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# Program in Chronological Order

## (Copyrighted Papers)

\* Author Name – Corresponding Author • \* Following Paper Title – Paper not Available

**Monday, 5 March 2018**

MoAT1: 09:35-11:05 Antilles CD  
**BSN Session # 1 – Sensing for Rehabilitation** (Oral Session)  
**Chair:** Brattain, Laura *MIT Lincoln Laboratory*  
**Co-Chair:** McKinney, Zach *UCLA*

09:35-09:50 MoAT1.1  
**Sleeve based Knee Angle Calculation for Rehabilitation** ..... 1-4  
 Maurer, Mathias W\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Zrenner, Markus (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Reynolds, David (*Ottobock Healthcare GmbH*); Dümler, Burkhard (*Adidas AG*); Eskofier, Bjoern M (*Friedrich-Alexander-Universität Erlangen-Nürnberg*)

09:50-10:05 MoAT1.2  
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 Oagaz, Hawkar (*Univ. of Colorado, Denver*); Sable, Anurag (*Univ. of Colorado, Denver*); Choi, Min-Hyung (*Univ. of Colorado, Denver*); Xu, Wenyao (*SUNY at Buffalo*); Lin, Feng\* (*Univ. of Colorado, Denver*)

10:05-10:20 MoAT1.3  
**KneeHapp Textile: A Smart Textile System for Rehabilitation of Knee Injuries** ..... 9-12  
 Haladjian, Juan\* (*Technische Universität München*); Bredies, Katharina (*University of Arts Berlin, Design Research Lab*); Brügge, Bernd (*Technische Universität München*)

10:20-10:35 MoAT1.4  
**BiGRA: A Preliminary Bilateral Hand Grip Coordination Rehabilitation using Home-Based Evaluation System for Stroke Patients** ..... 13-16  
 Vu, Tri\* (*University at Buffalo*); Tran, Hoan (*University at Buffalo*); Song, Chen (*University at Buffalo, The State University of New York*); Lin, Feng (*University of Colorado, Denver*); Langan, Jeanne (*University at Buffalo*); Cavuoto, Lora (*University at Buffalo*); Xu, Wenyao (*SUNY at Buffalo*)

10:35-10:50 MoAT1.5  
**A Metric for Upper Extremity Functional Range of Motion Analysis in Long-Term Stroke Recovery using Wearable Motion Sensors and Posture Cubics** ..... 17-20  
 Derungs, Adrian\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*); Amft, Oliver (*Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)*); Schuster-Amft, Corina (*Research Department, Reha Rheinfelden, Rheinfelden, Switzerland*)

10:50-11:05 MoAT1.6  
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 Bevilacqua, Antonio\* (*University College Dublin*); Huang, Bingquan (*University College Dublin*); Argent, Rob (*University College Dublin*); Caulfield, Brian (*UCD*); Kechadi, Tahar (*Insight Centre for Data Analytics, University College Dublin*)

MoBT1: 11:20-12:50	Antilles CD
<b>BSN Session # 2 – Gait, Motion and Activity Monitoring</b> (Oral Session)	
<b>Chair:</b> Huang, Ming-Chun <i>Case Western Reserve University</i>	
<b>Co-Chair:</b> Jarchi, Delaram <i>University of Oxford</i>	

11:20-11:35 MoBT1.1  
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 Xiao, Xuesu (*Texas A&M University*); Zarar, Shuayb\* (*Microsoft Research*)

11:35-11:50 MoBT1.2  
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 Jeyhani, Vala (*Tampere University of Technology*); Mahdiani, Shadi (*VTT Technical Research Centre of Finland*); Viik, Jari (*Tampere University of Technology*); Oksala, Niku (*Faculty of Medicine and Life Sciences, University of Tampere, Ta*); Vehkaoja, Antti\* (*Tampere University of Technology*)

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 Du, Wenjing (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Li, Huihui (*Chinese Academy of Sciences, Shenzhen, China*); Wang, Lei\* (*Chinese Academy of Sciences, Shenzhen, China*); Wenmin, Chen (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*); Omisore, Olatunji Mumini (*Shenzhen Institutes of Advanced Technology, Chinese Academy of S*)

