

**The Second International Conference on Advances in Computing Research (ACR'24)**  
**IE University, Madrid, Spain, June 3-5, 2024**

**Conference Program**

**Monday, June 3, 2024**

**07.30-08.00** Conference Registration (Conference Registration Desk)

**08.00-08.15** WELCOME  
**Professor Solange Ghernaoui**, University of Lausanne, Switzerland  
Conference Chair

**ACR24-Session-1-IR**      **Cybersecurity Engineering**  
**08.20-10.20, June 3, 2024 (In-person/Remote)**

**Session Chair:**      **Enkhzol Dovdon**  
Eindhoven University of Technology, The Netherlands

**08.20-08.40** Optimizing Energy Consumption for IoT Adaptive Security: A Mobility-Based Solution  
**Asma Arab**, Michaël Mahamat, Ghada Jaber, and Abdelmadjid Bouabdallah  
Université de Technologie de Compiègne, Heudiasyc (Heuristics and Diagnosis of Complex Systems) CS 60319, 60203 Compiègne cedex, France

**08.40-09.00** Machine Learning Based Analysis of Cyber-attacks Targeting Smart Grid Infrastructure  
**Mais Nijim**<sup>1</sup>, **Viswas Kanumuri**<sup>1</sup>, **Waseem Al Aqqad**<sup>2</sup>, and **Hisham Albataineh**<sup>3</sup>  
<sup>1</sup>Department of Electrical Engineering and Computer Science, Texas A&M University-Kingsville, Kingsville, TX, USA  
<sup>2</sup>Department of Electrical and Computer engineering, West Virginia Tech, Beckley, WV, USA  
<sup>3</sup>Department of Physics and Geosciences, Texas A&M University-Kingsville, Kingsville, TX, USA

**09.00-09.20** Cyber Attack Detection on IoT Using Machine Learning  
**Mohamed Haddadi**<sup>1</sup>, Eralda Caushaj<sup>2</sup>, Ala Eddine Bouladour<sup>3</sup>, and Adbeldjabar Nedjai Dhirar<sup>3</sup>  
<sup>1</sup>Université de M'hamed Bougara de Boumerdes, Boumerdès 35000, Algérie.  
<sup>2</sup>Oakland University, Rochester Hills, Michigan, USA  
<sup>3</sup>Université de Ferhat Abbess Sétif1, Algérie

- 09.20-09.40** Open Platform Infrastructure for Industrial Control Systems Security  
**Guillermo Francia, III** and Eman El-Sheikh  
Center for Cybersecurity University of West Florida Pensacola, FL, USA
- 09.40-10.00** Security Challenges and Solutions in Smart Cities  
**Faisal AlZyoud**<sup>1</sup>, Ruba Al-Falah<sup>2</sup>, Monther Tarawneh<sup>1</sup>, Omar Tarawneh<sup>3</sup>  
<sup>1</sup>Computer Science Department, Isra University, Amman, Jordan  
<sup>2</sup>Ministry of Local Administration, Amman, Jordan  
<sup>3</sup>Software Engineering Department, Amman Arab University, Amman, Jordan
- 10.00-10.20** CloudSec: An Extensible Automated Reasoning Framework for Cloud Security Policies  
**Joe Stubbs**, Smruti Padhy, Richard Cardone, and Steve Black  
Texas Advanced Computing Center, University of Texas at Austin, Texas, USA
- 10.20-10.40** **BREAK**
- ACR24-Session-2-I** **Data Analytics Engineering**  
**10.40-12.20, June 3, 2024 (In-Person)**
- Session Chair:** **Guillermo Francia III**  
University of West Florida Pensacola, FL, USA
- 10.40-11.00** Irregular Frame Rate Synchronization of Multi-camera Videos for Data-driven Animal Behavior Detection  
**Enkhzol Dovdon**, Manu Agarwal, Yanja Dajsuren, and Jakob de Vlieg  
Mathematics & Computer Science Department,  
Eindhoven University of Technology, The Netherlands
- 11.00-11.20** Data Transfer Methods and Strategies: Unified Replication Model Using Trees.  
**Alberto Arteta**, Sai Sharan Karam, Vanga Ritesh Reddy, and Sontireddy Ranjith Reddy  
Troy University, Troy AL 36081, USA
- 11.20-11.40** Effects of Parallel and Distributed Learning on CNN Performance for Lung Disease Classification.  
**Lara Visuña**, Javier Garcia-Blas, and Jesus Carretero  
Computer Science and Engineering Department, University Carlos III of Madrid, Leganes, Spain

