Welcome to

EUSPN 2018
The 9th International Conference on Emerging Ubiquitous Systems and Pervasive Networks

ICTH 2018
The 8th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare

November 5 – 8, 2018
Leuven, Belgium

With support of
Hasselt University, Belgium & Acadia University, Canada
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<td>SPFC2</td>
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# PROGRAM AT A GLANCE

## EUSPN 2018, ICTH 2018 and Workshops

### Program Time Slots

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<th>Timing</th>
<th>Monday 5 November 2018</th>
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<td>16:00 - 18:00</td>
<td>Registration Room</td>
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<tr>
<th>Timing</th>
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<tr>
<td>Starts 08:45</td>
<td>Registration Room</td>
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<tr>
<td>09:15 - 09:30</td>
<td>Opening Ceremony</td>
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<td>09:30 - 10:30</td>
<td>Keynote Speaker II</td>
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<td>09:30 - 10:30</td>
<td>Coffee Break</td>
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Prof. Danny Hughes

Prof. Marie-Francine Moens

auICTH

EICN–S1/CIM

HiPIS–S1

HiPIS–S2

HiPIS–S2/SPFC2

EICN–S2

AATCare/PSCare
KEYNOTE I

Self adaptive Software Systems are Essential for the Internet of Things

Prof. Danny Hughes

CTO VersaSense, Belgium

Abstract
The Internet of Things is composed of tiny computers equipped with sensors, actuators and low power radios that are embedded in our physical environment. The number of Internet of Things devices is growing dramatically. Gartner predicts that by 2020 there will be over 20 billion deployed internet of things devices. By bridging the physical and digital worlds, the Internet of Things will enable radical efficiency gains across a wide range of industries. This talk will argue that self-adaptive software is essential to achieving the IoT vision. My talk will be illustrated throughout by real-world examples of the demand for self-adaptation in the Internet of Things, as drawn from my experiences as the Chief Technical Officer of VersaSense, an industrial Internet of Things company and spin-off of KU Leuven.

About the Speaker:
Prof. Danny Hughes is the Chief Technical Officer (CTO) of VersaSense, the creators of the world's first true plug-and-play Internet of Things platform. He is also a Professor with the Department of Computer Science at KU Leuven (Belgium), where he leads the Networked Embedded Software task force. Danny holds a PhD from Lancaster University (UK) and has since worked at the University of California at Berkeley (USA), the University of Sao Paulo (Brazil) and at Xi'an Jiaotong-Liverpool University (China). His research focuses on developing and securing the complete Internet of Things (IoT) software stack.
KEYNOTE II

Mining the Text of Clinical Reports

Prof. Marie-Francine Moens
KU Leuven, Belgium

Abstract
An important part of information about patients resides in the free text of clinical reports, which we would like to automatically mine. In this talk we report on the research of the ACCUMULATE project, where we extract the events of the medical history of a patient from free text and tag the information with diagnosis labels (e.g., with ICD-10 labels following the International Classification of Diseases). These tasks are challenging. First, using standardized medical terminology in clinical reports is far from realized. Physicians and hospitals often use their own terminology or morphological variants thereof. Second, current methods for information extraction and classification rely on training examples that are manually annotated with labels, which are usually not available in abundance. We elaborate on the role of deep learning in the extraction and classification processes and propose novel ways of explaining to the user what a deep learning model actually has learned and how it has taken a classification decision.

About the Speaker
Prof. Marie-Francine Moens heads the Language Intelligence and Information Retrieval research group at the Department of Computer Science of KU Leuven, Belgium. Her research expertise includes: content recognition in text, information extraction, discourse understanding, text mining, knowledge acquisition, machine reading of text, processing of noisy text such as user-generated content and speech transcripts, information retrieval, search models, and machine learning for natural language processing. She is author of more than 300 international peer-reviewed publications and of several books. She is involved in the organization or program committee (as program chair, area chair or reviewer) of major conferences on computational linguistics, information retrieval and machine learning. In 2011 and 2012 she was appointed as chair of the European Chapter of the Association for Computational Linguistics (EACL) and was a member of the executive board of the Association for Computational Linguistics (ACL). From 2010 until 2014 she was a member of the Research Council of KU Leuven and is currently a member of the Council of the Industrial Research Fund of KU Leuven. She is the scientific manager of the EU COST action iV&L (The European Network on Integrating Vision and Language). She was appointed as Scottish Informatics and Computer Science Alliance (SICSA) Distinguished Visiting Fellow in 2014.
Monday, November 5, 2018