12:05-12:20 MoBT1.4  
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 McGinnis, Ryan S.\* (*University of Vermont*); Redrado, Javier (*University of Vermont*); Choquette, Rebecca (*University of Vermont*); Beynnon, Bruce (*University of Vermont*); Slauterbeck, James (*University of Vermont*); Tourville, Timothy (*University of Vermont*); Toth, Michael (*University of Vermont*)

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 Gu, Xiao (*School of Information Science and Technology, Fudan University*); Deligianni, Fani\* (*Imperial College London*); Lo, Benny (*Imperial College London*); Chen, Wei (*Fudan University*); Yang, Guang-Zhong (*Imperial College London*)

12:35-12:50 MoBT1.6  
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MoPO: 18:15-20:15	Caribbean ABC
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18:15-20:15 MoPO.2  
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 Wattal, Shashank\* (*The University of Alabama*); Spear, Scott (*The University of Alabama*); Imtiaz, Masudul Haider (*University of Alabama*); Sazonov, Edward (*University of Alabama*)

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 Teplitzky, Benjamin (*Preventice Solutions*); McRoberts, Michael\* (*Preventice Solutions*)

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 Guo, Yao\* (*University of JiNan*); Zhang, Yuan (*University of JiNan*); Mursalin, Md (*University of JiNan*); Xu, Wenyao (*SUNY at Buffalo*); Lo, Benny (*Imperial College London*)

**Tuesday, 6 March 2018**

TuAT1: 11:10-12:40 Antilles CD  
**BSN Session # 3 – Physiological Monitoring using BSN (Oral Session)**  
 Chair: Caulfield, Brian *UCD*  
 Co-Chair: Prioleau, Temiloluwa *Rice University*

11:10-11:25 TuAT1.1  
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 Atallah, Louis\* (*Philips Research North America*); Ciuhu, Calina (*Philips Research*); Bongers, Edwin (*Philips Research*); Paulussen, Igor (*Philips Research*); Noordergraaf, Gerrit Jan (*St Elizabeth Hospital*); Blom, Toon (*Philips Research*); Wang, Chao (*Philips Research*)

11:25-11:40 TuAT1.2  
**Motion Artifact Mitigation for Wearable Pulse Oximetry** ..... 74-77  
 Williamson, James\* (*MIT Lincoln Labs*); Patel, Tejash (*MIT Lincoln Labs*); Singh, Ninoshka (*MIT Lincoln Labs*); Siegel, Andrew (*MIT Lincoln Labs*); Telfer, Brian (*MIT Lincoln Labs*); Trebicka, Ray (*MIT Lincoln Labs*); Welsh, Brendon (*MIT Lincoln Labs*); Hoyt, Reed (*US Army Research Institute of Environmental Medicine*)

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 Gurel, Nil Zeynep\* (*Georgia Institute of Technology*); Shandhi, Md. Mobashir Hasan (*Georgia Institute of Technology*); Bremner, Douglas (*Emory University*); Vaccarino, Viola (*Emory University*); Ladd, Stacy (*Emory University*); Shallenberger, Lucy (*Emory University*); Shah, Amit (*Emory University School of Medicine*); Inan, Omer (*Georgia Institute of Technology*)

11:55-12:10 TuAT1.4  
**Non-Invasive Bladder Volume Sensing for Neurogenic Bladder Dysfunction Management** ..... 82-85  
 Fong, Daniel\* (*University of California, Davis*); Velazquez Alcantar, Alejandro (*University of California, Davis*); Gupta, Prashant (*University of California, Davis*); Kurzrock, Eric (*University of California, Davis*); Ghiasi, Soheil (*University of California, Davis*)

12:10-12:25 TuAT1.5  
**Tomographic Probe for Perfusion Analysis in Deep Layer Tissue** ..... 86-89  
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 Posada-Quintero, Hugo Fernando\* (*University of Connecticut*); Chon, Ki (*University of Connecticut*)

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<b>BSN Session # 4 – Wellness and Sports Applications</b> (Oral Session)	
<b>Chair:</b> Amft, Oliver <i>Friedrich-Alexander Universität Erlangen-Nürnberg (FAU)</i>	
<b>Co-Chair:</b> Kaya, Mehmet <i>Florida Institute of Technology</i>	

14:15-14:30 TuBT1.1  
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 Vhaduri, Sudip\* (*University of Notre Dame*); Poellabauer, Christian (*University of Notre Dame*)

