2014 IEEE Symposium on Computational Intelligence in Robotic Rehabilitation and Assistive Technologies

(CIR2AT 2014)

Orlando, Florida, USA
9-12 December 2014
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE SSCI 2014 General Committee</td>
<td>iv</td>
</tr>
<tr>
<td>IEEE CIR2AT 2014 Committee</td>
<td>v</td>
</tr>
<tr>
<td>Keynote Talk: CIR2AT’14</td>
<td>vi</td>
</tr>
</tbody>
</table>

**Wednesday, December 10**

**9:20AM-10:00AM**

**CIR2AT’14 Keynote Talk**

*Rehabilitation Robotics: From Evidence to Model-Based Interventions*
Hermano Igo Krebs

**10:20AM-12:00PM**

**CIR2AT’14 Session 1: Robotic Assistive Technology**
Chair: Georgios Kouroupetroglou

- **10:20AM** *VirtuNav: A Virtual Reality Indoor Navigation Simulator with Haptic and Audio Feedback for the Visually Impaired* ................................................................. 1  
  Catherine Todd, Swati Mallya, Sara Majeed, Jude Rojas and Katy Naylor
- **10:40AM** *A Guidance Robot for the Visually Impaired: System Description and Velocity Reference Generation* ......................................................................................................................... 9  
  Hironori Ogawa, Kazuteru Tobita, Katsuyuki Sagayama and Masayoshi Tomizuka
- **11:00AM** *Assistive Mobile Manipulation for Self-Care Tasks Around the Head* ................................................. 16  
  Kelsey P. Hawkins, Phillip M. Grice, Tiffany L. Chen, Chih-Hung King and Charles C. Kemp
- **11:20AM** *A Novel Approach of Prosthetic Arm Control using Computer Vision, Biosignals, and Motion Capture* ......................................................................................................................... 26  
  Harold Martin, Jaime Donaw, Robert Kelly, Youngjin Jung and Jong-Hoon Kim
- **11:40AM** *Tactile pitch feedback system for deafblind or hearing impaired persons - Singing accuracy of hearing persons under conditions of added noise* ........................................ 31  
  Masatsugu Sakajiri, Shigeki Miyoshi, Junji Onishi, Tsukasa Ono and Tohru Ifukube

**1:30PM-3:10PM**

**CIR2AT’14 Session 2: Robotic Rehabilitation**
Chair: Hermano Igo Krebs

- **1:30PM** *Spasticity Assessment System for Elbow Flexors/Extensors: Healthy Pilot Study* ............................. 36  
  Nitin Seth, Denise Johnson and Hussein Abdullah
- **1:50PM** *Robotic Agents used to Help Teach Social Skills to Individuals with Autism: The Fourth Generation* .......................................................................................................................... 42  
  Matthew Tennyson, Deitra Kuester and Christos Nikolopoulos
- **2:10PM** *Encouraging Specific Intervention Motions via a Robotic System for Rehabilitation of Hand Function* .......................................................................................................................... 49  
  Brittney English and Ayanna Howard

**AUTHOR INDEX** ........................................................................................................ 57