**Registration**
16:00-18:00

**Room**: Registration Room

Tuesday, November 6, 2018

**Registration**
08:45 – 9:15 & 10:30 – 12:30

**Room**: Registration Room

**Opening**
09:15 - 10:30

**Opening Ceremony**
**Room**: Main Meeting Room

**Keynote I**

*Self adaptive software systems are essential for the Internet of Things*
Prof. Danny Hughes, CTO VersaSense, Belgium

**Session Chair**: Ansar Yasar, Hasselt University, Belgium
**Room**: Main Meeting Room

**Coffee Break**
10:30 - 10:55

**Room**: Meeting Foyer

**Technical Sessions (1)**
11:00 - 12:30

**EUSPN Session S-1**: Adaptive Systems, Intelligent Computing and Applications
**Session Chair**: Krishnamurthy Vidyasankar, Memorial University, Canada
**Room**: Room 1

- A Prediction Model of Electric Vehicle Charging Requests
  *Ahmed Nait-Sidi-Moh, Azizbek Ruzmetov, Mohamed Bakhouya, Naitmalek Youssef and Jaafar Gaber*

- A Hybrid GPU-FPGA-based Computing Platform for Machine Learning
  *Xu Liu, Hibat Allah Ounifi, Abdelouahed Gherbi, Yves Lemieux and Wubin Li*

- A High Performance Search Algorithm for Job-Shop Scheduling Problem
  *Shao-Juan Wang, Chun-Wei Tsai and Ming-Chao Chiang*

- An Approach for QoS-aware Service Composition with GraphPlan and Fuzzy Logic
  *Ming Zhu, Guodong Fan, Jing Li and Olga Ormandjieva*

**ICTH Session S-1**
**Session Chair**: Johan Holmgren, Malmö University, Sweden
**Room**: Room 2

- Parallel software architecture for the next generation of glucose monitoring
  *Tomas Koutny and Martin Ubi*

- Air Quality based Informational Intervention Framework to Promote Healthy and Active School Travel
  *Shiraz Ahmed, Muhammad Adnan, Davy Janssens, Ansar-Ul-Haque Yasar and Geert Wets*

- Fall Detection System by Machine Learning Framework for Public Health
  *Thiago Braga Rodrigues, Débora Pereira Salgado, Mauricio Costa Cordeiro, Katja Magdalena Osterwald, Teodiano F. B. Filho, Vicente F. de Lucena Jr, Eduardo L.M. Naves and Niall Murray*

- Classification of SmartestMentalTech Services and Application for Comprehensive Stepped-Care Model: Health Psychological Approach
  *Seomi Kyeong Ah Lee*
**auICTH Workshop**
**Session Chair:** Heiko Gewald and Philipp Brune, The Neu-Ulm University of Applied Sciences, Germany  
**Room:** Room 3

- Return of the JS: Towards a Node.js-Based Software Architecture For Combined CMS/CRM Applications  
  _Fabian Kaimer and Philipp Brune_
- Grandma’s New Tablet – The Role of Mobile Devices in Trying to Innovate in IT  
  _Maximilian Haug, Heiko Gewald and Robert Rockmann_
- An Experimental Protocol to Support Cognitive Impairment Diagnosis by using Handwriting Analysis  
  _Nicole Dalia Cilia, Claudio De Stefano, Francesco Fontanella and Alessandra Scotto di Freca_
- How can technology enhance elderly adherence to self-managed treatment plan?  
  _Karoly Bozan and Heiko Gewald_

**Lunch Break**  
**12:30 - 13:25**  
**Room:** Meeting Foyer

**Technical Sessions (2)**  
**13:30 - 15:00**

**EUSPN Session S-2: Big Data and Big Data Science I**  
**Session Chair:** Manuele Kirsch-Pinheiro, Université Paris 1 - Panthéon Sorbonne, France  
**Room:** Room 1

- Improving Data Locality in P2P-based Fog Computing Platforms  
  _Luiz Angelo Steffenel and Manuele Kirsch-Pinheiro_
- Hybrid Technique for Arrival Rate Extraction and Size Reduction using Singular Spectrum Analysis and Fourier Series  
  _Ahmad Hammoudeh, Mohammad Al Saaideh and Ghazi Al-Naymat_
- Cloud Platform using Big Data and HPC Technologies for Distributed and Parallels Treatments A Patient Identity  
  _Olivier Debauche, Sidi Ahmed Mahmoudi, Said Mahmoudi and Pierre Manneback_
- Big Data and Time Series Use In Short Term Load Forecasting In Power Transmission System  
  _Arber Ùçuku, Daniela Minkovska and Lyudmila Stoyanova_

