SILDOMAR TAKAHASHI MONTEIRO

EDUCATION Tokyo Institute of Technology, Tokyo, Japan Ph.D. in Mechano-Micro Engineering (Mechatronics) March 2007 Aeronautics Institute of Technology, São José dos Campos, Brazil M.Sc. in Computer Science June 2002 University of Amazonas, Manaus, Brazil B.Sc. in Electrical Engineering B.Sc. in Electrical Engineering October 1999 RESEARCH INTERESTS Machine learning; statistical signal and image processing; autonomous robots; remote sensing; and biomedical engineering. RESEARCH EXPERIENCE University of Sydney, Sydney, Australia Research Fellow, Australian Center for Field Robotics Mar. 2008 – present Tokyo Institute of Technology, Tokyo, Japan JSPS Postdoctoral Fellow Apr. 2007 – Feb. 2008 Doctoral Student, Dept. Mechano-Micro Engineering Apr. 2003 – Mar. 2007 Toshiba Corporate Research and Development Center, Kawasaki, Japan Research Assistant Intern, Human Centric Laboratory Jun. 2004 – May 2005 TEACHING EXPERIENCE 2011 Introduction to Probabilistic Graphical Models (postgraduate) 2011 • Introduction to Probabilistic Graphical Models (postgraduate) 2011 MARADS AND SCHOLARSHIPS 2003 – 2007 • Postdoctoral fellowship for foreign researchers 2007 – 2008 Japan Society for the Promotion of S	Rose Street Building J04 University of Sydney NSW 2006 Australia	sildomar@usyd.edu.au http://www-personal.acfr.usyd.edu.au/sildomar (+61) 421 462 214	
Tokyo Institute of Technology, Tokyo, Japan Ph.D. in Mechano-Micro Engineering (Mechatronics)March 2007Aeronautics Institute of Technology, São José dos Campos, Brazil M.Sc. in Computer ScienceJune 2002University of Amazonas, Manaus, Brazil B.Sc. in Electrical EngineeringOctober 1999RESEARCH INTERESTS Machine learning; statistical signal and image processing; autonomous robots; remote sensing; and biomedical engineering.October 1999RESEARCH EXPERIENCE University of Sydney, Sydney, Australia Research Fellow, Australian Center for Field RoboticsMar. 2008 – presentTokyo Institute of Technology, Tokyo, Japan JSPS Postdoctoral FellowApr. 2007 – Feb. 2008 Apr. 2007 – Feb. 2008 Apr. 2007 – Feb. 2008 Joctoral Student, Dept. Mechano-Micro EngineeringApr. 2004 – May 2005TEACHING EXPERIENCE • Computer Vision and Image Processing, AMME4710 (4th year)2011• Introduction to Probabilistic Graphical Models (postgraduate)2011• Professional Engineering and IT, ENGG1805 (1st year)2009, 2010, 2011• AwARDS AND SCHOLARSHIPS 	EDUCATION		
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	 Doctoral research scholarship Japan's Ministry of Education, Culture, Sports Master's degree scholarship Research Support Foundation of the São Paulo 	s, Science and Tech o State, Brazil (FAI	2003 – 2007 mology (MONBUSHO) 2000 – 2002 PESP)

Research Grants

• (PI) *JSPS Fellowship grant*, JPY\$12 million (approximately \$155k), "Study on high-performance parallel particle swarm optimizers for hyperspectral data analysis," 2007 – 2008

LIST OF SELECTED PUBLICATIONS

JOURNALS

1. R.J. Murphy, S.T. Monteiro and S. Schneider, Evaluating classification techniques for mapping vertical geology using field-based hyperspectral sensors, *IEEE Transactions on Geoscience and Remote Sensing*, in press, 2011.

- 2. A. Kadkhodaie-Ilkhchi, S.T. Monteiro, F. Ramos and P. Hatherly, Rock recognition from MWD data: a comparative study of boosting, neural networks and fuzzy logic, *IEEE Geoscience and Remote Sensing Letters*, v.7, n. 4, pp. 680-684, 2010.
- 3. S.T. Monteiro and Y. Kosugi, Particle swarms for feature extraction of hyperspectral data, *IEICE Transactions on Information and Systems*, v. E90-D, n. 7, pp. 1038-1046, Oxford University Press, 2007.
- 4. S.T. Monteiro, Y. Minekawa, Y. Kosugi, T. Akazawa and K. Oda, Prediction of sweetness and amino acid content in soybean crops from hyperspectral imagery, *ISPRS Journal of Photogrammetry & Remote Sensing*, v. 62, n. 1, pp. 2-12, Elsevier Press, 2007.
- 5. S.T. Monteiro, K. Uto, Y. Kosugi, N. Kobayashi and E. Watanabe, Optimization of infrared spectral manipulation for surgical visual aid, *Journal of Japan Society of Computer Aided Surgery*, vol. 8, no. 1, pp. 33–38, 2006.