11.40-12.00 Public Policy Decision Making: Confirmatory Factor Analysis  
**Maryna Averkyna**<sup>1,2</sup> and Oleksandr Skarbarchuk<sup>2</sup>  
<sup>1</sup>Estonian Business School, A. Lauteri,<sup>3</sup> Tallinn, Estonia,  
<sup>2</sup>The National University of Ostroh Academy, Seminarska, 2, Ostroh,  
Ukraine

12.00-12.20 Classification of Eye Disorders Using Deep Learning and Machine Learning Models  
**Manal El Harti**<sup>1</sup>, Saad Zaamoun<sup>2</sup>, Said Jai Andaloussi<sup>1</sup>, and Ouail Ouchetto<sup>1</sup>  
<sup>1</sup> Department of Mathematics and Computer Science, Faculty of Science Ain Chock, Hassan II University, Casablanca, Morocco.  
<sup>2</sup> Faculty of Juridical, Economic and Social Sciences Ain-Chock, Hassan II University, Casa-blanca, Morocco.

12.20-01.20 **LUNCH BREAK (ON YOUR OWN)**

**ACR24-Session-3-R**                      **Data Analytics Engineering**  
**01.20-03.00, June 3, 2024, (Remote)**

**Session Chair:**                      **Lemia Louail**  
Université de Lorraine, France

01.20-01.40 TNEST: Training Sparse Neural Network for FPGA Based Edge Application  
Rammi Das<sup>1</sup>, **Rupesh Raj Karn**<sup>2</sup>, Jukka Heikkonen<sup>3</sup>, and Rajeev Kanth<sup>4</sup>  
<sup>1</sup>Nepal College of Information Technology, Pokhara University, Nepal  
<sup>2</sup>Center for Cyber Security, New York University, UAE  
<sup>3</sup>Department of Computing, University of Turku, Finland  
<sup>4</sup>Department of Information Technology, Savonia University of Applied Sciences, Finland

01.40-02.00 Improving the efficiency of Multimodal approach for Chest X-ray  
Jiblal Upadhy<sup>1</sup>, Jorge Vargas<sup>2</sup>, Khem Poudel<sup>3</sup>, and **Jaishree Ranganathan**<sup>3</sup>  
<sup>1</sup> Computational and Data Science, Middle Tennessee State University, Murfreesboro, TN, 37132, USA,  
<sup>2</sup> Department of Engineering Technology, Middle Tennessee State University, Murfreesboro, TN, 37132, USA,  
<sup>3</sup> Department of Computer Science, Middle Tennessee State University, Murfreesboro, TN, 37132, USA

**02.00-02.20** Improving Weeds Detection in Pastures Using Illumination Invariance Techniques  
Ali Hassan Alyatimi<sup>1,2</sup>, Thair Al-Dala'in<sup>3</sup>, Vera Chung<sup>1</sup>, **Ali Anaissi**<sup>1</sup>, and Edmund J. Sadgrove<sup>4</sup>  
<sup>1</sup> School of Computer Science, The University of Sydney  
<sup>2</sup> Computer Tech, Jazan College of Technology, Vocational Training Corporation (TVTC), Saudi Arabia  
<sup>3</sup> Western Sydney University, Sydney City Campus, Australia.  
<sup>4</sup> School of Science & Technology, University of New England, Armidale, NSW 2351, Australia

**02.20-02.40** Evaluating Study Between Vision Transformers and Pre-trained CNN Learning Algorithms to Classify Breast Cancer Histopathological Images  
**Maali Altulayhi** and Ashwaq Alhrgan  
College of Computing and Informatics, Saudi Electronic University, Saudi Arabia