**ICTH Session S-2**  
**Session Chair:** Ali Al-Badi, Sultan Qaboos University, Oman  
**Room:** Room 2

- Optimal placement of Mobile Stroke Units considering the perspectives of equality and efficiency  
  _Oliver Dahllof, Felix Hofwimmer, Johan Holmgren and Jesper Petersson_
- Linking Health Web Services as Resource Graph by Semantic REST Resource Tagging  
  _Cong Peng, Prashant Goswami and Guohua Bai_
- Red blood cell segmentation by thresholding and using a Canny detector  
  _Fatimah Al-Hafiz, Shiroq Al-Megren and Heba Kurdi_
- SOULMATE - Secure Old people’s Ultimate Lifestyle Mobility by offering Augmented reality Training Experiences  
  _An Neven, Tom Bellemans, Astrid Kemperman, Pauline van den Berg, Martijn Kiers, Lex van Velsen, Judith Urlings, Davy Janssens and Yves Vanrompay_

**EICN-S1/CIM Workshops**  
**Session Chair:** Ming-Chao Chiang, National Sun Yat-sen University, Taiwan  
**Room:** Room 3

- An Effective Search Algorithm for Hyper-Dense Deployment Problem of 5G  
  _Shi-Jui Liu and Chuan-Wei Tsai_
- EERP: An Enhanced Eigentrust Algorithm for Reputation Management in Peer to Peer Network  
  _Alanoud Alhusain and Heba Kurdi_
- Visualizations Serendipity for User Controlled Recommender System for Learning  
  _Ahmad Hassan Afridi_
- Estimating meteorological visibility range under foggy weather conditions: A deep learning approach  
  _Hazar Chaabani, Naoufel Werghi, Faouzi Kamoun, Bilal Taha, Fatma Outay, Ansar-Ul-Haque Yasar_

**Coffee Break**  
**15:00 - 15:25**  
**Room:** Meeting Foyer
Technical Sessions (3)  15:30 - 17:30

EUSPNN Session S-3: Internet of Things  
Session Chair: Luiz Angelo Steffenel, Université de Reims Champagne-Ardenne, France  
Room: Room 1

- Consistency of Continuous Queries in Fog Computing  
  Krishnamurthy Vidyasankar
- An Improved Energy Efficient Duty Cycling Algorithm for IoT based Precision Agriculture  
  Himanshu Agrawal and Ruchi Dhall
- Ontology for Academic Context Reasoning  
  Maricela Bravo, José A. Reyes-Ortiz, Isabel Cruz-Ruíz, Ariadna Gutiérrez-Rosales and Josué Padilla-Cuevas
- Towards Security on Internet of Things: Applications and Challenges in Technology  
  Kazi Masum Sadique, Rahim Rahmani and Paul Johannesson
- Adaptive Packet Scheduling in IoT environment Based on Q-learning  
  Donghyun Kim, Sejun Kim, Byungjum Lee and Hee Yong Youn

ICTH Session S-3  
Session Chair: Fatma Outay, Zayed University, UAE  
Room: Room 3

- Teleoperation Training Environment for New Users of Electric Powered Wheelchair  
  Yuri Silva, Vinicius Souza, Eduardo Naves, Teodiano Bastos Filho and Vicente Lucena Jr.
- Risk Evaluation Method for Range of Motion after Total Hip Arthroplasty applying Monte-Carlo Simulation  
  Gisun Jung, Young Kim, Nokhaiz Tariq Khan and Yun Bae Kim
- Security model for Big Healthcare Data Lifecycle  
  Hayat Khaloufi, Abderrahim Beni-Hssane, Karim Abouelmehdi and Mostafa Saadi

EICN-S2/SPFC2 Workshops  
Session Chair: Rui Neves Madeira, University of Lisboa, Portugal  
Room: Room 3

- Research Directions for Digital Signage Systems in Retail  
  Christine Bauer, Marion Garaus, Christine Strauss and Udo Wagner
- Group affiliation detection in a challenging environment  
  Håkan Jonsson, Pierre Nugues
- CS-IBE : A Data Confidentiality System in Public Cloud Storage System  
  Ahmed Bentajer, Hedabou Mustapha, Karim Abouelmehdi and Said Elfezazi
- Predicting Hospital Readmission among Diabetics using Deep Learning  
  Ahmad Hammoudeh, Ghazi Al-Naymat, Ibrahim Ghannam and Nadim Obied

