Jie Liu
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WORK EXPERIENCE:

3/2017- present Chief Research and Design Engineer at Kay Mounting Ltd of HENI Group, London UK and Science (UK) Limited.

Investigate novel robot carving methods to improve the state of the art whilst closely work with masons and artists. Work on automation and improvement of the current manual fabrication processes using robotics and software to explore market opportunities and new innovative techniques of profiling 3D objects.

4/2016- 04/2017 Chief Engineer & Deputy General Manager (Professorate Senior Engineer) Robotics Science Research Institute at Yuanda Science and Technology Park, Shenyang, Liaoning, China

Finalist of National High-end Foreign Experts Recruitment (1,000 Talents Plan: Long-Term Innovative Talent). Manage technology development and innovation while leading industry oriented research: research and development in robotics with a focus in mechanical design and automated system integration for manufacturing, such as human friendly collaborative robotic arms.

9/2011-2/2016 Research Associate Rehabilitation Institute of Chicago, Chicago, IL,US.

Developing signal processing algorithms to extract neural control information from electromyographic (EMG) signals for intelligent rehabilitation. Developing a clinically feasible and reliable procedure for muscle innervation zone (IZ) localization, thereby facilitating advanced surface EMG guided botulinum toxin injection towards improved muscle tone treatments.

12/2009-8/2011 Research Associate Division of Engineering, Brown University, VA Medical Center, Providence, RI ,US.

Working in the BrainGate Neural Interface System research team, with a specific focus on developing the interface between assistive devices and the BrainGate system for people with paralysis or limb loss.

1/2009-12/2009 Senior Research Engineer (part-time) Beijing Tobor Technology CO.LTD,Beijing,China

Industry oriented research: applied laser scanning, 3D surface reconstruction, mesh subdivision and automatic trajectory generation for robotic laser cladding.

4/2007 – 4/2009 Marie Curie Research Fellow Unilever R&D Port Sunlight, Bebington,Wirral, UK

Participating in EU-funded research project Bridget. Specific tasks are development, implementation and validation of advanced trajectory generation and motion control algorithms for the application of robotic platforms for health and personal care.

6/2005 - 4/2007 PostDoc

Northwestern University & Rehabilitation Institute of Chicago, Chicago, IL,US

Developing kinematic metrics for hand function evaluation and its rehabilitation following neuromuscular injury to determine the properties of the hand.

11/2003 - 6/2005 Research Engineer Beijing Research Institute of Automation for Machinery Industry (RIAMB), Beijing, China

Industry oriented research: mathematical modeling of the kinematic model of a custom robotic arm. Research and development of the 3D surface reconstruction based trajectory control for a magnetic scattering film plating robot. Supervising master students.

EDUCATION:

6/2005 - 4/2007 Northwestern University & Rehabilitation Institute of Chicago, Chicago, IL,US

PostDoc Rehabilitation Engineering

9/2000 - 9/2003 Beijing University of Aeronautics and Astronautics a.k.a Beihang university , Beijing, China

PhD, Mechanical Engineering, Major in Robotics

9/1998 - 7/2000 Harbin Institute of Technology, Harbin, Heilongjiang, China

ME Mechanical Engineering, Major in Computer Integrated Manufacturing System

9/1994 - 7/1998 Harbin Institute of Technology, Harbin, Heilongjiang, China

BE Mechanical Engineering, Mechanical Manufacturing/Automation

RESEARCH INTERESTS:

I was trained in robotics and developed my career in robotics engineering.

Robotics R&D, from applied research through the design of advanced prototypes and product development, including assistive robotics, rehabilitation robotics, especially in biomedical signal processing with emphasis on the applications in neural rehabilitation engineering by means of human-machine interfaces.

SELECTED AWARDS:

Marie Curie Host Fellowship for experienced researcher (Transfer of Knowledge *MKTD-CD*

200502996 2 years), Unilever Research & Development Port Sunlight, UK, **2007**

Martin Prize for Basic Research from Massachusetts General Hospital, Boston, MA, USA, **2013**

Professorate Senior Engineer Liaoning province,**2016**

Zhejiang Provincial Program for High-Level Overseas Talents (1,000 Talents Plan: Long-Term Innovative Talent),**2019**

Shanghai High-end Foreign Experts Recruitment Plan (1,000 Talents Plan: Long-Term Innovative Talent),**2020**

ACTIVITIES AND INTERESTS:

Member of the editorial advisory board of **Industrial Robot** http://www.emeraldinsight.com/journal/ir.

Guest editor of special issue on "Advances in Rehabilitation and Assistive Robots for Restoring Limb Function in Persons with Movement Disorders" for Applied Bionics and Biomechanics.

Member of the program committee of the 2008 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM2008).