**02.40-03.00** Wrist Crack Classification Using Deep Learning and X-Ray Imaging  
**Biswaranjan Senapati**<sup>1</sup>, Awad Bin Naeem<sup>2</sup>, Muhammad Imran Ghafoor<sup>3</sup>, Vivek Gulaxi<sup>4</sup>, Friban Almeida<sup>5</sup>, Manish Raj Anand<sup>6</sup>, Saroopya Gollapudi<sup>7</sup>, and Chandra Jaiswal<sup>8</sup>  
<sup>1</sup> Parker Hannifin Corp, Chicago, USA  
<sup>2</sup> National College of Business Administration & Economics, Pakistan  
<sup>3</sup> Pakistan Television Corporation, Lahore, Pakistan  
<sup>4</sup> Publix Corporation, USA  
<sup>5</sup> Computer Science Department Inc, USA  
<sup>6</sup> Medline Pharmaceuticals, USA  
<sup>7</sup> Deloitte Consulting LLP, USA  
<sup>8</sup> Hanes Brands INC, USA

**03.00-03.20** **BREAK**

**ACR24-Session-4-IR** **Networking and Communication**  
**03.20-04.20, June 3, 2024 (Remote/In-Person)**

**Session Chair:** **Eman El-Sheikh**  
University of West Florida Pensacola, FL, USA

**03.20-03.40** User controlled routing exploiting PCEPS and Inter-domain Label Switched Paths  
**Leonardo Boldrini**<sup>1</sup>, Matteo Bachiddu<sup>2</sup>, Ralph Koning<sup>3</sup>, and Paola Grosso<sup>1</sup>  
<sup>1</sup> MNS group, University of Amsterdam, Amsterdam, The Netherlands  
<sup>2</sup> NETGroup, Politecnico di Torino, Torino, Italy  
<sup>3</sup> SIDN Labs, Arnhem, The Netherlands

03.40-04.00 Performance Evaluation of Multi-Hop Multi-Branch AF Relaying Cooperative Diversity Network  
Arwa Sh. Aqel, and **Mamoun F. Al-Mistarihi**  
Jordan University of Science and Technology, Irbid, Jordan

04.00-04.20 Study of Sober and Efficient LoRaWAN Networks  
**Lemia Louail** and Jean-Philippe Georges  
Université de Lorraine, CNRS, CRAN, F-54000 Nancy, France

04.20-05.20 **Keynote Speech: Data-driven Decision Support and Sector-based Optimization within Complex Reachback Process**

**Professor Stefan Wolfgang Pickl**  
DKKV, COMTESSA, Munich, Germany

07.30-10.00 **CONFERENCE DINNER**

**Tuesday, June 4, 2024**

**ACR24-Session-5-IR Computational Intelligence**  
**08.00-10.20, June 4, 2024 (In-person/Remote)**

**Session Chair: Maryna Averkyna**  
Estonian Business School, Estonia

08.00-08.20 Innovating Project Management: AI Applications for Success Prediction and Resource Optimization  
**Monther Tarawneh**<sup>1</sup>, Huda AbdAlwahed<sup>2</sup>, and Faisal AlZyoud<sup>1</sup>  
<sup>1</sup> Computer Science Department, Isra University, Amman, Jordan  
<sup>2</sup>Software Engineering Department, Isra University, Amman, Jordan

08.20-08.40 Integrating Lean Healthcare and Machine Learning for Cancer Risk Prediction  
Mohammad Shahin, **Mazdak Maghanaki**, F. Frank Chen, and Ali Hosseinzadeh  
The University of Texas at San Antonio, San Antonio TX 78249, USA

08.40-09.00 Fast Artificial Intelligence Detecting Climate Change Effects in Imaging Data  
**Birgitta Dresch-Langley**<sup>1</sup> and John M. Wandeto<sup>2</sup>  
<sup>1</sup> CNRS UMR 7357 Strasbourg University, 67200 Strasbourg, FRANCE  
<sup>2</sup> Dedan Kimathi University of Technology, Nyeri, Kenya

