

# Achievement

## \*Journals and books

- 1) Nobuhiro Shimoi, "Technology at campaign ban land mines," Morikita Publishing Co., Ltd., Book, pp. 1–152 (2002.6) (in Japanese).
- 2) Nobuhiro Shimoi, Yatuka Nakamura, "Application of Millimeter-Wave Radar Traffic Observation System," The Institute of Electronics (IEICE), Information and Communication Engineers Vol. 78-C-1, No. 4, pp. 226–228 (1995.4) (in Japanese).
- 3) Nobuhiro Shimoi, Akihiko Shinoda, Syuuitirou Koga, Hujio Iitaka, Kouji Itoho, "An experiment on metallic body detection covered with insulators by a microwave passive sensor." Journal of the Institute of Electronics, Information and Communication Engineers, STA, 94-386, pp. 45–49 (1994.12) (in Japanese).
- 4) Nobuhiro Shimoi, Masahiko Kanoho, Yoshiaki Shinoda, Hujio Iitaka, "An Experiment on Metallic Body Detection Covered with Insulators by a Microwave Passive Sensor," Journal of the Institute of Electronics, Information and Communication Engineers, Vol. 78-C-1, No. 4, pp. 226–228 (1995.4) (in Japanese).
- 5) Nobuhiro Shimoi, Syuuitirou Koga, Kouji Itoho, Hujio Iitaka, Yoshiaki Shinoda, "An experiment on metallic body detection covered with insulators by a microwave passive sensor," Journal of Society of Instrument and Control Engineers (SICE), Vol. 37, No. 6, pp. 577–583 (2001) (in Japanese).
- 6) Nobuhiro Shimoi, "The Technology of personnel mine detecting for humanitarian detecting: Vibration reduction study with aircushion," Journal of Society of Instrument and Control Engineers (SICE), Vol. 33, No. 5, pp. 337–343 (1997) (in Japanese).
- 7) Nobuhiro Shimoi, "The Technology of Personnel Mine Detecting for Humanitarian Demining," Journal of SICE, Vol. 37(6), pp. 577–583 (2001.6) NII Journal ID (NAID), 10006210556 (in Japanese).
- 8) Nobuhiro Shimoi, Yatuka Nakamura, "Application of Millimeter-Wave Radar Traffic Observation System," IEEE Electronics and Communications in Japan, Vol. 79, No. 4, pp. 24–34 (1996.4).
- 9) Nobuhiro Shimoi, Yoshihiro Takita, Katumi Wasaki, "A Smart Sensing for Mine Detection Studies with IR Cameras," 2001 IEEE International Symposium on Computational Intelligence in Robotics and Automation, pp. 356–361 (2001.8).
- 10) Nobuhiro Shimoi, Yoshihiro Takita, Katumi Wasaki, "A Smart Sensing for Mine Detection Studies with IR Cameras," 2001 IEEE International Symposium on Computational Intelligence in Robotics and Automation, pp. 356–361 (2001.8).
- 11) Nobuhiro Shimoi, Yoshihiro Takita, "Mine Remote Sensing Technology Using a Working Robot," Journal of Robotics and Mechatronics, Motion Control and Applications in Robot Technology (RT), IEEE, Vol. 17, No. 1, pp. 101–105 (2005.1).
- 12) N. Shimoi, H. Madokoro, "Flight Stabilization of Micro Flying Robot for Rescue Scenarios," International Journal of Automation, Robotics and Autonomous Systems, ICGST-ARAS Journal, Vol. 12, Issue 1, pp. 11–15 (December 2012).
- 13) N. Shimoi, C.H. Cuadra, H. Madokoro, M. Saijo, "Simple Smart Piezoelectric Bolt Sensor for Structural Monitoring of Bridges," International Journal of Instrumentation Science, Vol. 1, No. 5, pp. 78–83 (2012) doi: 10.5923/j.instrument.20120105.03. (December 2012).
- 14) Nobuhiro Shimoi, Yoshihiro Takita, "Remote Mine Sensing Technology by Using IR Images," American