Reviewer for the following Journals and Conferences: IEEE Transactions on Robotics, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Neural Systems and Rehabilitation Engineering, IEEE Transactions on Human-Machine Systems, IEEE Transactions on Systems, Man and Cybernetics: Systems, Muscle and Nerve, Gait & Posture, Journal of NeuroEngineering and Rehabilitation,Journal of Musculoskeletal and Neuronal Interactions, Journal of Neuroscience Methods, Neurocomputing , Medical Engineering & Physics, Entropy, Journal of Applied Biomechanics,Industrial Robot, Journal of Intelligent Manufacturing, Advanced Robotics, IEEE ICRA, IEEE/RSJ IROS, ASME AIM

PUBLICATIONS AT PEER-REVIEWED JOURNALS:

https://www.researchgate.net/profile/Jie_Liu14 (RG Score **1,441**, higher than 95% of ResearchGate members)

https://scholar.google.co.uk/citations?user=whboVIoAAAAJ&hl=en

Peer-reviewed articles **27** in total, **23** listed on Web of Knowledge (**17** first-author; **9** corresponding author)
H-index Google Scholar: **18**
Number of citations： **3455** (Google Scholar)

Peer-reviewed Journal Papers (* corresponding author, 17 first-authored)

1. **Jie Liu**, Yupeng Ren, Dali Xu, Sang Hoon Kang, Li-Qun Zhang, EMG-Based Real-Time Linear-Nonlinear Cascade Regression Decoding of Shoulder, Elbow and Wrist Movements in Able-Bodied Persons and Stroke Survivors, IEEE Transactions on Biomedical Engineering, vol. 67, no. 5, pp. 1272-1281, 2020, Impact Factor: 4.491, doi: 10.1109/TBME.2019.2935182.
2. **Jie Liu***, Sheng Li, Faezeh Jahanmiri-Nezhad, William Zev Rymer, Ping Zhou, Motor unit innervation zone localization based on robust linear regression analysis, Computers in Biology and Medicine,Vol. 106, pp.65-70,2019; Impact Factor: 2.115, doi:10.1016/j.compbiomed.2019.01.007.
3. **Jie Liu**, Sang Hoon Kang, Dali Xu, Yupeng Ren, Song Joo Lee, Li-Qun Zhang,EMG-based continuous and simultaneous estimation of arm kinematics in able-bodied individuals and stroke survivors,Frontiers in Neuroscience,2017, Impact Factor: 3.566, doi: 10.3389/fnins.2017.00480.
4. Minal Bhadane; **Jie Liu**; William Z Rymer; Ping Zhou; Sheng Li,Re-evaluation of EMG-torque relation in chronic stroke using linear electrode array EMG recordings, Scientific Reports, Vol. 6, No. 28957, 2016. Impact Factor: 4.259, doi: 10.1038/srep28957.
5. **Jie Liu***, Qiuping Liu, Use of the integrated profile for voluntary muscle activity detection using EMG signals with spurious background spikes: a study with incomplete spinal cord injury, Biomedical Signal Processing and Control, Vol.24, pp.19-24,2016; Impact Factor: 2.214, doi: 10.1016/j.bspc.2015.09.004.
6. **Jie Liu**, Dongwen Ying, William Zev Rymer, Ping Zhou, Robust muscle activity onset detection using an unsupervised electromyogram learning framework, PLoS One, 10(6):e0127990,2015. Impact Factor:3.234*, doi: 10.1371/journal.pone.0127990.
7. Le Li, Xiaoyan Li, **Jie Liu**, Ping Zhou, Alterations in multidimensional motor unit number index of hand muscles after incomplete cervical spinal cord injury, Frontiers in Human Neuroscience, 9:238. Impact Factor: 2.986, doi: 10.3389/fnhum.2015.00238.
8. **Jie Liu*,** Dongwen Ying, William Zev. Rymer, EMG burst presence probability: a joint time-frequency representation of muscle activity and its application to onset detection, Journal of

Biomechanics, Vol.48, No.6, pp.1193-1197, 2015. Impact Factor: 2.751, doi: 10.1016/j.jbiomech.2015.02.017.

