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Research Interests

Robotics, Biomechanics, Computational Neuroscience, Motor Control and Learning, Machine Learning

Education

2004 B.S. Engineering, Kansai University.

2006 M.S. Engineering, Nara Institute of Science and Technology.

2009 Ph.D. Engineering, Nara Institute of Science and Technology.

Academic Positions

2009–2011 Postdoctoral Fellow, Nara Institute of Science and Technology.

2011–2014 Research Assistant Professor, Nara Institute of Science and Technology.

2014–2017 Assistant professor, Nara Institute of Science and Technology.

20147– Project Lecturer, Kobe University.

Award

2015 JNNS (Japanese Neural Network Society) Best Paper Award.

2015 ICROS Award for IROS2015 Best Application Paper.

Publications

Journal Articles

Nishanth Koganti, Tomoya Tamei, Kazushi Ikeda, Tomohiro Shibata. Bayesian Nonparametric Learning of Cloth Models for Real-Time State Estimation. *IEEE Transactions on Robotics* 33(4), pp.916-931, 2017.

M. Felix Orlando, Laxmidhar Behera, Tomoya Tamei and Tomohiro Shibata, Ashish Dutta and Anupam Saxena. On redundancy resolution of the human thumb, index and middle fingers in cooperative object translation. *Robotica*, 35(10), pp.1992-2017, 2016.

Tomoya Tamei, Yasuyuki Orito, Hiroyuki Funaya, Kazushi Ikeda, Yohei Okada and Tomohiro Shibata. Kinect-Based Posturography for In-Home Kinect-Based Posturography for In-Home. *APSIPA Transactions on Signal and Information Processing*, 4(17), 2015.

Yohei Okada, Tomohiro Shibata, Tomoya Tamei, Yasuyuki Orito, Hiroyuki Funaya, Chihiro Obayashi, Kazushi Ikeda, Makoto Hiyamizu and Shu Morioka. In-Home Posture Evaluation and Visual Feedback Training to Improve Posture with a Kinect-Based System in Parkinson's Disease. *Journal of Novel Physiotherapies*, 4(232), 2014.

Jimson G Ngeo, Tomoya Tamei and Tomohiro Shibata. Continuous and simultaneous estimation of finger kinematics using inputs from an EMG-to-muscle activation model. *Journal of NeuroEngineering and Rehabilitation*, 11:122, 2014.

Chihiro Obayashi, Tomoya Tamei and Tomohiro Shibata. Assist-as-needed robotic trainer based on reinforcement learning and its application to dart-throwing. *Neural Networks*, 53, pp.52-60, 2014.

M. Felix Orlando, Ashish Dutta, Anupam Saxena, Laxmidhar Behera, Tomoya Tamei and Tomohiro Shibata. Manipulability Analysis of Human Thumb, Index and Middle Finger in Cooperative 3D Rotational Movements of a Small Object. *Robotica*, 31(5), pp.797-809, 2013.

Tomoya Tamei and Tomohiro Shibata. Fast Reinforcement Learning for Three-Dimensional Kinetic Human-Robot Cooperation with an EMG-to-activation model. *Advanced Robotics*, 25(5), pp.563-580, 2011.

Tomoya Tamei, Shin Ishii and Tomohiro Shibata. Virtual Force/Tactile Sensors for Interactive Machines Using User's Biological Signals. *Advanced Robotics*, 22(8), pp.893-911, 2008.

Proceedings (selected)

Nishanth Koganti, Tomoya Tamei, Kazushi Ikeda, Tomohiro Shibata. Imparting Motor-Skills to Humanoid Robots Using Bayesian Nonparametric Latent Spaces. *The 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2017), FrBT16.1*, 2017.

Nishanth Koganti, Tomoya Tamei, Kazushi Ikeda, Tomohiro Shibata. Bayesian Nonparametric Motor-skill Representations for Efficient Learning of Robotic Clothing Assistance. *Neural Information Processing Systems (NIPS 2016)*, 2016.

Yutaka Kusune, Tomoya Tamei, Arata Yoshida, Junichiro Shiraishi, Tomohiro Shibata. A Low-Cost Balance Assessment System Using Center of Pressure Tracking Tasks. *International Workshop on Smart Info-Media Systems in Asia (SISA 2016), SS6-4*, 2016.