- Journal of Remote Sensing issued by Science Publishing Group, Vol. 1, No. 2, pp. 33–37 (2013.4).
- 15) Nobuhiro Shimoji, Yoshihiro Takita, “Development of a wheel robot and micro fling robot using for rescue scenarios,” American Journal of Remote Sensing, Science Publishing Group, Vol. 1, No. 3, pp. 61–66 (2013.6).
  - 16) Nobuhiro Shimoji, Hirokazu Madokoro, “A study for bed monitoring systems using 3 dimensional accelerometer and piezoelectric weight sensor,” Journal of SICE, Vol. 49, No. 12, pp. 1092–1100 (2013.12).
  - 17) Nobuhiro Shimoji, Hirokazu Madokoro, Li Xu, “Piezoelectric vibration measuring sensor and accelerometer used for bed monitoring system,” Journal of Mechanical Engineering and the Society of Instrument and Control Engineering, Vol. 80, No. 812, pp. 1–14 (2014.10)  
[doi.org/10.1299/transjsme.2014trans0060](https://doi.org/10.1299/transjsme.2014trans0060).
  - 18) Nobuhiro Shimoji, Masahiro Saijo, Carlos Cuadra, Hirokazu Madokoro, “Comparison of Natural Frequency Vibration Analysis for a Bridge Using Accelerometers and a Piezoelectric Cable Vibration Sensor,” International Journal of Instrumentation Science, Vol. 4, No. 1, pp. 1–9 (2015.4)  
[doi: 10.5923/j.instrument.20150401.01](https://doi.org/10.5923/j.instrument.20150401.01)
  - 19) Nobuhiro Shimoji, Carlos Cuadra, “A Study of Measurement for Dangerous Prediction on Static Loading Test Using Piezoelectric Limit Sensors,” American Journal of Remote Sensing issued by Science Publishing Group, Vol. 3, No. 3, pp. 43–48 (2015.6). doi: 10.11648/j.ajrs.20150303.12
  - 20) Nobuhiro Shimoji, Carlos Cuadra, Kazuhisa Nakasho, Takuya Sasaki, “Comparison of FEM Analysis and Actual Measurement for Destruction of Brick Masonry Specimen Using a Piezoelectric Limit Sensor,” International Journal of Science and Engineering Investigations, Vol. 5, Issue 55, pp. 61–66 (August 2016) ISSN:2251-8843
  - 21) Nobuhiro Shimoji, Tetsuya Nishida, Akihiko Obata, Kazuhisa Nakasho, Hirokazu Madokoro, Carlos Cuadra, “Comparison of Displacement Measurements in Exposed Type Column Base Using Piezoelectric Dynamic Sensors and Static Sensors,” American Journal of Remote Sensing issued by Science Publishing Group, Vol. 4, Issue 5, pp. 23–32 (2016.9) doi: 10.11648/j.ajrs.20160405.11
  - 22) Nobuhiro Shimoji, Kazuhisa Nakasho, Carlos Cuadra, Masahiro Saijo, Hirokazu Madokoro, “Avalanche and Falling Rock Measurement Using Piezoelectric Dynamics and Static Sensors,” American Journal of Remote Sensing issued by Science Publishing Group, Vol. 5, Issue 2, pp. 10–15 (2017.7) doi: 10.11648/j.ajrs.20170502.11
  - 23) Nobuhiro Shimoji, Kazuhisa Nakasho, Carlos Cuadra, Hirokazu Madokoro, “Land and Falling Rock Measurement Using Piezoelectric Smart Sensors,” International Journal of Science and Engineering Investigations, Vol. 7, Issue 77, pp. 134–138 (2018.7) doi: 10.11648/j.ajrs.20170502.11 ISSN:2251-8843
  - 24) Nobuhiro Shimoji, Carlos Cuadra, Hirokazu Madokoro, Kazuhisa Nakasho, “Comparison in Displacement Measurements for Fillet Weld of Steel Column Base by Using Piezoelectric Joint Sensors,” International Journal of Science and Engineering Investigations, Vol. 9, Issue 102, pp. 99–103 (2020.7).
  - 25) Nobuhiro Shimoji, Carlos Cuadra, Hirokazu Madokoro and Kazuhisa Nakasho, “Comparison of Displacement Measurements and Simulation on Fillet Weld of Steel Column Base,” International Journal of Mechanical Engineering and Applications, Vol. 8, No. 5, pp. 111–117 (2020.10) doi: 10.11648/j.ijmea.20200805.11
  - 26) Nobuhiro Shimoji, Kazuhisa Nakasho, “Sally, a Robot for Measuring Piezoelectric Joint Sensor

Characteristics," Research & Development by Science Publishing Group, Vol. 1, No. 1, pp. 25–30 (2020.12), doi: 10.11648/j.rd.20200101.13

