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DAY 1: THURSDAY - SEPTEMBER 1, 2022

8.15	**Shuttle Service from Piazza Indipendenza to Conference Venue***
8.30	**Registration**
9.00 - 9.30	**Welcome Session**
9.30 - 10.15	**Chair:** *Prof. Carlo Morabito* **KEYNOTE: PROF. ALFONSO FARINA** Consultant to Electronic Division, Leonardo SpA – Roma, Italy **Title:** *Artificial Intelligence and Data Fusion Techniques applied to Space-based Global Maritime Surveillance. A look to deep learning and information from heterogeneous sensors*
10.15 - 11.00	**Workshop: *The use of Artificial Intelligence for Space Applications*** **Panel Discussion:** *Artificial Intelligence for Space Applications* **Chairs:** *Proff. Carlo Morabito, Roberto Furfaro* **Panellists:** *Prof. Carlo Morabito (UNIRC), Prof. Roberto Furfaro (University of Arizona), Dr. Gabriella Arrigo (ASI), Dr. Marco Di Clemente (ASI), Dr. Sabrina Ricci (ESA-ESRIN), Dr. Andrea Pietropaolo (Thales Alenia Space), Dr. Pietro Ferraro (CNR-ISASI)*
11.00 – 11.20	**Coffee Break**
11.20 – 13.05	**Workshop: *The use of Artificial Intelligence for Space Applications*** ***Chair:*** *Dr. Marco Di Clemente* Paper IDs: 15, 17, 19, 23, 24, 33, 40
11.20 – 11.35	ID 15 YOLO v4 Based Algorithm for Resident Space Object Detection and Tracking *Marco Mastrofini, Gilberto Goracci, Ivan Agostinelli, Fabio Curti*
11.35 – 11.50	ID 17 Overview of Meta-Reinforcement Learning Methods for Autonomous Landing Guidance *Andrea Scorsoglio, Luca Ghilardi, Roberto Furfaro*
11.50 – 12.05	ID 19 Hardware-in-the-loop simulations of future autonomous space systems aided by artificial intelligence *Andrea Carbone, Dario Spiller, Mohamed Salim Farissi, Sarathchandrakumar T. Sasidharan, Francesco Latorre, Fabio Curti*
12.05 – 12.20	ID 23 Distribution Shift Metric for Performance Evaluation of Behavioral Cloning Applied to the Fuel-Optimal Landing Problem *Omkar S. Mulekar, Riccardo Bevilacqua, Hancheol Cho*
12.20 – 12.35	ID 24 Fault Detection Exploiting Artificial Intelligence in Satellite Systems *Nicola Ferrante, Gianluca Giuffrida, Pietro Nannipieri, Alessio Bechini, Luca Fanucci*
12.35 – 12.50	ID 33 An Overview of X-TFC Applications for Aerospace Optimal Control Problems *Enrico Schiassi, Andrea D'Ambrosio, Roberto Furfaro*
12.50 – 13.05	ID 40 Innovative ML-based methods for automated on-board spacecraft anomaly detection *Carlo Ciancarelli, Eleonora Mariotti, Francesco Corallo, Salvatore Cognetta, Livia Manovi, Alex Marchioni, Mauro Mangia, Riccardo Rovatti, Gianluca Furano*
13.05 – 14.05	**Lunch**
14.05 – 15.50	**Workshop: *The use of Artificial Intelligence for Space Applications*** ***Chair:*** *Dr. Andrea Pietropaolo* Paper IDs: 44, 45, 68, 81, 97, 100, 108
14.05 – 14.20	ID 44 Deep Learning for Navigation of Small Satellites about Asteroids: an Introduction to the DeepNav Project *Carmine Buonagura, Mattia Pugliatti, Vittorio Franzese, Francesco Topputo, Aurel Zeqaj, Marco Zannoni, Mattia Varile, Ilaria Bloise, Federico Fontana, Francesco Rossi, Lorenzo Feruglio*
14.20 – 14.35	ID 45 Object recognition algorithms for the Didymos binary system *Mattia Pugliatti, Felice Piccolo, Francesco Topputo*
14.35 – 14.50	ID 68 Investigating Vision Transformers for Bridging Domain Gap in Satellite Pose Estimation *Alessandro Lotti, Dario Modenini, Paolo Tortora*
14.50 – 15.05	ID 81 Earth Observation Big Data exploitation for water reservoirs continuous monitoring: the potential of Sentinel-2 data and HPC *Roberta Ravanelli, Paolo Mazzucchelli, Valeria Belloni, Filippo Bocchino,* *Laura Morselli, Andrea Fiorino, Fabio Gerace, Mattia Crespi*