14:30-14:45 TuBT1.2  
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 Amores Fernandez, Judith\* (*MIT*); Richer, Robert (*Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany*); Zhao, Nan (*MIT Media Lab*); Eskofier, Bjoern M (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Maes, Pattie (*MIT Media Lab*)

14:45-15:00 TuBT1.3  
**Unobtrusive and Wearable Landing Momentum Estimation in Ski Jumping with Inertial-Magnetic Sensors** ..... 102-105  
 Groh, Benjamin H.\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*); Fritz, Julian (*Dept of Sports Science and Kinesiology, University of Salz*); Deininger, Martin (*Otto-von-Guericke-Universität Magdeburg (OvGU), Institute of Spo*); Schwameder, Hermann (*Dept of Sports Science and Kinesiology, University of Salz*); Eskofier, Bjoern M (*Friedrich-Alexander-Universität Erlangen-Nürnberg*)

15:00-15:15 TuBT1.4  
**Kinematic Parameter Evaluation for the Purpose of a Wearable Running Shoe Recommendation** ..... 106-109  
 Zrenner, Markus\* (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Ullrich, Martin (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Zobel, Pascal (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Jensen, Ulf (*Adidas AG*); Laser, Felix (*Adidas AG*); Groh, Benjamin H. (*Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)*); Dümler, Burkhard (*Adidas AG*); Eskofier, Bjoern M (*Friedrich-Alexander-Universität Erlangen-Nürnberg*)

15:15-15:30 TuBT1.5  
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 Gao, Anqi (*Imperial College London*); Lo, Po Wen\* (*The Chinese University of Hong Kong*); Lo, Benny (*Imperial College London*)

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 Pryss, Rüdiger\* (*Ulm University*); Reichert, Manfred (*Ulm University, Institute of Databases and Information Systems*); John, Dennis (*FOM University of Applied Sciences*); Frank, Julian (*Ulm University, Institute of Databases and Information Systems*); Schlee, Winfried (*University Hospital Regensburg*); Probst, Thomas (*Donau Universität Krems*)

### Wednesday, 7 March 2018

WeAT1: 08:50-10:20	Antilles CD
<b>BSN Session # 5 – Machine Learning and Signal Processing for BSN</b> (Oral Session)	
<b>Chair:</b> Chen, Shanshan <i>Virginia Commonwealth University</i>	
<b>Co-Chair:</b> Lee, Sunghoon Ivan <i>University of Massachusetts Amherst</i>	

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 Ma, Yuchao\* (*Washington State University*); Aminikhanghahi, Samaneh (*Washington State University*); Wilhelm, Shane (*Washington State University*); Thorsen, Wesley (*Washington State University*); Coleman, Evan (*Washington State University*); Ghasemzadeh, Hassan (*Washington State University*)

09:05-09:20 WeAT1.2  
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 Popov, Anton (*National Technical University of Ukraine "Kyiv Polytechnic Inst*); Olesh, Erienne V. (*West Virginia University*); Yakovenko, Sergiy (*West Virginia University*); Gritsenko, Valeriya\* (*West Virginia University*)