- 09.00-09.20** Optimizing Feature Selection for Binary Classification with Noisy Labels: A Genetic Algorithm Approach  
**Vandad Imani**<sup>1</sup>, Elaheh Moradi<sup>1</sup>, Carlos Sevilla-Salcedo<sup>2</sup>, Vittorio Fortino<sup>3</sup>, and Jussi Tohka<sup>1</sup>  
<sup>1</sup>A. I. Virtanen Institute for Molecular Sciences, University of Eastern Finland, Finland  
<sup>2</sup> Department of Computer Science, Aalto University, Espoo, Finland  
<sup>3</sup> Institute of Biomedicine, University of Eastern Finland, Finland
- 09.20-09.40** A web Application to Determine the Quality of Water Through the Identification of Macroinvertebrates  
**Maria-Isabel Cañar**<sup>1</sup>, Marcelo Flores<sup>1,2</sup>, and Angélica Zea<sup>1</sup>  
<sup>1</sup>Salesian Polytechnic University, Calle Vieja 12-30. Cuenca, Ecuador  
<sup>2</sup>Polytechnic University of Valencia. Camino de Vera s/n 46022 Valencia, Spain
- 09.40-10.00** Improving Early Diagnosis: The Intersection of Lean Healthcare and Computer Vision in Cancer Detection  
**Mazdak Maghanaki**, Mohammad Shahin, F. Frank Chen, and Ali Hosseinzadeh  
The University of Texas at San Antonio, San Antonio, TX 78249, USA
- 10.00-10.20** Analysis of Blood Smear Microscopic Images Using ML: DL  
**Hadia Mansouri**<sup>1</sup> and Faouzi Benzarti<sup>2</sup>  
<sup>1</sup> University of Tunis El Manar, National School of Engineers of Tunis, SITI Laboratory, University Campus Farhat Hached El Manar, Tunis  
<sup>2</sup>University of Tunis, High National School of Engineers of Tunis, SITI Laboratory, National School of Engineers of Tunis
- 10.20-10.40** **BREAK**
- 10.40-12.00** **Panel: Current and Future Trends in Computational Intelligence**  
*Moderator:* **Khem Poudel**, Middle Tennessee State University, USA  
*Panelists:* **Luis Coelho**, Polytechnic Institute of Porto, Portugal  
**Birgitta Dresp-Langley**, CNRS UMR 7357 Strasbourg University, France  
**Monther Tarawneh**, Isra University, Jordan
- 12.00-12.20** **FREE SLOT**
- 12.20-01.20** **LUNCH BREAK (ON YOUR OWN)**

01.20-02.40 **Keynote Speech: Secure Key Exchange Withstanding Quantum Attacks**

**Professor María Isabel González Vasco**  
Universidad Carlos III de Madrid, Spain

02.40-03.00 **FREE SLOT**

03.00-03.20 **BREAK**

**ACR24-Session-6-IR Cybersecurity Engineering**  
**03.20-05.00, June 4, 2024 (In-Person/Remote)**

**Session Chair: Alberto Arteta**  
Troy University, USA

03.20-03.40 A New Security Mechanism for IoT Devices: Electroencephalogram (EEG) Signals  
Ahmet Furkan Aydogan<sup>1</sup>, **Cihan Varol**<sup>1</sup>, Aysenur Vanli<sup>1</sup>, and Hacer Varol<sup>2</sup>  
<sup>1</sup>Sam Houston State University, Huntsville TX 77384, USA  
<sup>2</sup>Stephen F. Austin State University, Nacogdoches TX 75962, USA

03.40-04.00 Towards Hybrid NIDS: Combining Rule-Based SIEM with AI-Based Intrusion Detectors  
Federica Uccello<sup>1</sup>, **Marek Pawlicki**<sup>2</sup>, Salvatore D'Antonio<sup>1</sup>, Rafal Kozik<sup>2</sup>, and Michal Choras<sup>2</sup>  
<sup>1</sup>University of Naples 'Parthenope' Centro Direzionale, Isola C4, 80133 Napoli, Italy  
<sup>2</sup>Bydgoszcz University of Science and Technology, PBS, Bydgoszcz, Poland