15.05 – 15.20	ID 97 Retrieval of marine parameters from hyperspectral satellite data and machine learning methods *Federico Serva, Luigi Ansalone, Pierre Philippe Mathieu*
15.20 – 15.35	ID 100 Cooperative Lunar Site Preparation and Open Pit Resource Extraction Using Ground Robots *Jekan Thangavelautham*
15.35 – 15.50	ID 108 A Supervised Learning-based Approach to Maneuver Detection Through TLE Data Mining *Riccardo Cipollone, Nugraha Setya Ardi, Pierluigi Di Lizia*
15.50 – 16.10	**Coffee Break**
16.10 – 18.10	**Track: Application of AI and Informatics in Pattern Recognition Paper** **Chair:** *Prof. Marley Vellasco* Paper IDs: 43, 69, 82, 66, 36, 71, 47, 38, 51
16.10 – 16.25	ID 43 Identifying Colluding Actors in Social Communities by Reputation Measures *Mariantonia Cotronei, Sofia Giuffrè, Attilio Marcianò, Domenico Rosaci, Giuseppe M. L. Sarnè*
16.25 – 16.40	ID 82 Applied Enhanced Q-NAS for COVID-19 Detection in CT Images *Julia Noce, Gianella Chantong, Gustavo Jauregui, Roberto Mogami, Alexandra Monteiro, Karla Figueiredo, Marley Vellasco*
16.40 – 16.55	ID 66 Beware the Sirens: Prototyping an Emergency Vehicle Detection System for Smart Cars *Michela Cantarini, Leonardo Gabrielll, Lucia Migliorelli, Adriano Mancini, Stefano Squartini*
16.55 – 17.10	ID 36 Identifying synthetic voices qualities for conversational agents *Marialucia Cuciniello, Terry Amorese, Gennaro Cordasco, Stefano Marrone, Fiammetta Marulli, Filippo Cavallo, Olga Gordeeva, Zoraida Callejas Carrión, Anna Esposito*
17.10 – 17.25	ID 71 Detection of Autism Spectrum Disorder by a Fast Deep Neural Network *Francesco Di Luzio, Federica Colonnese, Antonello Rosato, Massimo Panella*
17.25 – 17.40	ID 47 A graph-based approach to detect anomalies based on shared attribute values *Steffen Brauer, Marco Fisichella, Gianluca Lax, Carlo Romeo, Antonia Russo*
17.40 – 17.55	ID 38 An FPGA-based Hardware Accelerator for the k-Nearest Neighbor Algorithm Implementation in Wearable Embedded Systems *Antonio Borelli, Fanny Spagnolo, Raffaele Gravina, Fabio Frustaci*
17.55 – 18.10	ID 51 MEMS and AI for the Recognition of Human Activities on IoT Platforms *Luigi Bibbò, Massimo Merenda, Francesco Della Corte, Riccardo Carotenuto, Vincenzo Francesco Romeo*
16.10 – 17.15	**Track: Application of AI and Informatics in Network, Security, and Analytics** **Chair:** *Prof. Shamim Kaiser* Paper IDs: 35, 79, 96115, 89, 90 **ROOM B**
16.10 – 16.25	ID 35 A novel approach to identifying DDoS traffic in the Smart Home network via Exploratory Data Analysis *Asmau Wali, Oluwasegun Apejoye, Thejavathy Raja, Jun He, Xiaoqi Ma*
16.25 – 16.40	ID 79 Indoor Positioning and Navigation using Bluetooth Low Energy and Cloud Service in Healthcare Perspective *K Shayekh Ebne Mizan, M Shamim Kaiser, Milon Biswas*
16.40 – 16.55	ID 96115 Evaluation of Galvanic Skin Response (GSR) Signals Features for Emotion Recognition *Kuryati Kipli, Aisya Amelia Abdul LatiP, Kasumawati Lias, Norazlina Bateni, Salmah Mohamad Yusoff, Jamaah Suud, M.A. Jalil, Kanad Ray, M Shamim Kaiser, Mufti Mahmud*
16.55 – 17.10	ID 89 Identification of Crown and Rump in First-Trimester Ultrasound Images using Deep Convolutional Neural Network *Samuel Sutton, Mufti Mahmud, Rishi Singh, Luis Yovera*
17.10 – 17.25	ID 90 A Hybrid Deep Learning System to detect face-mask and monitor social distance