- 27) Shinnozuke Yamaguchi, Katsumi Wasaki, Nobuhiro Shimo, "Generalized Full Adder Circuits (GFAs)," Part I: Formalized Mathematics, Vol. 13, No. 4, pp. 549–571 (2005.4).
- 28) K. Wasaki, N. Shimo, "A Practice of Smart Sensing System for Buried Mines Detecting based on Active Infrared Thermography Approach," International Journal of Computational Intelligence, Theory and Practice, Vol. 4, No. 1, pp. 29–37 (2009).
- 29) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Unrestrained Sensor Systems Using Piezoelectric Elements for Bed-Leaving Prediction," Journal of Mechanical Engineering and the Society of Instrument and Control Engineering, Vol. 79, No. 800, pp. 1024–1035 (2013.4) ((2013-01-22), TRANS-JSME-D-13-00071).
- 30) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Development of Non-Restraining and QoL sensor system for bed-leaving prediction," Institute of Electronics, Information and Communication Engineers D, Vol. J96D, No. 12, pp. 3055–3067 (2013.12) ISSN: 1881-0225.
- 31) C. Cuadra, N. Shimo, T. Sasaki, T. Taguchi, "Preliminary Evaluation of Piezoelectric Sensors for the Prediction of Compression Failure of Brick Masonry Components," WIT Transactions on The Built Environment, Vol. 153, Structural Studies, Repairs and Maintenance of Heritage Architecture XIV, pp. 605–612 (July 2015) doi:10.2495/STR150501 .
- 32) C. Cuadra, N. Shimo, "Preliminary study of applicability of a piezoelectric sensor for structural monitoring," Congreso International de Computations y Telecommunications, No. VII, COMTEL2015, pp. 211–216.
- 33) H. Madokoro, Y. Ishioka, S. Takahashi, K. Sato, N. Shimo, "Visual Saliency Based Multiple Objects Segmentation and its Parallel Implementation for Real-Time Vision Processing," Computer Science and Information Technology, Vol. 3, No. 5, pp. 188–198 (2015) doi:10.13189/csit.2015.030504 .
- 34) H. Madokoro, K. Shirai, K. Sato, N. Shimo, "Basic Design of Visual Saliency Based Autopilot System Used for Omnidirectional Mobile Electric Wheelchair," Computer Science and Information Technology, Vol. 3, No. 5, pp. 171–187 (2015) doi:10.13189/csit.2015.030503 .
- 35) H. Madokoro, N. Shimo, K. Sato, "Unrestrained Multiple-Sensor System for Bed-Leaving Detection and Prediction," Nursing and Health, Vol. 3, No. 3, pp. 58–68 (2015) doi:10.13189/nh2015.030302 .
- 36) H. Madokoro, K. Sato, N. Shimo, "Classification of Trajectories Using Category Maps and U-Matrix to Predict Interests Used for Event Sites," Computer Science and Information Technology, Vol. 3, No. 4, pp. 138–147 (2015.7) doi: 10.13189/csit.2015.030408.
- 37) C. Cuadra, N. Shimo, M. Saijo, "Dynamic Characteristics of a Bridge Estimated with New Bolt-type Sensor, Ambient Vibration Measurements and Finite Element Analysis," Int. J. of Safety and Security Eng., Vol. 6, Issue 1, pp. 40–52 (2016) doi: 10.2495/SAFE-V6-N1-40-52 .
- 38) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, Li Xu, "Human Sensing for Sleep Monitoring Using Film-Load Sensors," Journal of Japan Society for Fuzzy Theory and Intelligent Informatics, Vol. 28, Issue 6, pp. 963–973 (2016) doi:10.3156/jsoft.28.963 .
- 39) H. Madokoro, S. Sato, N. Shimo, "Category Maps Describe Driving Episodes Recorded with Event Data Recorders," Journal of Machine Learning and Knowledge Extraction, Vol.1, No. 3, pp. 1–21 (2018)

- doi:10.3390/make1010003 .
- 40) H. Madokoro, K. Sato, N. Shimo, "Vision-Based Indoor Scene Recognition from Time-Series Aerial Images Obtained Using a MAV Mounted Monocular Camera," *Drones*, Vol. 3, No. 1, pp. 1–18 (2019)  
doi:10.3390/drones3010022 .
- 41) H. Madokoro, K. Sato, N. Shimo, "Indoor Scene and Position Recognition Based on Visual Landmarks Obtained from Visual Saliency without Human Effects," *Robotics*, Vol. 8, No. 1, pp. 1–24 (2019)  
doi:10.3390/robotics8010003 .
- 42) H. Madokoro, K. Nakasho, N. Shimo, H. Woo, K. Sato, "Development of Invisible Sensors and a Machine-Learning-Based Recognition System Used for Early Prediction of Discontinuous Bed-Leaving Behavior Patterns," *MDPI Sensors*, Vol. 20, No. 5, pp. 1–22 (2020.1) doi:10.3390/s20051415 .
- 43) Yoshihiro Takita, Yuuji Hida, Nobuhiro Shimo, "Navigation and recognition of the unknown space using infrared following servo system for moving robot," *Transaction of the Japan of Mechanical Engineers (c)*, Vol. 61, No. 590, pp. 4013–4020 (1995)
- 44) Yoshihiro Takita, Nobuhiro Shimo, "Walking control of self-standing quadrupedal robot with YT-mechanism," *Transaction of the Japan of Mechanical Engineers*, Vol. 62, No. 593, pp. 188–193 (1996).
- 45) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Unrestrained Sensor Systems Using Piezoelectric Elements for Bed-Leaving Prediction," *Transaction of the Japan of Mechanical Engineers*, Vol. 79, No. 800, pp. 128–139 (2013); ((2013-01-22), TRANS-JSME-D-13-00071).
- 46) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Development of non-restraining and QoL sensor systems for bed-leaving prediction," *IEICE (d)*, Vol. J96D, No. 12, pp. 3055–3067 (2013.12) ISSN: 1881-0225 .
- 47) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Prediction of bed-leaving behaviors using accelerometer-embedded pillow based on machine learning," *SSI2012 Journal of SICE*, Vol. 49, No. 11, pp. 994–1003 (2013.11) doi: 10.9746/sicetr.49.994 .
- 48) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Prediction of Bed-leaving behaviors using accelerometers embed pillow based on machine learning," *Journal of SICE*, Vol. 49, No. 11, pp. 994–1003 (2013.11) doi: 10.9746/sicetr.49.994 .
- 49) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, Li Xu, "Pattern recognition of movement on bed aimed at prediction of bed-leaving behaviors (Time-series feature learning using Elman-type feedback counter propagation network)," *Journal of SICE*, Vol. 51, No. 8, pp. 528–534 (2015.8) doi <https://doi.org/10.9746/sicetr.51.528> .
- 50) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Piezoelectric sensors for bed-leaving detection with system measurement technology," *The Material Report*, Vol. 34, No. 3, pp. 57–63 (2014.3).
- 51) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, Li Xu, "Human sensing for sleep monitoring using film-load sensors," *Journal of Japan Society for Fuzzy Theory and Intelligent Informatics*, Vol. 28, No. 6, pp. 963–973 (2016).
- 52) Hirokazu Madokoro, Nobuhiro Shimo, Kazuhito Sato, "Development of simplified monitoring system of daily life using care robot and non-restraining sensors," *IEICE (d)*, Vol. J102–D, No. 5, pp. 411–422 (2019)  
doi:10.14923/transinfj.2018JDP7065 .