04.00-04.20 Cyber Edge: Mitigating Cyberattacks in Edge Computing using Intrusion Detection System  
**Waseem AlAqqad**<sup>1</sup>, Mais Nijim<sup>2</sup>, Hisham Albataineh<sup>3</sup>  
<sup>1</sup>Department of Electrical and Computer Engineering, West Virginia Tech, Beckley, WV, USA  
<sup>2</sup>Department of Electrical Engineering and Computer Science, Texas A&M University-Kingsville, Kingsville, TX, USA  
<sup>3</sup>Department of Physics and Geosciences, Texas A&M University-Kingsville, Kingsville, TX, USA

04.20-04.40 Using Multivariate Heuristic Analysis for Detecting Attacks in Website Log Files: A Formulaic Approach  
**Peter Smith**, John Robson, and Nick Dalton  
Northumbria University, Newcastle, United Kingdom

04.40-05.00 An Assessment of the Cyber Security Challenges and Issues Associated with Cyber-Physical Power Systems  
Abubakar Bello<sup>1</sup>, Farnaz Farid<sup>1</sup> and **Fahima Hossain**<sup>2</sup>  
<sup>1</sup>Western Sydney University, Australia  
<sup>2</sup>Hamdard University, Bangladesh

## Wednesday, June 5, 2024

Session Chair: **Mohamed Haddadi**  
Université de M'hamed BOUGARA de Boumerdes, Algeria

ACR24-Session-7-R **Data Analytics Engineering**  
**08.00-09.20, June 5, 2024 (Remote)**

08.00-08.20 Increasing the Accuracy of a Deep Learning Model for Traffic Accident Severity Prediction by Adding a Temporal Category  
**Luis Pérez-Sala**, Manuel Curado, Leandro Tortosa, and Jose F. Vicent  
Department of Computer Science and Artificial Intelligence, University of Alicante, Alicante, Spain

08.20-08.40 2ARTs: a Platform for Exercise Prescriptions in Cardiac Recovery Patients  
Andreia Pereira<sup>1</sup>, Ricardo Martinho<sup>2</sup>, Rui Pinto<sup>3</sup>, Rui Rijo<sup>2</sup>, and **Carlos Grilo**  
<sup>1</sup> ESTG, Polytechnic of Leiria, Portugal  
<sup>2</sup> INESCC-DL, ESTG, Polytechnic of Leiria, Portugal  
<sup>3</sup> ciTechCare, ESSLei, Polytechnic of Leiria, Portugal  
<sup>4</sup> CIIC, ESTG, Polytechnic of Leiria, Portugal

08.40-09.00 Understanding Consumers Attitudes Towards Sustainability  
**Ali Anaissi**<sup>1</sup>, Maria P. Mandiola<sup>1</sup>, Sabreena Zoha Amin<sup>2</sup>, and Widad Alyassine<sup>1</sup>  
<sup>1</sup> School of Computer Science, The University of Sydney, Australia  
<sup>2</sup> School of Business, Western Sydney University



09.00-09.20 Optimized Vehicle Repair Cost by Means of Smart Repair Distribution Model

**Franck van der Sluis**<sup>1,3</sup>, Cristian Rodriguez Rivero<sup>2</sup>, and Joris Hooi<sup>3</sup>

<sup>1</sup> University of Amsterdam, Science Park, Amsterdam 1098 XH, Netherlands

<sup>2</sup> Cardiff Metropolitan University, Cardiff CF52YB, Wales, UK

<sup>3</sup> Openclaims, Amsteldijk 10, 1074 HP Amsterdam, Netherlands

09.20-10.20 **Keynote Speech: A Visit to Pre-Quantum, Quantum, and Post-Quantum Cryptography**

**Dr. Luis Hernández Encinas**

The Spanish Nacional Research Council (CSIC), Madrid, Spain

10.20-10.40 **BREAK**

ACR24-Session-8-IR **Posters**  
10.40-12.20, June 5, 2024 (**In-Person/Remote**)