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	Lutfun Nahar, Nanziba Basnin, Mohammad Shahadat Hossain, Karl Andersson
17.25 – 18.10	**Chair: Prof. Mufti Mahmud** **KEYNOTE: PROF. CARLOS COELLO COELLO** Professor at the Center for Research and Advanced Studies del National Polytechnic Institute, Mexico **Title**: *Evolutionary Multi-Objective Optimization and The Quest for Reproducibility* **ROOM B**
18.15	**End of Day 1** **Shuttle Service from Conference Venue to Piazza Indipendenza***
20.30	**Social Dinner at** **L'A Gourmet L'Accademia** *Via Largo Cristoforo Colombo, 6, 89125 Reggio Calabria*

***Local information at http://neurolab.ing.unirc.it/events/2022/aii2022/**

DAY 2: FRIDAY - SEPTEMBER 2, 2022

8.15	**Shuttle Service from Piazza Indipendenza to Conference Venue***
8.30	**Registration**
9.00 - 9.45	**Chair:** *Dr. Sabrina Ricci* **KEYNOTE: DR. PIERRE PHILIPPE MATHIEU** Earth Observation Future Systems Department, European Space Agency (ESA), Italy **Title:** *The rise of AI for Space*
9.45 – 10.45	**Workshop: *The use of Artificial Intelligence for Space Applications*** ***Chair:*** *Dr. Sabrina Ricci* Paper IDs: 12, 16, 18, 96101
9.45 – 10.00	ID 12 SAR Image Formation: Conventional and AI-based approaches on Sentinel-1 Raw Products *Gianluca Maria Campagna, Luca Manca*
10.00 – 10.15	ID 16 GPU@SAT: a general-purpose programmable accelerator for on board data processing and satellite autonomy *Roberto Ciardi, Gianluca Giuffrida, Gionata Benelli, Christian Cardenio, Riccardo Maderna*
10.15 – 10.30	ID 18 Satellite IoT for TT&C and Satellite Identification *Giuseppe D'Angelo, JP Mediano-Alameda, Riccardo Andreotti*
10.30 – 10.45	ID 96101 A Machine learning approach for Monitoring of GNSS signal quality in Spaceborne receivers: Evil waveform and RF threats *Andrea Emmanuele, Ruggero Colombo, Stefano Zago, Mirko Salaris*
10.45 - 11.05	**Coffee Break**
11.05 – 12.20	**Workshop: *The use of Artificial Intelligence for Space Applications*** ***Chair:*** *Prof. Roberto Furfaro* Paper IDs: 42, 72, 103, 77, 26
11.05 – 11.20	ID 42 SINAV an ASI study of future AI applications on spatial rovers *Piergiorgio Lanza, Gabriele Berardi, Patrick Roncagliolo, Giuseppe D'Amore*
11.20 – 11.35	ID 72 Detection of Clouds and Cloud shadows on Sentinel-2 Data Using a CNN *Bram Eijgenraam, Simone Mancon*
11.35 – 11.50	ID 103 Canopy fire effects estimation using Sentinel-2 imagery and deep learning approach. A case study on the Aspromonte National Park *Giuseppe Modica, Giandomenico De Luca*
11.50 – 12.05	ID 77 PRISMA Hyperspectral Image Segmentation with U-Net Convolutional Neural Network using Singular Value Decomposition for Mapping Mining Areas