## \* Proceedings

- 53) Nobuhiro Shimoi, Syoitirou Koga, Kohoji Itou, Hujio Iitaka, Akihiro Shinoda, "A Sensor stabilizing Technology of Air cushion for Pile Detection," Proceedings of 1996 4th International Workshop on Advanced Motion Control, VAMC '96-MIE, Vol. 2 pp. 383–388 (1996.3).
- 54) Nobuhiro Shimoi, Yoshihiro Takita, Kenzou Nonami, Katumi Wasaki, "Smart Sensing for Mine Detection Studies with IR Cameras," Proceedings of 2001 IEEE International Symposium Computational Intelligence in Robotics and Automation. CIRA 2001, pp. 356–361 (2001.2).
- 55) Nobuhiro Shimoi, Yoshihiro Takita, Kenzou Nonami, Katumi Wasaki "Land Mine Detecting Technology by Using IR Cameras," Proceedings of the International Conference on Control Automation and Systems (ICCAS 2001), pp. 131–134 (2001.10).
- 56) Nobuhiro Shimoi, Katumi Wasaki, Yoshihiro Takita, "A realization of the smart sensing for mine detecting by the time subtraction IR Images," International Conference on Multisensory Fusion and Integration for Intelligent Systems (MIF 2001), IEEE, IES, pp. 1–7 (2001.8).
- 57) Nobuhiro Shimoi, Yoshihiro Takita, "Mine Detecting Technology for Humanitarian Purpose," The 7th World Multi Conference on Systemic, Cybernetics and Informatics SCI 2003, pp. 166–171 (2003.7).
- 58) Nobuhiro Shimoi, Yoshihiro Takita, "Remote mine sensing technology using a Mobile Wheeled Robot RAT-1," Proceedings of the International Conference on Control Automation and Systems (ICCAS 2010), TE06-4(5) (2010.10).
- 59) Nobuhiro Shimoi, Masahiro Saijo, Carlos Cuadra, Hirokazu Madaokoro, "Comparison of Natural Frequencies of Vibration for a Bridge Obtained Measurements with Accelerometers and Piezoelectric Cable Sensor," Second European Conference on Earthquake Engineering and Seismology, Istanbul (2ECEES), Aug. 25–29, WA02-2 (2014).
- 60) Nobuhiro Shimoi, Carlos Cuadra, "Comparison of Vibration Analysis for a Bridge Using Accelerometers and a Piezoelectric Cable Sensor," IEEE Multi-Conference on System and Control, 978-1-4799-7786-4/15, IEEE. pp. 595–600, September 21–23, Sydney, Australia (MSC 2015).
- 61) Nobuhiro Shimoi, Carlos Cuadra, "Comparison of natural Frequencies of Vibration for a Bridge Obtained from Measurements with Accelerometers and Piezoelectric Sensor," The 13th International Workshop on Advanced Infrared Technology and Applications (AITA 2015), pp. 346–349, Pisa, Italy, Sep. 29 – Oct. 02 (2015).
- 62) Nobuhiro Shimoi, Carlos Cuadra, Kazuhisa Nakasho, Hirokazu Madokoro, "Active image processing for wooden traditional structure using IR cameras," The 14th International Workshop on Advanced Infrared Technology and Applications (AITA 2017), pp. 113–116, Quebec, Canada (Sep. 27–29, 2017) doi: 10.5923/j.instrument.20150401.01 .
- 63) Nobuhiro Shimoi, Carlos H. Cuadra, "Nondestructive Survey of a Historical Wooden Construction Using Thermography and Ambient Vibration Measurements," 18th International Conference on Control, Automation and Systems (ICCAS) (Oct. 17–20 2018), Yong Pyong Resort, PyeongChang, GangWon, Korea, Paper No. P00025
- 64) Hiroaki Utida, Nobuhiro Shimoi, Kou Yang, Daisuke Komizo, "Development and Force/Attitude Control of Demining Six-legged Locomotion Robot," Titech COE/Super Mechano-Systems Symposium 2000, pp. 239–244 (2000.3).

