Stanford



Ken Waldron

Professor (Research) of Mechanical Engineering, Emeritus

Mechanical Engineering - Design

Curriculum Vitae available Online

Bio

BIO

Kenneth J. Waldron is Professor of Mechanical and Mechatronic Engineering at UTS. He is also Professor Emeritus from the Design Group in the Department of Mechanical Engineering of Stanford University. He holds bachelors and masters degrees from the University of Sydney, and PhD from Stanford. He works in machine design, and design methodology with a particular focus on robotic and mechatronic systems.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Mechanical Engineering - Design
- Member, Bio-X

Publications

PUBLICATIONS

- **Professional interactions with Professor Erskine Crossley** *MECHANISM AND MACHINE THEORY*
  Waldron, K. J., Jacobs, D. A.
  2015; 89: 72-74
- **Modeling Inelastic Collisions With the Hunt-Crossley Model Using the Energetic Coefficient of Restitution** *JOURNAL OF COMPUTATIONAL AND NONLINEAR DYNAMICS*
  Jacobs, D. A., Waldron, K. J.
  2015; 10 (2)
- **AN ACTUATED CONTINUOUS SPRING LOADED INVERTED PENDULUM (SLIP) MODEL FOR THE ANALYSIS OF BOUNCING GAITS** *Conference on Climbing and Walking Robots (CLAWAR)*
  Jacobs, D. A., Park, L. J., Waldron, K. J.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2013: 463–470
- **Heuristic control of bipedal running: steady-state and accelerated** *ROBOTICA*
  Perkins, A. D., Waldron, K. J., Csonka, P. J.
  2011; 29: 939-947
- **Characterization of an Electric-Pneumatic Hybrid Prismatic Actuator** *JOURNAL OF MECHANISMS AND ROBOTICS-TRANSACTIONS OF THE ASME*
  Csonka, P. J., Waldron, K. J.
  2010; 2 (2)
- **Control of Bipedal Turning While Running** *12th International Symposium on Advances in Robot Kinematics (ARK 2010)*
  Perkins, A. D., Waldron, K. J.
  SPRINGER-VERLAG BERLIN.2010: 301–308

- **Passively Stable Hopping of an Articulated Leg with a Tendon-Coupled Ankle** *IEEE/RSJ International Conference on Intelligent Robots and Systems*
  Csonka, P. J., Perkins, A. D., Waldron, K. J.
  IEEE.2010: 3404–3408
- **Static and Dynamic Maneuvers With a Tendon-Coupled Biped Robot** *18th CISM-IFToMM Symposium on Robot Design, Dynamics and Control*
  Csonka, P. J., Waldron, K. J.
  SPRINGER-VERLAG WIEN.2010: 265–72
- **The mechanics of biped running and a stable control strategy** *ROBOTICA*
  Abdallah, M. E., Waldron, K. J.
  2009; 27: 789-799
- **In memoriam: Kosuke Ishii** *RESEARCH IN ENGINEERING DESIGN*
  Waldron, K. J.
  2009; 20 (2): 143-144
- **Analyzing Bounding and Galloping Using Simple Models** *JOURNAL OF MECHANISMS AND ROBOTICS-TRANSACTIONS OF THE ASME*
  Waldron, K. J., Estremera, J., Csonka, P. J., Singh, S. P.
  2009; 1 (1)
- **The state of the art of climbing and walking robots** *INDUSTRIAL ROBOT-AN INTERNATIONAL JOURNAL*
  Waldron, K. J.
  2009; 36 (4): 313-313
- **Thrust control, stabilization and energetics of a quadruped running robot** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Estremera, J., Waldron, K. J.
  2008; 27 (10): 1135-1151
- **Configuration Design of a Robotic Vehicle for Rough Terrain Mobility** *15th International Conference on Mechatronics and Machine Vision in Practice*
  Waldron, K. J., Hung, T. T., Madadnia, J.
  IEEE.2008: 476–481
- **A Subgoal-Guided Force Field Method for Robot Navigation** *IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications*
  Wang, D., Liu, D. K., Kwok, N. M., Waldron, K. J.
  IEEE.2008: 488–493
- **A Unified Method for Multi-Body Systems Subject to Stick-Slip Friction and Intermittent Contact** *IEEE/RSJ International Conference on Intelligent Robots and Systems*
  Perkins, A. D., Abdallah, M. E., Mitiguy, P., Waldron, K. J.
  IEEE.2008: 2311–2316
- **An optimal traction control scheme for off-road operation of robotic vehicles** *IEEE-ASME TRANSACTIONS ON MECHATRONICS*
  Waldron, K. J., Abdallah, M. E.
  2007; 12 (2): 126-133
- **A hybrid motion model for aiding state estimation in dynamic quadrupedal locomotion** *IEEE International Conference on Robotics and Automation*
  Singh, S. P., Waldron, K. J.
  IEEE.2007: 4337–4342
- **THINKING ABOUT BOUNDING AND GALLOPING USING SIMPLE MODELS** *10th International Conference on Climbing and Walking Robots (CLAWAR 2007)*
  Waldron, K. J., Estremera, J., Csonka, P. J., Singh, S. P.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2007: 445–453
- **Robotic harness for the field assessment of galloping gaits** *IEEE/RSJ International Conference on Intelligent Robots and Systems*
  Singh, S. P., Csonka, P. J., Waldron, K. J.