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	Andrea Dosi, Michele Pesce, Anna Di Nardo, Vincenzo Pafundi, Rita Chirico, Lorenzo Ammirati, Nicola Mondillo, Giuseppe Longo
12.05 – 12.20	ID 26 RobDT: AI-enhanced Digital Twins for Space Exploration Robotic Assets *Marco Bozzano, Riccardo Bussola, Marco Cristoforetti, Srajan Goyal, Martin Jonáš, Konstantinos Kapellos, Andrea Micheli, Davide Soldà, Stefano Tonetta, Christos Tranoris, and Alessandro Valentini*
12.20 – 13.20	**Special Session: AI-based Time Series Analysis for Energy-related Applications and Systems** **Chair:** *Prof. Massimo Panella* Paper IDs: 37, 48, 39, 76
12.20 – 12.35	ID 37 An Indirect Approach to Forecast Produced Power on Photovoltaic Plants under Uneven Shading Conditions *Valentina Lucaferri, Martina Radicioni, Francesco De Lia, Antonino Laudani, Roberto Lo Presti, Gabriele Maria Lozito, Francesco Riganti Fulginei, Massimo Panella, Riccardo Schioppo*
12.35 – 12.50	ID 48 Weakly Supervised Transfer Learning for Multi-label Appliance Classification *Giulia Tanoni, Emanuele Principi, Luigi Mandolini, Stefano Squartini*
12.50 – 13.05	ID 39 Designing Low-Power and High-Speed FPGA-based Binary Decision Tree Hardware Accelerators *Roman Huzyuk, Fanny Spagnolo, Fabio Frustaci*
13.05 – 13.20	ID 76 Nonexclusive Classification of Household Appliances by Fuzzy Deep Neural Networks *Federico Succetti, Antonello Rosato, Massimo Panella*
13.20 – 14.20	**Lunch**
14.20 – 15.05	**Chair:** *Prof. Gianluca Lax* **KEYNOTE: PROF. FRANCESCO BUCCAFURRI** University Mediterranea of Reggio Calabria, Italy **Title:** *Internet Censorship Resistance*
15.05 – 16.20	**Chairs:** *Dr. Giovanni Morabito* **INDUSTRY SESSION** *Stefano De Rossi, Aubay* *Valeria Tomaselli, ST Microelectronics* *Giuseppe Morabito, TIM* *Corrado Felini, Goboservice*
16.20 – 16.40	**Coffee Break**
16.40 – 18.10	**Track: Application of AI and Informatics in Healthcare** **Chair:** *Dr. Nadia Mammone* Paper IDs: 10, 14, 49, 73, 70, 52
16.40 – 16.55	ID 10 Handwriting and Drawing for Depression Detection: A Preliminary Study *Gennaro Raimo, Michele Buonanno, Massimiliano Conson, Gennaro Cordasco, Marcos Faundez-Zanuy, Stefano Marrone, Fiammetta Marulli, Alessandro Vinciarelli, Anna Esposito*
16.55 – 17.10	ID 14 Explainable Deep Learning for Alzheimer Disease Classification and Localisation *Marcello Di Giammarco, Giacomo Iadarola, Fabio Martinelli, Francesco Mercaldo, Fabrizio Ravelli, Antonella Santone*
17.10 – 17.25	ID 49 ML-based Radiomics analysis for Breast Cancer classification in DCE-MRI *Francesco Prinzi, Alessia Orlando, Salvatore Gaglio, Massimo Midiri, Salvatore Vitabile*
17.25 – 17.40	ID 73 Explainable deep learning classification of respiratory sound for telemedicine applications *Michele Lo Giudice, Nadia Mammone, Cosimo Ieracitano, Umberto Aguglia, Danilo Mandic, Francesco Carlo Morabito*
17.40 – 17.55	ID 70 Toward an Interoperable Catalogue of Multimodal Depression-related Data *Terry Amorese, Gennaro Cordasco, Giovanni D'Angelo, Maria Stella de Biase, Michele Di Giovanni, Anna Esposito, Claudia Greco, Stefano Marrone, Fiammetta Marulli, Laura Verde*
17.55 – 18.10	ID 52 Decoding motor imagery from EEG signals through a novel deep 3D Convolutional Neural Network approach *Nadia Mammone et al.*
16.40 – 18.10	**Track: Application of AI and Informatics in Healthcare** **Chair:** *Prof. Shamim Kaiser* Paper IDs: 91, 96105, 54, 83, 86