- 65) Nozue Tomohiro, Fujisawa Ryo, Madokoro Hirokazu, Shimoi Nobuhiro, "Piezoelectric Vibration Sensor and Pillow Sensor Used for Bed-Leaving Prediction System," Proc. International Conference on Instrumentation, Control, Information Technology and System Integration (SICE2014), pp. 1603–1608, September 9–12, 2014, Hokkaidou University (2014.9).
- 66) K. Nonami, Q. J. Huang, D. Komizo, N. Shimoi, H. Uchida, "Humanitarian Mine Detection Six-Legged Walking Robot Proceedings of the 3rd International Conference on Climbing and Walking Robots" (CLAWER.2000), Madrid, Spain, 2000, pp. 861–868 (2000.10).
- 67) Hiroaki Utida, Nobuhiro Shimoi, Kou Yang, "Development of Teleoperated Six-legged Walking Robot for Mine Detection and Mapping of mine Field," The 2000 IEEE/RSJ International Conference on intelligent Robots and Systems, No. 6348-5 (2000.11).
- 68) Katumi Wasaki, Yasuo Yamaguchi, Yasunari Shidama, Nobuhiro Shimoi, "A Rapid HDL Generation for a pipelined DES Encipher Circuit using the Logical Colored Petri Net," The 6th International Conference on Control, Automation, Robotics and Vision (ICARCV 2000), Vol. 1, No. FM5-2, pp. 1–6 (2000.12).
- 69) Hiroaki Uchida, Kou Yang, Daisuke Komizo, Nobuhiro Shimoi, Kenzou Nonami, "Force/Attitude Control and Recoding Environment for Six-legged Locomotion Robot Using Pitching and Rolling Moments at Foot," The 15 International Conference on Motion and Vibration Control 2000 Movic, pp. 305–310 (2000.12).
- 70) Katsumi Wasaki, Nobuhiro Shimoi, Yoshihiro Takita, Pauline N. Kawamoto, "A Smart Sensing Method for Mine Detection using Time Difference IR Images," Proceedings of IEEE Conference on Multisensor Fusion and Integration for Intelligent Systems (IEEE-MFI2001), 1:133–139 (2001).
- 71) Katsumi Wasaki, Nobuhiro Shimoi, Yoshihiro Takita, "A Remote Sensing Method of Ground Mines using Time Difference IR Images," Proceedings of the International Symposium on Inverse Problems in Engineering Mechanics (ISIP2003), 1, 261–270 (2003).
- 72) Yoshihiro Takita, Nobuhiro Shimoi, "Development of a Wheeled Mobile Robot Octal "Wheel Realized" Climbing up and Down Stairs," Proceedings of 2004 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2004), 2440–2445 (2004.12).
- 73) Yuta Yamada, N. Shimoi, C.H. Cuadra, Naota Miyahara, Takashi Doko, "Forced vibration test on wooden model to simulate the seismic behavior of traditional Japanese wooden shrines," Proceedings of the 15th World Conference on Earthquake Engineering, September 24–29, 2012, Lisbon, Portugal, Paper No. 1721 (2012.9).
- 74) Hirokazu Madokoro, Nobuhiro Shimoi, Kazuhito Sato, "Unrestrained Sensors Using Piezoelectric Elements for Bed-Leaving Prediction," 2013 13<sup>th</sup> International Conference on Control, Automation and Systems (ICCAS), Oct. 20–23, 2013 in Kimdaeung Convention Center, Gwangju, Korea, Paper No.WA02-3 (2013.10).
- 75) Carlos Cuadra, Nobuhiro Shimoi, Tetsuya Nishida and Masahiro Saijo, "Estimation of Dynamic Properties of Traditional Wooden Structures Using New Bolt Sensor," 13th International Conference on Control, Automation and Systems (ICCAS), Oct. 20–23, 2013 in Kimdaeung Convention Center, Gwangju,

Korea, Paper No.WA02-2 (2013.10).

- 76) Carlos Cuadra, Nobuhiro Shimo, Tetsuya Nishida, Hirokazu Madokoro, "Dynamic characteristics of a bridge using ambient vibration measurements and finite element analysis," 15th Second European Conference on Earthquake Engineering (2ECEES), 24–29 August, 2014, Istanbul, Turkey, paper No. 365 (2014.8).
- 77) Tomohiro Nozue, Ryo Fujisawa, Hirokazu Madokoro, Nobuhiro Shimo, "Piezoelectric Vibration Sensor and Pillow Sensor Used for Bed-Leaving Prediction System," Proc. International Conference on Instrumentation, Control, Information Technology and System Integration (SICE2014), pp. 1603–1608, September 9–12, 2014, Hokkaidou University (2014.9).
- 78) Madokoro Hirokazu, Shimo Nobuhiro, Sato Kazuhito, "Unrestrained Multi-Sensor Systems for Real-Time Prediction of Bed-Leaving Behavior Patterns," Proc. International Conference on Instrumentation, Control, Information Technology and System Integration (SICE2014), pp. 1946–1953, September 9–12, 2014, Hokkaido University (2014.9).
- 79) N. Sato, Li Xu, H. Cheng, S. Matsushita, H. Madokoro, N. Shimo, "A Novel Method for Recasting an n-D Fornasini-Marchesini Model into an n-D Roesser Model," Proceedings of the Joint International Conference of ITCA 2014 & ISCIIA 2014, pp. 17–22, Changsha, China (2014.9).
- 80) Hirokazu Madokoro, Kantarou Kakuta, Ryo Fujisawa, Nobuhiro Shimo, Kazuhito Sato, Li Xu, "Bed-Leaving Behavior Detection and Recognition Based on Time-Series Learning Using Elman-Type Counter Propagation Networks," 2014 14th International Conference on Control, Automation and Systems (ICCAS 2014) Oct. 22–25, 2014 in Kimdaejung Convention Center, Gwangju, Korea, paper No. TA01-5 (2014.10).
- 81) H. Madokoro, K. Sato, N. Shimo "Adaptive Category Mapping Networks for All-Mode Topological Feature Learning Used for Mobile Robot Vision," The 23rd IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN2014), pp. 678–683 (2014.10).
- 82) C. Cuadra, N. Shimo, T. Sasaki, T. Taguchi, "Preliminary Evaluation of Piezoelectric Sensors for the Prediction of Compression Failure of Brick Masonry Components," 14th International Conference on Studies, Repairs and Maintenance of Heritage Architecture (STREMAH), No. 115, pp. 605–612, 13–15 July 2015, A Coruna, Spain (2015).
- 83) Beiyi Liu, Guan Gui, Li Xu, Nobuhiro Shimo, "Iteration-Promoting Variable Step Size Least Mean Square Algorithm for Accelerating Adaptive Channel Estimation," The 34th Chinese Control Conference and SICE, Annual Conference 2015, No. 0141, July 28–30 (2015) Hangzhou, China doi: 10.11528/tsjc.2015.04 .
- 84) Chan Ye, Guan Gui, Li Xu, Nobuhiro Shimo, "Improved Adaptive Sparse Channel Estimation Using Re-Weighted L1-norm Normalized Least Mean Fourth Algorithm," The 34th Chinese Control Conference and SICE, Annual Conference 2015, No. 0165, July 28–30 (2015) Hangzhou, China.
- 85) Guan Gui, Li Xu, Nobuhiro Shimo, "Stable sparse channel estimation algorithm under non-Gaussian noise environments," 2015 21st Asia-Pacific Conference on Communications (APCC), Kyoto 14–16 Oct. (2015) 978-4-8855-2301-4, doi: 10.1109/APCC.2015.7412573.
- 86) Asahi Kainuma, Hirokazu Madokoro, Kazuhito Sato, Nobuhiro Shimo, "Occlusion-Robust Segmentation for Multiple Objects using a Micro Air Vehicle," 16th International Conference on Control, Automation and Systems (ICCAS), MA05-2, 16–19 Oct. 2016, HICO, Gyeongju, Korea (2016).
- 87) Shinya Ueda, Hirokazu Madokoro, Kazuhito Sato, Nobuhiro Shimo, "Prototype Development of On-Board Vision Processing Micro Air Vehicle for Wide-Range Monocular SLAM," 16th International