**Session Chair:** **Lara Visuña**  
University Carlos III of Madrid, Spain

10.40-11.00 Towards a Scalable Spiking Neural Network  
Rasha Karakchi and **Jacob Frierson**  
University of South Carolina, Columbia SC 29208, USA

11.00-11.20 Exploration of TPUs for AI Applications  
**Diego Sanmartín Carrión**, Vera Prohaska, and Oscar Diez  
IE University, Madrid 28029, Spain

11.20-11.40 Driving Through Crisis: A Comparative Analysis of Road Accidents Before, During, and After the Pandemic  
Balakiran Neelam, Chandra Ponnathota, Manikanta Tumu, and **Samah Senbel**  
Sacred Heart University, Fairfield, Connecticut, USA

11.40-12.00 The Controversies and Challenges of Developing Beneficial Artificial Intelligence  
**Louis Golding** and Robert Polding  
Department of Data and Business Analytics, IE University, School of Science and Technology, Madrid, Spain

- 12.00-12.20** An Approach to Mitigate CNN Complexity on Domain-Specific Architectures  
Rasha Karakchi and **Noah Robertson**  
University of South Carolina, Columbia SC 29208, USA
- 12.20-01.20** **LUNCH BREAK (ON YOUR OWN)**
- 01.20-02.20** **Panel: Advances in Data Analytics Engineering**
- Moderator:* **Robert Polding**, IE University, Spain
- Panelists:* **Alberto Arteta**, Troy University, USA  
**Maryna Averkyna**, Estonian Business School, Estonia  
**Enkhzol Dovdon**, Eindhoven University of Technology, The Netherlands
- 02.20-02.40** **FREE SLOT**
- 02.40-03.00** **BREAK**
- ACR24-Session-9-IR** **Data Analytics Engineering + Mobile and Cloud Computing + Robotics and Automation**  
**03.00-05.00, June 5, 2024 (In-Person/Remote)**
- Session Chair:** **Joe Stubbs**  
University of Texas at Austin, USA
- 03.00-03.20** A Quadcopter Development for Security Purposes  
**Yusra Obeidat** and Rana Daoud  
Electronics Engineering Department Yarmouk University, Irbid, Jordan
- 03.20-03.40** An Analytical Study of Traffic Accidents in Connecticut, USA Using Python  
Prudhvinath Reddy Sureddy, Saifuddin Mohammed, Venkata Sai Veerendranath Magathala, Yamuna Koppala and **Samah Senbel**  
Sacred Heart University, Fairfield, Connecticut, USA
- 03.40-04.00** Enriching Ontology with Named Entity Recognition (NER) Integration  
**Nabila Khouya**, Asmaâ Retbi, and Samir Bennani  
Rime Team, Mohammadia School of Engineers (EMI), Mohammed V University in Rabat, Morocco

- 04.00-04.20 Overview of Infrastructure as Code (IaC) with Performance and Availability Assessment on Google Cloud Platform  
**Hongyu Wang**, Brian Kishiyama, David Lopez, and Jeong Yang  
Department of Computational, Engineering, and Mathematical Sciences,  
Texas A&M University-San Antonio, San Antonio, TX, USA
- 04.20-04.40 Determination of Pareto-Optimal Solutions to the Problem of Multicriteria Selection  
**Sergiy Shevchenko**  
National Technical University, Kharkiv Polytechnic Institute, Ukraine
- 04.40-05.00 Credit Card Batch Processing in Banking System  
Samir Poudel\*, Movinuddin<sup>1</sup>, Sanjana Gutta<sup>1</sup>, Revanth Kumar Kommu<sup>1</sup>,  
Jiblal Upadhy<sup>2</sup>, Md Nahid Hasan<sup>2</sup>, and **Khem Poudel**<sup>1</sup>  
<sup>1</sup> Department of Computer Science, Middle Tennessee State University,  
Murfreesboro, TN, 37132, USA,  
<sup>2</sup> Computational and Data Science, Middle Tennessee State University,  
Murfreesboro, TN, 37132, USA