Tomoya Tamei, Yasuyuki Orito, Tomohiro Shibata and Kazushi Ikeda. In-Home Measurement System of User's Motion and Center of Pressure. *Annual Summit and Conference of Asia-Pacific Signal and Information Processing Association (APSIPA 2015)*, 2015.

Nishanth Koganti, Jimson Gelbolingo Ngeo, Tomoya Tamei, Kazushi Ikeda and Tomohiro Shibata. Cloth Dynamics Modeling in Latent Spaces and its Application to Robotic Clothing Assistance. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2015)*, 2015.

Tomoya Tamei, Tomohiro Shibata and Kazushi Ikeda. Comparison of an Expert and Non-Experts in Standing up Guidance. *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015), SaBPoT5.26*, 2015.

Jimson Ngeo, Tomoya Tamei, Kazushi Ikeda and Tomohiro Shibata. Modeling Dynamic High-DOF Finger Postures from Surface EMG Using Nonlinear Synergies in Latent Space Representation. *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2015), WeET11.1*, 2015.

Jimson Ngeo, Tomoya Tamei and Tomohiro Shibata. Estimation of Continuous Multi-DOF Finger Joint Kinematics from Surface EMG Using a Multi-Output Gaussian Process. 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2014), pp. 3537-40, 2014.

Nishanth Koganti, Tomoya Tamei, Takamitsu Matsubara and Tomohiro Shibata. Real-Time Estimation of Human-Cloth Topological Relationship using Depth Sensor for Robotic Clothing Assistance. 23rd IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2014), 2014.

Yasuyuki Orito, Hiroyuki Funaya, Tomoya Tamei, Tomohiro Shibata and Kazushi Ikeda. Development of Low-cost and Accurate Posturography Using Kinect for In-home Rehabilitation of Balance Disorders. The 19th International Symposium on Artificial Life and Robotics 2014 (AROB 19th '14), pp. 185-188, 2014.

Jimson Ngeo, Tomoya Tamei, Tomohiro Shibata, M.Felix Orlando, Laxmidhar Behera, Anupam Saxena and Ashish Dutta. Control of an Optimal Finger Exoskeleton based on Continuous Joint Angle Estimation from EMG signals. 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2013), pp. 338-341, 2013.

Jimson Ngeo, Tomoya Tamei and Tomohiro Shibata. Continuous Estimation of Finger Joint Angles Using Muscle Activation Inputs from Surface EMG Signals. 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2012), pp. 2756-2759, 2012.

Tomoya Tamei, Takamitsu Matsubara, Akshara Rai and Tomohiro Shibata. Reinforcement learning of clothing assistance with a dual-arm robot. 11th IEEE-RAS International Conference on Humanoid Robots (Humanoids 2011), pp.733-738, 2011.

Tomoya Tamei, Chihiro Obayashi and Tomohiro Shibata. Throwing Darts Utilizes the Interaction Torque of the Elbow Joint. 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2011), 2011.

Chihiro Obayashi, Tomoya Tamei, Akira Imai and Tomohiro Shibata. Development of an Adaptive Robotic Trainer: Application to Darts Throwing. 1st International Conference on Applied Bionics and Biomechanics (ICABB 2010), 2010.

Tomoya Tamei and Tomohiro Shibata. Three-Dimensional Virtual Force Sensing for Kinetic Interaction with a Robot. 5th IEEE International Conference on Systems of Systems Engineering (SoSE 2010), 2010.

Tomoya Tamei and Tomohiro Shibata. Policy Gradient Learning of Cooperative Interaction with a Robot Using User's Biological Signals. International Conference on Neural Information Processing (ICONIP 2008), Advances in Neuro-Information Processing: Proceedings of the 15th International Conference on Neuro-Information Processing, Springer LNCS 5507, pp.1029-1037, 2008.

Tomoya Tamei, Shin Ishii and Tomohiro Shibata. Dynamic and Cooperative Interaction with a Robot that Possesses No Force/Tactile Sensors. International Conference Advanced Robotics (ICAR 2007), pp.647-652, 2007.