control on smart farming and forest management
Authors: Tatiana M. Pinho, João Paulo Coelho, Josenalde Oliveira and José Boaventura Cunha
#28 - Data Anomaly Detection in Wireless Sensor Networks with Application to an Oil Refinery
Authors: Paulo Gil, Hugo Martins, Fábio Januário, Amâncio Santos, Alberto Cardoso and Jorge Henriques
#54 - Cooperative Human-Machine Interaction in Industrial Environments
Authors: Liliana Antão, Rui Pinto, João Reis, Gil Gonçalves and Fernando Lobo Pereira
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<th>Time</th>
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<tbody>
<tr>
<td>10:50</td>
<td>Coffee break</td>
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<tr>
<td>11:00</td>
<td>Complementary Activity for secondary school students</td>
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<td>11:00</td>
<td>Workshop “An adventure on exotic wheels”</td>
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<td>11:20</td>
<td>Plenary Session</td>
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<td>11:20</td>
<td>“Communicating with Machines”</td>
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<tr>
<td>11:20</td>
<td>Keynote Speaker: Richard Bowden (University of Surrey, UK)</td>
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<tr>
<td>11:20</td>
<td>Chairs: Bernardete Ribeiro and Paulo Moura Oliveira</td>
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<td>11:20</td>
<td>Lunch break</td>
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<td>12:15</td>
<td>Lunch break</td>
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<tr>
<td>13:30</td>
<td>Industry Special Session</td>
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<td>13:30</td>
<td>Invited Speakers:</td>
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<tr>
<td>13:30</td>
<td>Chairs: João Calado and Jorge Henriques</td>
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<tr>
<td>14:30</td>
<td>Closing Session</td>
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<tr>
<td>14:30</td>
<td>Representative of the University of the Azores</td>
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<tr>
<td>14:30</td>
<td>Cristina Silva Calisto, Mayor of Lagoa</td>
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<td>14:30</td>
<td>José Virgílio Cruz, Board Member of Nonagon</td>
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<td>14:30</td>
<td>António Dourado, President of the General Assembly of APCA</td>
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<tr>
<td>14:30</td>
<td>Paulo Gil, CONTROLO2018 Program Chair, NOVA University of Lisbon</td>
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<tr>
<td>15:00</td>
<td>Departure from Lagoa</td>
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<tr>
<td>15:20</td>
<td>View of the “Lagoa do Fogo”</td>
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<tr>
<td>15:45</td>
<td>Technical Visit (visit to the “Central Geotérmica do Pico Vermelho”)</td>
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<tr>
<td>17:00</td>
<td>Tea break at “Fábrica do Chá da Gorreana”</td>
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<tr>
<td>18:30</td>
<td>Visit to “Lagoa das Furnas”</td>
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<tr>
<td>19:30</td>
<td>Visit to “Caldeiras das Furnas”</td>
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<tr>
<td>20:00</td>
<td>Dinner at Furnas</td>
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<tr>
<td>22:00</td>
<td>Return to Ponta Delgada</td>
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