Conference on Control, Automation and Systems (ICCAS), MA01-2, 16–19 Oct. 2016, HICO, Gyeongju, Korea (2016).

- 88) Takuya Sasaki, Calros Cuadra, Hirokazu Madokoro, Kazuhisa Nakasho, Nobuhiro Shimoi, “Comparison of Piezoelectric Limit Sensors with FEM Analysis Results of Compression Failure of Brick Masonry Specimens,” 16th International Conference on Control, Automation and Systems (ICCAS), WA06-1, 16–19 Oct. 2016, HICO, Gyeongju, Korea, pp. 1197–1201 (2016.10).
- 89) Hirokazu Madokoro, Kazuhito Sato, Nobuhiro Shimoi, “Development of Micro Air Vehicle Using Aerial Photography for Safe Rowing and Coaching,” 16th International Conference on Control, Automation and Systems (ICCAS), MA01-1, October 16–19, 2016, HICO, Gyeongju, Korea (2016).
- 90) Kazuhisa Nakasho, Hirokazu Madokoro, Nobuhiro Shimoi, “Implementation of a Vital Signs Monitoring System in Combination with a Bed-Leaving Detection System,” 2016 IEEE/SICE International Symposium on System Integration, TuP2D.1, pp. 290–295 (2016.12), Sapporo.
- 91) Hirokazu Madokoro, Nobuhiro Shimoi, Kazuhito Sato, Li Xu, “Development of Unrestrained and Hidden Sensors Using Piezoelectric Films for Recognition and Prediction of Bed-Leaving Behaviors,” The International Symposium on Stability, Vibration, and Control of Machines and Structures (SVCS) (2016).
- 92) Carlos H. Cuadra, Nobuhiro Shimoi, “Measurment of vibration characteristic a bridge using piezoelectric bolt –type sensors,” 16th World Conference on Earthquake (January 9–13, 2017), Santiago Chile, Paper No. 4037.
- 93) Hirokazu Madokoro, Kazuhito Sato, Kazuhisa Nakasho, Nobuhiro Shimoi, “Adaptive Learning Based Driving Episode Description on Category Maps,” 2017 International Joint Conference on Neural Networks, 14–19 May 2017, Anchorage, Alaska (2017).
- 94) Katsumi Wasaki, Masaaki Niimura, Nobuhiro Shimoi, “Implementing an In-Home Sensor Agent in Conjunction with an Elderly Monitoring Network,” Proceedings of the 14th International Conference on Information Technology New Generations (ITNG2017), Advances in Intelligent Systems and Computing, Vol. 558, Springer, pp. 57–65 (April 2017).
- 95) Kazuhisa Nakasho, Carlos Cuadra, Hirokazu Madokoro, Nobuhiro Shimoi, “Infrared Thermography Applied for Robust Image Processing to Examine Historical Wooden Buildings,” The 14th International Workshop on Advanced Infrared Technology and Applications (AITA2017), Canada, Quebec, Sep. 27–29 (2017).
- 96) Katsumi Wasaki, Masaaki Niimura, Nobuhiro Shimoi, “A Multi-agent Approach to Smart Home Sensors for the Elderly Based on an Open Hardware Architecture: A Model for Participatory Evaluation,” 7th International Conference on Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH), pp. 386–391, Spain (2017.7.27).
- 97) H. Madokoro, K. Sato, K. Nakasho, N. Shimoi, “Unsupervised Learning-based Semantic Scene Recognition and Boundary Visualization on Category Maps,” 2017 Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EPIROB), pp. 350–355, Lisbon, Portugal (September 18–21, 2017).
- 98) H. Madokoro, K. Sato, K. Nakasho, N. Shimoi, “Context Based Semantic Scene Classification and Recognition Used for a Vision-Based Mobile Robot,” 26th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN), pp. 1332–1337, Lisbon, Portugal (August 28–31, 2017).