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	ROOM B
16.40 – 16.55	ID 91 A Non-Parametric Model for Forecasting Life Expectancy at Birth Using Gaussian Process *Pranta Biswas, Fahmida Islam Ireen, Fairooz Ahsan Nawar, Maisha Tabassum, Muhammad Arifur Rahman, Mufti Mahmud, M Shamim Kaiser, David J. Brow7*
16.55 – 17.10	ID 96105 A Pyramidal Approach for Emotion Recognition from EEG Signals *Thejaswini M S, G.Hemantha Kumar, VN Manjunath Aradhya*
17.10 – 17.25	ID 54 A Hybrid Transfer Learning and Segmentation approach for the Detection of Acute Lymphoblastic Leukemia *Jia Hau Ang, Nazia Hameed, Adam David Walker*
17.25 – 17.40	ID 83 iConDet2: An Improved Conjunctivitis Detection Portable Healthcare App Powered by Artificial Intelligence *Nilanjana Dutta Roy, Mufti Mahmud, Mainak Adak, Ayushman Chatterjee*
17.40 – 17.55	ID 86 Ensemble Classifiers for a 4-way Classification of Alzheimers Disease *Noushath Shaffi, Faizal Hajamohideen, Abdelhamid Abdessalam, Mufti Mahmud, Karthikeyan Subramanian*
18.10 – 20.15	**BEST PAPER AWARD CERIMONY**
20.15	**End of Day 2** **Shuttle Service from Conference Venue to Piazza Indipendenza***

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DAY 3: SATURDAY - SEPTEMBER 3, 2022

8.15	**Shuttle Service from Piazza Indipendenza to Conference Venue***
8.30 - 9.00	**Registration**
9.00 – 11.00	**Workshop: *The use of Artificial Intelligence for Space Applications*** ***Chair:*** *Prof. Carlo Morabito* Paper IDs: 21, 22,102, 20, 25, 30, 41, 46
9.00 – 9.15	ID 21 Imbalanced data handling for deep learning-based autonomous Crater Detection Algorithms in Terrain Relative Navigation *Francesco Latorre, Dario Spiller, Fabio Curti*
9.15 – 9.30	ID 22 Comparative Analysis of Reinforcement Learning Algorithms for Robust Interplanetary Trajectory Design *Lorenzo Federici, Alessandro Zavoli, Roberto Furfaro*
9.30 – 9.45	ID 102 Machine learning for SAR processing *Oreste Trematerra, Quirino Morante*
9.45 – 10.00	ID 20 Deep Reinforcement Learning for Pin-Point Autonomous Lunar Landing: Trajectory Recalculation for Obstacle Avoidance *Giulia Ciabatti, Dario Spiller, Shreyansh Daftry, Roberto Capobianco, Fabio Curti*
10.00 – 10.15	ID 25 ISS Monocular Depth Estimation Via Deep Learning *Luca Ghilardi, Andrea Scorsoglio, Roberto Furfaro*
10.15 – 10.30	ID 30 AI and Penetration Testing: Optimization of the Ground Segment's Security *Alessandro Confido, Evridiki V. Ntagiou, Marcus Wallum*
10.30 – 10.45	ID 41 Explainable AI with the Information Bottleneck Principle *Gabriele Berardi, Piergiorgio Lanza*
10.45 – 11.00	ID 46 Toward an explainable Artificial Intelligence approach for ships detection from satellite imagery *Cosimo Ieracitano, Nadia Mammone, Francesco Carlo Morabito*