End of Tuesday Technical Sessions
Wednesday, November 7, 2018

**Keynote II** 09:30 - 10:30

*Mining the Text of Clinical Reports*

Prof. Marie-Francine Moens, KU Leuven, Belgium

**Session Chair:** Yves Vanrompay, Hasselt University, Belgium

**Room:** Room 1

**Coffee Break** 10:30 - 10:55

**Room:** Meeting Foyer

**Technical Sessions (4)** 11:00 - 12:30

**EUSPN Session S-4: Emerging Pervasive/Ubiquitous Technologies**

**Session Chair:** Ibrahim Gomaa, National Telecommunication Institute, Egypt

**Room:** Room 1

- Multi-UAV Task Allocation Algorithm to Combat the Red Palm Weevil
  - Shiroq Al-Megren, Munirah F. Aldaood and Heba Kurdi
- A Practical Sensors Software to Manage Fault Signals’ Impact
  - Slimane Ouhmad, Abderrahim Beni-Hssane and Abdelmajid Hajami
- 3iVClass: a new classification method for Virtual, Augmented and Mixed Realities
  - Marc Parveau and Mehdi Adda
- A step loss function based SVM classifier for binary classification
  - Mahmud Mansour, Fethi Jaray, Sabri Boughorbel and Ghassen Tlig

**ICTH Session S-4**

**Session Chair:** Ming Zhu, Shandong University of Technology, China

**Room:** Room 2

- MobiHealth: a System to Improve Medication Adherence in Hypertensive Patients
  - Vandermi Silva, Vicente Ferreira De Lucena Jr, Vinicius Souza and Robson Cruz
- Mobile Hardware Based Implementation of a Novel, Efficient, Fuzzy Logic Inspired Edge Detection Technique for Analysis of Malaria Infected Microscopic Thin Blood Images
  - Stephen Bias, Saumya Reni and Izzet Kale
- A training simulation for practicing shared decision making for older patients
  - Ruth Pel-Littel, Henk van Zeijts, Nadine Schram, Henk Herman Nap and Johan Jeuring
  - Alexandre Stecowiat, Saumya Kareem Reni and Izzet Kale

**HiPIS Workshop S-1**

**Session Chair:** Filipe Portela, Manuel Filipe Santos, University of Minho, Portugal

**Room:** Room 3

- Step Towards Progressive Web Development in Obstetrics
  - Patricia Loreto, Jorge Peixoto, Hugo Peixoto, José Machado and António Abelha
- Efficient Enriching of Synthesized Relational Patient Data with Time Series Data
  - Simon Schiff, Marcel Gehrke and Ralf Möller
- Deep Learning Based Pipeline for Fingerprinting Using Brain Functional MRI Connectivity Data
  - Nicolas Lori, Ivo Ramalhosa, Paulo Marques and Victor Alves

**Lunch** 12:30 - 13:25

**Room:** Meeting Foyer
### Technical Sessions (5)  13:30 - 15:00

**EUSPN Session S-5: Mobile Computing and Wireless Communications**  
**Session Chair:** Tarek Sheltami, KFUPM University, Saudi Arabia  
**Room:** Room 1

- Supporting Node Connectivity with Dixon’s Test for ZigBee-based WSN  
  - Seungeon Yoo, Cheng Wang, Kyung Tae Kim, Sejun Kim and Hee Yong Youn
- An Approach towards Service System Building for Road Traffic Signs Detection and Recognition  
  - Natalia Kryvinska and Aneta Poniszewska-Maranda
- KaliGreen: A distributed Scheduler for Energy Saving  
  - Hernán Humberto Álvarez Valera, Philippe Roose, Marc Dalmau, Christina Herzog and Kyle Respicio
- One the V2X speed synchronization at intersections: Rules based system for extended virtual platooning  
  - Wendan Du, Abdeljalil Abbas-Turki, Abderrafiaa Koukam, Stéphane Galland and Franck Gechter

**ICTH Session S-5**  
**Session Chair:** Francesco Fontanella, University di Cassino e del Lazio meridionale, Italy  
**Room:** Room 2

- Vision and Voice in eConsent: Future Trends for Health Social Networks  
  - Yvonne O’Connor, Wendy Rowan and Ciara Heavin
- An agent-based simulation model for assessment of prehospital triage policies concerning destination of stroke patients  
  - Jabir Al Fatah, Ala’A Alshaban, Johan Holmgren and Jesper Petersson
- Memory Improvement Tool for Dementia Alzheimer’s Patients  
  - Kahandawa Arachchige Dona Chathurangika Padmakumari Kahandawaarachchi, Dona Shanilka Deshani Weerakoon, Jayathilaka Dissanayakalage Suneelaka Yasith Dissanayake, Welideniayage Prasansane Madhushika Tilakasiri and Wadduwage Don Malaka Buddhimal Shanthakumara
- A Fuzzy based Diagnostic Agent for Context Aware Patient Monitoring  
  - Tshegofatso Magano, Karim Djouani, Abdelghani Chibani and Anish Kurien