- 99) Carlos H. Cuadra, Nobuhiro Shimoji, "Structural Damage Detection in a Steel Column-Beam Joint Using Piezoelectric Sensors," 18th International Conference on Control, Automation and Systems (ICCAS 2018) (Oct. 17–20, 2018), Yong Pyong Resort, Pyeong Chang, Gang Won, Korea, Paper No. P00026 .
- 100) H. Madokoro, N. Shimoji, K. Sato, "Daily Life Monitoring System with Behavior Pattern Recognition Using Ambient Sensors," The Eighth International Conference on Ambient Computing, Applications, Services and Technologies (AMBIENT2018), pp. 11–16, Athens, Greece (Nov. 18–22, 2018).
- 101) K. Iguchi, H. Madokoro, K. Sato, K. Nakasho, N. Shimoji, "Classification and Visualization of Long-Term Life-monitoring Sensor Signals Using Topological Characteristics of Category Maps," Proc. 16th International Conference on Control, Automation and Systems (ICCAS), pp. 381–386, Gang Won Province, Korea (Oct. 17–20, 2018).
- 102) D. Hiramatsu, H. Madokoro, K. Sato, K. Nakasho, N. Shimoji, "Automatic Calibration of Bed-Leaving Sensor Signals Based on Genetic Evolutionary Learning," 18th International Conference on Control, Automation and Systems (ICCAS), pp. 81–86, Gang Won Province, Korea (Oct. 17–20, 2018).
- 103) Carlos H. Cuadra, Nobuhiro Shimoji, "Earthquake Damage Level Detection Using Piezoelectric Sensors," Proceedings of the International Research Conference ICES 2019: International Conference on Engineering Structures, Tokyo (March 25–26, 2019), pp. 610–614.
- 104) H. Madokoro, H. Woo, K. Sato, N. Shimoji, "Development of Octo-Rotor UAV Prototype with Night-vision Stereo Camera System Used for Nighttime Visual Inspection," 19th International Conference on Control, Automation and Systems (ICCAS), pp. 998–1003, Jeju, Korea (Oct. 15–18, 2019).
- 105) H. Madokoro, K. Nakasho, N. Shimoji, H. Woo, K. Sato, "Invisible Sensors for Early Prediction of Discontinuous Bed-Leaving Behavior Patterns," Proc. 5th International Conference on Sensors Engineering and Electronics Instrumentation Advances (SEIA), pp. 74–80, Canary Islands (Tenerife), Spain (Sep. 25–27, 2019). Structures, Tokyo, March 25–26, 2019, pp. 610–614.
- 106) Carlos H. Cuadra, Nobuhiro Shimoji, "Structural Damage Detection in a Steel Column-Beam Joint Using Piezoelectric Sensors," Abstract of ICERSSA 2019: International Conference on Earthquake Resistant Structures and Seismic Analysis, Paris, France (September 19–20, 2019), pp. 367.
- 107) Carlos H. Cuadra, Nobuhiro Shimoji, "Gestion de Mantenimiento de Puentes en Japón, Sensores Piezo eléctricos Para el Monitoreo Estructural de Puentes Management of Bridges in Japan, Piezoelectric Sensors for Structural Monitoring)," Proceedings of the XVIII Congreso Internacional Infraestructura Vial & Expo Vial y Transporte (18th International Congress and Expo on Road Infrastructure), Lima, Peru (August 30–31, 2019).
- 108) C. Cuadra, N. Shimoji, "Response of a piezoelectric sensor designed for health monitoring of a welded steel joint," The 17th World Conference on Earthquake Engineering, No. 3f-0018, Sendai, Japan – September 13–18 ( 2020).

## \* Patents

- 109) Syuitiro Koga, Nobuhiro Shimoji, Hujio Iitaka, "Vibration Penetration Device," Japanese Patent No. 2858329 (Nov. 20, 1998).
- 110) Yasuaki Shinoda, Hujio Iitaka, Nobuhiro Shimoji, Masahiko Kanou, "Buried Object Detector," Japanese Patent No. 2090606 (September 18, 1996, 1).