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9.00 – 9.45	**Panel Discussion:** *Applied Intelligence Towards Inclusiveness and Personalisation for Students with Learning Disabilities and Autism* ***Chairs:*** *Prof. David Brown, Nottingham Trent University, UK, Dr. Mufti Mahmud, Nottingham Trent University, UK* *Prof. M Shamim Kaiser, Jahangirnagar University, Bangladesh, Mr. Karel Van Isacker, PhoenixKM BVBA, Belgium* **ROOM B**
11.00 – 11.20	**Coffee Break**
11.20 – 12.35	**Track: Emerging Applications of AI and Informatics** **Chair:** *Prof. Arifur Rahman* Paper IDs: 3, 34, 56, 105, 96104 **ROOM B**
11.20 – 11.35	ID 3 A hybrid speed and radial distance feature descriptor using optical flow approach in HAR *Guanghui Hua, G. Hemantha Kumar, V. N. Manjunath Aradhya*
11.35 – 11.50	ID 34 A Unsupervised Domain Adaptation Framework for Vestibular Schwannoma and Cochlea Segmentation *Wen Jye Chai, Nazia Hameed, Jeremie Clos*
11.50 – 12.05	ID 56 A Novel Fuzzy Semi-supervised Learning Approach for the Classification of Colorectal Cancer (FSSL-CRCC) *Mohammad Shahadat Hossain, Sara Karim, Muhammed J. A. Patwary, Karl Andersson*
12.05 – 12.20	ID 105 Impact Of Emotional State On Food Preference By Students: A Machine Learning Approach *Nadia Nasrin, Biraj Saha Aronya, Nusrat Jahan, Imran Mahmud, Afsana Begum*
12.20 – 12.35	ID 96104 A Privacy-Preserving Federated-MobileNet for Facial Expression Detection from Images *Tapotosh Ghosh, Md. Hasan Al Banna, Md. Jaber Al Nahian, M. Shamim Kaiser, Mufti Mahmud, Shaobao Li, Nelishia Pillay*
12.35 – 12.50	ID 69 The Effect of Drug on Neonatal-ICU Length of Stay: A Machine Learning Approach to Analyze *Farzana Islam Adiba, Mohammad Zahidur Rahman*
11.20 – 13.05	**Track: Emerging Applications of AI and Informatics** **Chair:** *Dr. Cosimo Ieracitano, Prof. Mufti Mahmud* Paper IDs: 96108, 75, 96109, 53, 96106, 6, 96107
11.20 – 11.35	ID 96108 Research Policies impact Dynamics for Balkanic countries in EU: new findings by deep learning and network analysis *Pasquale Fotia, Massimiliano Ferrara*
11.35 – 11.50	ID 75 Television programs classification via Deep Learning using SSMI-CCN *Federico Candela, Francesco Carlo Morabito, Carmen Francesca Zagaria*
11.50 – 12.05	ID 96109 Science Parks externalities on financial performance of small firms through business intelligence tools *Valentina Mallamaci, Massimiliano Ferrara*
12.05 – 12.20	ID 53 Tackling the Linear Sum Assignment Problem with Graph Neural Networks *Carlo Aironi, Samuele Cornell, Stefano Squartini*
12.20 – 12.35	ID 96106 A Novel Framework to Detect Anomalous Nodes to Secure Wireless Sensor Networks *Muhammad Raisuddin Ahmed, Thirein Myo, Badar Al Baroomi, M H Marhaban, M Shamim Kaiser, Mufti Mahmud*
12.35 – 12.50	ID 6 Innovative Soft Computing Techniques for the Evaluation of the Mechanical Stress State of Steel Plates *Mario Versaci, Giovanni Angiulli, Paolo Crucitti, Filippo Laganà, Diego Pellicanò, Annunziata Palumbo*
12.50 – 13.05	ID 96107 A novel Fuzzy dynamic expert system applied in economic with pandemic situations *Soheil Salahshoura, Ali Ahmadian, Massimiliano Ferrara*
13.05	**Closing of AII2022 Conference**
13.05 – 14.05	**Lunch**
14.15	**End of Day 3** **Shuttle Service from Conference Venue to Piazza Indipendenza***

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