9. **Jie Liu*,** Adaptive myoelectric pattern recognition toward improved multifunctional prosthesis control, Medical Engineering & Physics, Vol.37, No.4, pp.424-430, 2015.Impact Factor: 1.825, doi: 10.1016/j.medengphy.2015.02.005.
10. **Jie Liu,** Dongwen Ying, Ping Zhou, Wiener filtering of surface EMG with a priori SNR estimation toward myoelectric control for neurological injury patients, Medical Engineering & Physics, Vol.36, No.12, pp.1711-1715, 2014. Impact Factor: 1.825, doi: 10.1016/j.medengphy.2014.09.008.
11. **Jie Liu***, Feature dimensionality reduction for myoelectric pattern recognition: A comparison study of feature selection and feature projection methods, Medical Engineering & Physics, Vol. 36, No. 12, pp.1716-1720,2014. Impact Factor: 1.825, doi: 10.1016/j.medengphy.2014.09.011.
12. Sheng Li, **Jie Liu**, Minal Bhadane, Ping Zhou, William Zev. Rymer, Activation deficit correlates with weakness in chronic stroke: evidence from evoked and voluntary EMG recordings, Clinical Neurophysiology, Vol. 125, No. 12, pp.2413–2417,2014. Impact Factor: 3.097, doi: 10.1016/j.clinph.2014.03.01,.
13. Xiaoyan Li, **Jie Liu**, Sheng Li, Ying-Chi Wang, Ping Zhou, Examination of hand muscle activation and motor unit Indices derived from surface EMG in chronic stroke, IEEE Transactions on Biomedical Engineering, Vol. 61, No. 12, pp.2891-2898,2014. Impact Factor: 2.347, doi: 10.1109/TBME.2014.2333034.
14. **Jie Liu*,** Dongwen Ying, William Zev Rymer, Ping Zhou, Subspace based adaptive denoising of surface EMG from neurological injury patients, Journal of Neural Engineering, Vol. 11, No. 5:056025, 2014. Impact Factor: 3.295* ,doi: 10.1088/1741-2560/11/5/056025.
15. **Jie Liu,** Xiaoyan Li, Christina Marciniak, William Zev Rymer, Ping Zhou, Extraction of Neural Control Commands Using Myoelectric Pattern Recognition: A Novel Application in Adults with Cerebral Palsy, International Journal of Neural Systems, Vol. 24, No. 7:1450022, 2014. Impact Factor: 6.507*, doi: 10.1142/S0129065714500221.
16. **Jie Liu,** Sheng Li, Xiaoyan Li, Cliff Klein**,** William Zev. Rymer, Ping Zhou, Suppression of stimulus artifact contaminating electrically evoked electromyography, NeuroRehabilitation, Vol. 34, No. 2, pp.381-389, 2014. Impact Factor: 1.124, doi: 10.3233/NRE-131045.
17. **Jie Liu**, Xiaoyan Li, Guanglin Li, Ping Zhou, EMG features assessment for myoelectric pattern recognition and channel selection: A study with incomplete spinal cord injury, Medical Engineering & Physics, Vol. 36, No. 7, pp.975-980, 2014. Impact Factor: 1.825, doi: 10.1016/j.medengphy.2014.04.003.

18. Xiaoyan Li, Henry Shin, Ping Zhou, Xun Niu, **Jie Liu**, William Z. Rymer, Power Spectral Analysis of Surface Electromyography (EMG) at Matched Contraction Levels of the First Dorsal Interosseous Muscle in Stroke Survivors, Clinical Neurophysiology, Vol. 125, No. 5, pp.988-994, 2014. Impact Factor: 3.097, doi: 10.1016/j.clinph.2013.09.044.
19. **Jie Liu**, Ping Zhou, A novel myoelectric pattern recognition strategy for hand function restoration after incomplete cervical spinal cord injury, IEEE Transactions on Neural Systems and Rehabilitation Engineering. Vol. 21, No. 1, pp. 96–103, 2013. Impact Factor: 3.188*, doi: 10.1109/TNSRE.2012.2218832.
20. **Jie Liu***, Online measurement based tool path generation toward integrated robotic laser cladding, Industrial Robot, Vol. 40, No. 5, pp. 494 – 501, 2013. Impact Factor: 0.635, doi: 10.1108/IR-09-2012-408.
21. **Jie Liu***, A novel motion generation strategy for robotic tooth brushing simulator, Industrial Robot, Vol. 40, No. 4, pp. 355 – 362, 2013. Impact Factor: 0.635, doi: 10.1108/01439911311320868.
22. Leigh R. Hochberg, Daniel Bacher, Beata Jarosiewicz, Nicolas Y. Masse, John D. Simeral, Joern Vogel, Sami Haddadin, **Jie Liu,** Sydney S. Cash, Patrick van der Smagt, and John P. Donoghue, Reach and grasp by people with tetraplegia using a neurally controlled robotic arm, Nature, Vol. 485, No. 7398, pp. 372–375, 2012. Impact Factor: 41.456*, doi: 10.1038/nature11076.
23. **Jie liu***, 3D surface reconstruction based trajectory control for a magnetic scattering film plating robot, Journal of Intelligent Manufacturing, Vol. 20, No. 6, pp.719-726, 2009. Impact Factor: 1.731, doi: 10.1007/s10845-008-0160-y.
24. **Jie Liu***, Hanxu Sun, Yuru Zhang, Mapping human hand motion to dexterous robotic hands, Journal of BUPT, Vol. 28, No. 2, pp.54-58, 2005.(in Chinese)
25. **Jie Liu**, Yuru Zhang, Master/slave grasping of dexterous robotic hands in virtual reality, Robot, Vol. 26, No. 2, pp. 107-110 , 2004. (in Chinese)
26. **Jie Liu**, Yuru Zhang, Mapping human hand motion to dexterous robotic hands, Robot, Vol. 25, No. 5, pp. 444-447, 2003. (in Chinese)
27. **Jie Liu**, Yuru Zhang, Design and implement a system of grasp identification for dexterous robot hand, Robot, Vol. 25, No. 3, pp. 259-263, 2003.(in Chinese)