IEEE.2007: 4253–4258

- **A physical model and control strategy for biped running** *IEEE International Conference on Robotics and Automation*
  Abdallah, M. E., Waldron, K. J.
  IEEE.2007: 3982–3988
- **Stiffness and Duty Factor Models for the Design of Running Bipeds** *10th International Conference on Climbing and Walking Robots (CLAWAR 2007)*
  Abdallah, M. E., Waldron, K. J.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2007: 329–339
- **Optical flow aided motion estimation for legged locomotion** *IEEE/RSJ International Conference on Intelligent Robots and Systems*
  Singh, S. P., Csonka, P. J., Waldron, K. J.
  IEEE.2006: 1738–1743
- **Leg thrust control for stabilization of dynamic gaits in a quadruped robot** *16th Symposium on Theory and Practice of Robots and Manipulators*
  Estremera, J., Waldron, K. J.
  SPRINGER-VERLAG WIEN.2006: 213–20
- **Towards high-fidelity on-board attitude estimation for legged locomotion via a hybrid range and inertial approach** *9th International Symposium on Experimental Robotics (ISER)*
  Singh, S. P., Waldron, K. J.
  SPRINGER-VERLAG BERLIN.2006: 589–598
- **Stiffness and Texture Perception for Teledermatology** *13th Conference on Medicine Meets Virtual Reality*
  Waldron, K. J., Enedah, C., Gladstone, H.
  I O S PRESS.2005: 579–585
- **Attitude estimation for dynamic legged locomotion using range and inertial sensors** *IEEE International Conference on Robotics and Automation (ICRA)*
  Singh, S. P., Waldron, K. J.
  IEEE.2005: 1663–1668
- **System design of a quadrupedal galloping machine** *5th International Conference on Climbing and Walking Robots (CLAWAR 2002)*
  Nichol, J. G., Singh, S. P., Waldron, K. J., Palmer, L. R., Orin, D. E.
  SAGE PUBLICATIONS LTD.2004: 1013–27
- **Design of a leg system for quadruped gallop** *11th World Congress in Mechanism and Machine Science*
  Nichol, J. G., Palmer, L. R., Waldron, K. J.
  CHINA MACHINE PRESS.2004: 87–91
- **Design and evaluation of an integrated planar localization method for desktop robotics** *IEEE International Conference on Robotics and Automation*
  Singh, S. P., Waldron, K. J.
  IEEE.2004: 1109–1114
- **Intelligent control of quadruped gallops** *IEEE-ASME TRANSACTIONS ON MECHATRONICS*
  Marhefka, D. W., Orin, D. E., Schmiedeler, J. P., Waldron, K. J.
  2003; 8 (4): 446-456
- **Proprioceptive control for a robotic vehicle over geometric obstacles** *20th IEEE International Conference on Robotics and Automation (ICRA)*
  Waldron, K. J., Arkin, R. C., Bakkum, D., Merrill, E., Abdallah, M.
  IEEE.2003: 109–114
- **Coordination of an unmanned vehicle with active suspension over extreme terrain** *Conference on Unmanned Ground Vehicle Technology V*
  Waldron, K. J., Abdallah, M.
  SPIE-INT SOC OPTICAL ENGINEERING.2003: 371–379
- **Intelligent control of an experimental articulated leg for a galloping machine** *20th IEEE International Conference on Robotics and Automation (ICRA)*
  Palmer, L. R., Orin, D. E., Marhefka, D. W., Schmiedeler, J. P., Waldron, K. J.

IEEE.2003: 3821–3827

- **Mechanical characterization of the immersion Corp. Haptic, bimanual, surgical simulator interface** *8th International Symposium on Experimental Robotics (ISER 02)*
  Waldron, K. J., Tollon, K.
  SPRINGER-VERLAG BERLIN.2003: 106–112

- **Simulated medical learning environments on the Internet** *JOURNAL OF THE AMERICAN MEDICAL INFORMATICS ASSOCIATION*
  Dev, P., Montgomery, K., Senger, S., Heinrichs, W. L., Srivastava, S., Waldron, K.
  2002; 9 (5): 437-447

- **Biomimetic leg design for untethered quadruped gallop** *5th International Conference on Climbing and Walking Robots (CLAWAR 2002)*
  Nichol, J. G., Waldron, K. J.
  PROFESSIONAL ENGINEERING PUBLISHING LTD.2002: 49–54

- **Simulated learning environments in anatomy and surgery delivered via the Next Generation Internet** *10th World Congress on Medical Informatics (MEDINFO 2001)*
  Dev, P., Heinrichs, W. L., Srivastava, S., Montgomery, K. N., Senger, S., Temkin, B., Hasser, C., Latombe, J. C., HEEGAARD, J., Youngblood, P., Friedman, C. P., Waldron, K.
  I O S PRESS.2001: 1014–1018

- **Massively parallel actuation** *IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 01)*
  Yang, P. H., Waldron, K. J.
  IEEE.2001: 868–873

- **From walking to galloping** *3rd International Conference on Climbing and Walking Robots (CLAWAR 2000)*
  Waldron, K. J.
  PROFESSIONAL ENGINEERING PUBLISHING LTD.2000: 1–5

- **TECHNICAL DESCRIPTION OF THE ADAPTIVE SUSPENSION VEHICLE** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Pugh, D. R., RIBBLE, E. A., Vohnout, V. J., BIHARI, T. E., WALLISER, T. M., Patterson, M. R., Waldron, K. J.
  1990; 9 (2): 24-42

- **Kinematics of a Hybrid Series-Parallel Manipulation System** *JOURNAL OF DYNAMIC SYSTEMS MEASUREMENT AND CONTROL-TRANSACTIONS OF THE ASME*
  Waldron, K. J., Raghavan, M., Roth, B.
  1989; 111 (2): 211-221