CONFERENCE PROCEEDINGS (Refereed)

- 6. H. Zhou, P. Hatherly, S.T. Monteiro, F. Ramos, F. Oppolzer and E. Nettleton, A hybrid GP regression and clustering approach for characterizing rock properties from drilling data, *accepted to IEEE International Conference on Robotics and Automation* (ICRA), 2012.
- 7. S.T. Monteiro, F. Ramos and P. Hatherly, Learning 3D geological structure from drill-rig sensors for automated mining, *International Joint Conference on Artificial Intelligence* (IJCAI), pp. 2500-2506, Barcelona, Spain, 2011.
- 8. A.S.J. Tjiong and S.T. Monteiro, Feature selection with PSO and kernel methods for hyperspectral classification, *IEEE Congress on Evolutionary Computation* (CEC), pp. 1762-1769, New Orleans, USA, 2011.
- 9. H. Zhou, S.T. Monteiro, P. Hatherly, F. Ramos, E. Nettleton and F. Oppolzer, Automated rock recognition with wavelet feature space projection and Gaussian process classification, *IEEE International Conference on Robotics and Automation* (ICRA), pp. 4444-4450, Alaska, USA, 2010.
- 10. J. Nieto, D. Viejo and S.T. Monteiro, 3D geological modelling using laser and hyperspectral data, *IEEE International Geoscience and Remote Sensing Symposium* (IGARSS), pp. 4568-4571, Honolulu, USA, 2010.
- 11. S.T. Monteiro, F. Ramos and P. Hatherly, Conditional random fields for rock characterization using drill measurements, *International Conference on Machine Learning and Applications* (ICMLA), pp. 366-371, Miami, USA, 2009.
- 12. S.T. Monteiro, R.J. Murphy, F. Ramos and J. Nieto, Applying boosting for hyperspectral classification of ore-bearing rocks, *IEEE International Workshop on Machine Learning for Signal Processing* (MLSP), pp. 1-6, Grenoble, France, 2009.
- 13. S.T. Monteiro and Y. Kosugi, A particle swarm optimization-based approach for hyperspectral band selection, *IEEE Congress on Evolutionary Computation* (CEC), pp. 3335-3340, Singapore, 2007.
- 14. S.T. Monteiro, H. Nakamoto, H. Ogawa, and N. Matsuhira, Robust mobile robot map building using sonar and vision, *JSME Conference on Robotics and Mechatronics* (ROBOMEC), 2P1-N-052, pp. 1–4, Kobe, Japan, 2005.
- 15. S.T. Monteiro, K. Uto, Y. Kosugi, and E. Watanabe, Towards applying hyperspectral imagery as an intraoperative visual aid tool, *IASTED International Conference on Visualization, Imaging and Image Processing* (VIIP), pp. 483–488, Marbella, Spain, 2004.

WORKSHOPS (Refereed)

- 16. S.T. Monteiro, F. Ramos and P. Hatherly, Learning CRF models from drill rig sensors for autonomous mining, *Neural Information Processing Systems* (NIPS): *Workshop on Learning from Multiple Sources with Applications to Robotics*, Whistler, Canada, 2009.
- 17. S.T. Monteiro, K. Uto, Y. Kosugi and E. Watanabe, Towards a surgical tool using hyperspectral imagery as visual aid, *International Conference on Medical Image*

Computing and Computer Assisted Intervention (MICCAI): *Workshop on Augmented Environments for Medical Imaging and Computer-aided Surgery*, pp. 97–103, Rennes, France, 2004.

OTHER (Non-refereed)

18. S.T. Monteiro, Automatic Hyperspectral Data Analysis: A machine learning approach to high dimensional feature extraction, Saarbrucken, Germany: VDM Verlag Dr Muller, 2010. (monograph)

PATENTS

• Y. Kosugi, S.T. Monteiro, K. Uto and E. Watanabe, *Means and equipment for surgical viewing aid*, US patent application 2004/604,743. Japan Patent 2006-085688.

THESIS SUPERVISION

At University of Sydney: School of Aerospace, Mechanical and Mechatronic Engineering DOCTORAL

- 1. Seong Lee, expected 2014. (principal supervisor)
- 2. Tomasz Jasinski, expected 2014. (associate supervisor with Dr. Graham Brooker)

UNDERGRADUATE HONOURS

- 3. Ken Pang, "Gaussian processes for hyperspectral data regression," 2011. (1st honors)
- 4. Robbert Fujiwara, "Gaussian process preprocessing for rock recognition from MWD logs," 2011. (1st honors)
- 5. Samuel Perrett, "Reinforcement learning for navigation and control," 2011.
- 6. Anthony Tjiong, "Feature selection using kernel methods for hyperspectral mineral data," 2010. (1st honors)
- 7. Hans Hadiardja, "A study of reinforcement learning algorithms for robot navigation," 2010.

ACADEMIC SERVICE

COMMITTEES

• *Program co-chair*, Australasian Conference on Robotics and Automation (ACRA) 2009 LEADERSHIP

• *Organizer*, 2012 Robotics Science and Systems (RSS) conference workshop: "Beyond laser and vision: alternative sensing techniques for robotic perception." With co-organizers Alonzo Kelly (CMU), Michel Devy (LAAS-CNRS) and Thierry Peynot (USydney). (*Proposed*)

• *Co-chair*, IEEE Geoscience and Remote Sensing Society, ACT and NSW Chapter, 2011– OUTREACH

• *Inter-COE21 for High School Students*, Tokyo Institute of Technology, Japan, 2005 JOURNAL REFEREEING

- IEEE Robotics and Automation Magazine
- IEEE Transactions on Evolutionary Computation
- IEEE Transactions on Geoscience and Remote Sensing
- IEEE Geoscience and Remote Sensing Letters
- IEEE Journal of Selected Topics in Earth Observations and Remote Sensing CONFERENCE REFEREEING
- IEEE International Conference on Robotics and Automation (ICRA)
- IEEE Congress on Evolutionary Computation (CEC)
- International Conference on Unmanned Aerial Vehicles (UAV)

• Conference on Digital Image Computing: Techniques and Applications (DICTA) GRANT REFEREEING

Australian Research Council (ARC) Discovery Projects

PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronics Engineers (IEEE) Robotics and Automation Society Geoscience and Remote Sensing Society Computer Society
- Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery and Data Mining