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Wu, Jian* ( <i>Texas A&amp;M Univ.</i> ); Grimsley, Reese ( <i>Texas A&amp;M Univ.</i> ); Jafari, Roozbeh ( <i>Texas A&amp;M Univ.</i> )		
09:35-09:50		WeAT1.4
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Sun, Yingnan* ( <i>Imperial College London</i> ); Yang, Guang-Zhong ( <i>Imperial College London</i> ); Lo, Benny ( <i>Imperial College London</i> )		
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Normani, Niccolo' ( <i>Department of Information Engineering</i> ); Urru, Andrea ( <i>Tyndall National Institute, Cork, Ireland</i> ); Abraham, Lizy ( <i>Tyndall National Institute, Cork, Ireland</i> ); Walsh, Michael ( <i>Wireless Sensor Networks, Tyndall National Institute</i> ); Tedesco, Salvatore* ( <i>University College Cork</i> ); Cenedese, Angelo ( <i>Department of Information Engineering, Padova, Italy</i> ); Susto, Gian Antonio ( <i>Department of Information Engineering, Padova, Italy</i> ); O'Flynn, Brendan ( <i>Tyndall National Institute - University College Cork</i> )		
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Tron, Talia ( <i>Hebrew Univ. of Jerusalem, ELSC</i> ); Resheff, Yehezkel ( <i>Hebrew Univ. of Jerusalem</i> ); Bazhmin, Mikhail ( <i>Sha'ar Menashe MHC</i> ); Grinshpoon, Alexander ( <i>Sha'ar Menashe Mental Health Center, Sha'ar Menashe, Rappaport</i> ); Peled, Abraham ( <i>Technion</i> ); Weinshall, Daphna* ( <i>Hebrew Univ. of Jerusalem</i> )		
WeBT1: 12:30-14:00		Antilles CD
<b>BSN Session # 6 – Cardiovascular Monitoring using BSN (Oral Session)</b>		
<b>Chair:</b> Inan, Omer <i>Georgia Institute of Technology</i>		
<b>Co-Chair:</b> Lo, Benny <i>Imperial College London</i>		
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13:15-13:30		WeBT1.4
<b>Mitigation of Body Movement Interference in Near-Field Coherent Sensing for Heart Rate Monitoring</b> .....	156-159	
Hui, Xiaonan* ( <i>Cornell University</i> ); Kan, Edwin ( <i>Cornell University</i> )		
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13:45-14:00 WeBT1.6  
**Visualisation of Long-Term ECG Signals Applied to Post-Intensive Care Patients** ..... 165-168  
 Jarchi, Delaram\* (*University of Oxford*); Mahdi, Adam (*Institute of Biomedical Engineering, University of Oxford, UK*); Tarassenko, Lionel (*University of Oxford*); Clifton, David (*University of Oxford*)

WeCT1: 14:00-15:30 Antilles CD  
**BSN Session # 7 – Innovations in Sensing** (Oral Session)  
**Chair:** Atallah, Louis *Philips Research North America*  
**Co-Chair:** Vehkaoja, Antti *Tampere University of Technology*

14:00-14:15 WeCT1.1  
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 Mohapatra, Ankita\* (*University of Memphis*); Morshed, Bashir (*The University of Memphis*);  
 Shamsir, Samira (*University of Tennessee Knoxville*); Islam, Syed Kamrul (*University of Tennessee*)

14:15-14:30 WeCT1.2  
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 (*Fudan University*); Mei, Yongfeng (*Fudan University*); Bambang Oetomo, Sidarto (*Máxima Medical Center*);  
 Chen, Wei\* (*Fudan University*)

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 Zhang, YuFei (*University of Science and Technology of China*); Liu, Bin\* (*University of Science and  
 Technology of China*); Liu, Zhiqiang (*University of Science and Technology of China*)

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 Zhu, Yuhui (*Purdue University*); Jiang, Shuo (*Shanghai Jiao Tong University*);  
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 Song, Chen (*University at Buffalo, The State University of New York*); Lin, Feng (*University of Colorado,  
 Denver*); Langan, Jeanne (*University at Buffalo*); Xu, Wenyao (*SUNY at Buffalo*)

15:15-15:30 WeCT1.6  
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 Golparvar, Ata Jedari (*Sabancı University*); Yapici, Murat Kaya\* (*Sabancı University*)

WeDT1: 15:30-17:00 Antilles CD  
**BSN Session # 8 – Energy Efficient Design and Sensing** (Oral Session)  
**Chair:** Chaspari, Theodora *Texas A&M University*  
**Co-Chair:** Ghasemzadeh, Hassan *Washington State University*

15:30-15:45 WeDT1.1  
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 Technologies and Behavioral Health*); Lowens, Byron (*Clemson University*); Kotz, David (*Dartmouth College*);  
 Lord, Sarah (*Center for Technologies and Behavioral Health*); Halter, Ryan (*Dartmouth College*)

15:45-16:00 WeDT1.2  
**Saving Energy on Wrist-Mounted Inertial Sensors by Motion-Adaptive Duty-Cycling in Free-Living** ..... 197-200  
 Schiboni, Giovanni (*Friedrich-Alexander-Universität Erlangen-Nürnberg*); Amft, Oliver\* (*Friedrich-Alexander  
 Universität Erlangen-Nürnberg (FAU)*)

16:00-16:15 WeDT1.3  
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