- 111) Nobuhiro Shimoji, JST, "Method and apparatus for detecting mine," Japanese Patent No. 2001-074397 (Mar. 23, 2001).
- 112) Nobuhiro Shimoji, JST, "Unmanned crime prevention device," Japanese Patent No. 2003-3464936 (August 8, 2003).
- 113) Nobuhiro Shimoji, JST, "The mine treating apparatus," Japanese Patent No. 3639163 (January 21, 2005).
- 114) Nobuhiro Shimoji, JST, "Launch Apparatus," Japanese Patent No. 3730443 (January 5, 2006).
- 115) Nobuhiro Shimoji, Kenzou Nonami, "The mine disposal apparatus," Japanese Patent No. 3683774, Heisei 17 (2005) (June 3, 2005).
- 116) Nobuhiro Shimoji, JST, "To provide an alarm device with a compressive force detecting sensor using the same," Japanese Patent No. 3689260, Heisei 17(2005) (August 31, 2005).
- 117) Nobuhiro Shimoji, JST, "To provide an alarm device with a compressive force detecting sensor using the same," Japanese Patent No. 3689260 (June 17, 2005).
- 118) Nobuhiro Shimoji, JST, "The special shell processing method and apparatus therefor," Japanese Patent No. 3689344 (August 31, 2005).
- 119) Nobuhiro Shimoji, JST, "A vehicle anti-theft apparatus and method thereof," Japanese Patent No. 3859157 (September 29, 2006).
- 120) Nobuhiro Shimoji, JST, "Abnormality detecting method and device for a pipeline," Japanese Patent No. 3984218 (July 13, 2007).
- 121) Nobuhiro Shimoji, Akita Prefectural University, "Intelligent bed leaving bed leaving prediction sensor system IP," Japanese patent No. 5791156 (August 14, 2015).
- 122) Nobuhiro Shimoji, Akita Prefectural University, "Intelligent bed leaving bed leaving prediction sensor system II," Patent No. 5807857 (September 18, 2015).
- 123) Nobuhiro Shimoji, Akita Prefectural University, Yasushi Sano, Masahiro Saijyo (OYO Corp.) "Limit type displacement detector," Japanese Patent No. 6260901 (December 22, 2017).
- 123) Nobuhiro Shimoji (Akita Prefectural University), Yasushi Sano, Masahiro Saijo, Satoru Ishituka (OYO Corp.), "Avalanche Rock fall Monitoring System," Japanese Patent No. 2016-084918 (April 21, 2016), Patent No. 6352329.
- 124) Nobuhiro Shimoji (Akita Prefectural University), "Watching system for the elderly living alone," Japanese Patent No. 6321617 (April 13, 2018).
- 125) Katumi Wasaki, Masaaki Nimura (Shinshu University), Nobuhiro Shimoji (Akita Prefectural University). Japanese Patent No. 6750860 (August 17, 2020).
- 126) Nobuhiro Shimoji, Tetuya Nishida (Akita Prefectural University), "Soundness monitoring of limit type displacement detectors and structures, etc." Japanese Patent No. 6750860 (August 17, 2020).

#### \* Awards

- 127) Nobuhiro Shimoji, Line improvement proposal Excellence award, Ministry Defense, (1990.1.25).
- 128) Nobuhiro Shimoji, Awards for achievements in performing duties (Rank 5), Ministry Defense, (1991.4.27).
- 129) Nobuhiro Shimoji, Awards for achievements in performing duties (Rank 4), Ministry Defense, (1992.3.5).
- 130) Nobuhiro Shimoji, Yoshihiro Takita, Katsumi Wasaki, Best Paper Award: International Conference on Control Automation and Systems (ICCAS 2001) "Remote mine sensing technology using a Mobile

Wheeled Robot RAT-1” (2001.10.19).

- 131) Nobuhiro Shimoji, Award for achievement in performing duties, Ministry of Education, Culture, Sports, Science and Technology (2008.11.23).
- 132) Ikkou Sudou, Masaki Ishii, Nobuhiro Shimoji, Heisei 22, Information Processing Society of Japan Tohoku Branch Encouragement Award (2011.5).
- 133) Nobuhiro Shimoji, The Society of Instrument and Control Engineering acknowledges its gratitude to Nobuhiro Shimoji for contribution to SICE Annual Conference 2012 SICE Week Committee Chair (2012.8.23).
- 134) Nobuhiro Shimoji, The Society of Instrument and Control Engineering acknowledges its gratitude to Nobuhiro Shimoji for contribution to SICE Annual Conference 2012 Co-Chair (2014.9.11).
- 135) Nobuhiro Shimoji, Hirokazu Madokoro, The Society of Instrument and Control Engineering Award (Paper Award) (2014.9.11), Hokkaido University Open Hole.
- 136) Nobuhiro Shimoji, Masahiko Saijyo, The Society of Instrument and Control Engineering Award (Technology Award) (2014.9.11), Hokkaido University Open Hole.
- 137) H. Madokoro, N. Shimoji, K. Sato, “Daily Life Monitoring System with Behavior Pattern Recognition Using Ambient Sensors,” International Academy, Research, and Industry Association (IARIA) Best Paper Award, The Eighth International Conference on Ambient Computing, Applications, Services and Technologies (AMBIENT2018), pp. 11–16 (Nov. 18–22, 2018) Athens, Greece.
- 138) Carlos H. Cuadra, Nobuhiro Shimoji, “Earthquake damage level detection using piezoelectric sensors,” International Research Conference Certificate of Best Presentation Award. ICES 2019 International Conference on Engineering Structures (2019.3.25).
- 139) Carlos H. Cuadra, Nobuhiro Shimoji, “Structural damage detection in a steel column beam joint using piezoelectric sensors,” International Research Conference Certificate of Best Presentation Award. ICERSSA 2019 International Conference on Earthquake Resistant Structures and Seismic Analysis hereby certifies (2019.9.20).
- 140) Nobuhiro Shimoji, Carlos H. Cuadra, 13th FORUM8 Design Festival 2019; The 6th National Resilience Design Award, Grand Prize, Shinagawa intercity hole (2019/11/15)  
<http://www.forum8.co.jp/fair/narda.htm#nominate>