**AATCare/PSCare Workshops**  
**Session Chair:** Yun Bae Kim, Sungkyunkwan University, Korea Republic  
**Room:** Room 3

- The Kullback-Leibler Divergence Used in Machine Learning Algorithms for Health Care Applications and Hypertension Prediction: A Literature Review  
  - Antonio CLIM, Răzvan Daniel ZOTA, Grigore TINICĂ
- Comparison Study of Digital Forensics Analysis Techniques; Findings versus Resources  
  - Ayman Shaaban and Nashwa Abdelbaki
- Enhanced Approach to Detect Malicious VBScript files Based on Data Mining Techniques  
  - Doaa Wael, Samir G. Sayed, Nashwa AbdelBaki

**Coffee Break**  
**Room:** Meeting Foyer

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Technical Sessions (6)  15:30 - 17:30

**EUSPN Session S-6: Security, Privacy, and Trust**

**Session Chair:** Natalia Kryvinska, University of Vienna, Austria

**Room:** Room 1

- Multi-tier Blockchain Framework for IoT-EHRs Systems  
  *Shaimaa Badr, Ibrahim Gomaa and Emad Adb Elrahman*
- Detecting fake news in social media networks  
  *Monther Aldwairi and Ali Alwahedi*
- Design and Implementation of an End-to-End Web based Trusted Email System  
  *M Zeeshan Sabir and Muhammad Yousaq*
- Towards the intelligent agents for blockchain e-voting system  
  *Aneta Poniszewska-Maranda*
- A Detection and Prevention Technique for Man in the Middle Attack in Fog Computing  
  *Farouq Aliyu, Tarek Sheltami and Elhadi Shakshuki*

**ICTH Session S-6**

**Session Chair:** Vicente Lucena, Federal University of Amazonas, Brazil

**Room:** Room 2

- Interaction techniques for a neural-guided hand exoskeleton  
  *Tobias Ableitner, Surjo Soekadar, Andreas Schilling, Gottfried Zimmermann and Christophe Strobbe*
- Personalizing the User Experience of a Mobile Health Application towards Patient Engagement  
  *Rui Madeira, Patrícia Macedo and Helena Germano*
- Design of a feedback intervention to increase travel related physical activity of cardiac patients  
  *Tooba Batool, Luk Knapen, Yves Vanrompay, An Neven, Kris Brijs, Veerle Ross, Paul Dendale, Davy Jansses and Geert Wets*

**HiPIS Workshop S-2**

**Session Chair:** Filipe Portela, Manuel Filipe Santos, University of Minho, Portugal

**Room:** Room 3

- Improving Pervasive Decision Support System in Critical Care using Technology Acceptance Model  
  *Ana Nunes, Filipe Portela and Manuel Filipe Santos*
- Introduction to BPM approach in Healthcare and Case Study of End User Interaction with EHR Interface  
  *João Gomes, Filipe Portela and Manuel Filipe Santos*

End of Wednesday Technical Sessions

Banquet and Award Ceremony  19:00-21:00

Banquet Room
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<tr>
<th>Technical Sessions (7)</th>
<th>08:30 – 10:00</th>
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| **EUSPN Session S-7: Big Data and Big Data Science II**  
*Session Chair: Ansar Yasar, Hasselt University, Belgium*  
*Room: Room 1*  |
| Model-based Approach to Data Center Design and Power Usage Effectiveness Assessment  
*Hibat Allah Ounifi, Xu Liu, Abdelouahed Gherbi, Yves Lemieux and Wubin Li*  
Exploring Big Data Governance Frameworks  
*Ali Al-Badi, Ali Tarhini, Asharul Islam Khan*  
A Large-Scale Sentiment Data Classification for Online Reviews Under Apache Spark  
*Samar Al-Saqqa, Ghazi Al-Naymat and Arafat Awajan* |
| **EUSPN Session S-8: Emerging Systems**  
*Session Chair: Elhadi Shakshuki, Acadia University, Canada*  
*Room: Room 1* |
| Modeling and Verification of Response Time of QoS-aware Web Service Composition by Timed CSP  
*Ming Zhu, Jing Li, Olga Ormandjieva and Guodong Fan*  
Reconfigurable Hardware-Friendly Early Termination Mechanism in Motion Estimation for HEVC  
*Esam Alqaralleh, Yazan Alqudah and Belal Sababha*  
Improved Handover Decision Algorithm Using Multiple Criteria  
*Radiwan Mohamed Abdullah, Ali Alwan and Abedallah Zaid Abualkishik* |

**END of Event**