

# A/Prof Fabio T. Ramos

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## Contact information

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## Research Interests

Machine learning, data fusion, robotics, healthcare.

## Education

- Doctor of Philosophy, May 2008.  
Australian Centre for Field Robotics, The University of Sydney, Australia.  
Title: Recognising, Representing and Mapping Natural Features in Unstructured Environments.  
Supervisor: Hugh F. Durrant-Whyte
- Master of Science, June 2003.  
Polytechnique School, University of Sao Paulo, Brazil.  
Title: Anytime, Anyspace Probabilistic Inference.  
Supervisor: Fabio G. Cozman
- Bachelor of Science, December 2000.  
Polytechnique School, University of Sao Paulo, Brazil.  
Title: Bayesian Network Implementation in Embedded Systems.  
Supervisor: Fabio G. Cozman

## Positions

- co-Director, Centre for Translational Data Science, University of Sydney. April 2017 to present.
- Associate Professor in machine learning, School of Information Technologies, University of Sydney. January 2015 to present.
- Senior Lecturer in machine learning, School of Information Technologies, University of Sydney. January 2011 to 2015.
- ARC Research Fellow (APD) Australian Centre for Field Robotics, University of Sydney, Australia. February 2007 to January 2011.
- PhD Candidate Australian Centre for Field Robotics, University of Sydney, Australia. August 2003 to February 2007.
- Master of Science Candidate University of Sao Paulo, Brazil. Funded by HP Labs Palo Alto, USA, January 2002 to June 2003.
- Product Manager Siemens Brazil, Automation and Drives Division, January 2000 to December 2000.
- Research Student Mechatronics Engineering Department, University of Sao Paulo, January 1998 to January 2000.

## Awards and Honours

- Supervisor of the Year, 2017. Sydney University Postgraduate Representative Association (SUPRA)
- Robotics Science and Systems, Best Paper Award Finalist, 2017.
- Dean's Research Award 2012.
- Google Publication Prize 2012.
- Google Publication Prize 2011.
- Australasian Conference on Robotics and Automation (ACRA), Best Paper Award, 2007.
- International Conference on Intelligent Robots and Systems (IROS), Best Paper Award, August 2005.
- University of Sao Paulo, Polytechnique School award for outstanding contributions to the school, 2003.

## Grants and Fellowships

- Sydney Research Accelerator (SOAR) Fellowship 2017.
- ARC Discovery Project, 2016 – 2018.
- ARC Linkage Project, 2016 – 2018.
- ARC LIEF 2015.
- ARC Discovery Project, April 2013 – April 2016.
- ARC Discovery Early Career Award (DECRA), March 2012 – March 2015.
- Australian Centre for Renewable Energy (ACRE), March 2012 – March 2014. (A\$2m)
- ARC Australian Postdoctoral Fellowship (APD), March 2009 – March 2011.
- Rio Tinto Centre for Mining Automation in partnership with Hugh Durrant-Whyte and Peter Hatherly, 2007 (A\$21m grant for 5 years).
- The University of Sydney, Research Fellowship in Field Robotics, August 2003 – February 2007.
- HP Labs, Palo Alto, Research Fellowship on Probabilistic Reasoning, December 2001 – June 2003.
- CAPES PET Research Fellowship, Programa Especial de Treinamento (Special Training Program), January 1997 – December 2000.

## Professional Activities

### Editorial Board

- Senior PC Member, International Joint Conference on Artificial Intelligence, 2018
- Area Chair, Robotics Science and Systems, 2013 – 2014.
- Local Organiser, Robotics Science and Systems, 2012.
- IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2011.
- Associate Editor, IEEE International Conference on Robotics and Automation (ICRA), 2006 to present.
- Associate Editor, IEEE/RSJ International Conference on Intelligent Robots (IROS), 2010 to present.
- Publication Chair, Robotics Science and Systems, 2008.

### Program Committee (Summary)

- Neural Information Processing Systems, 2016 – 17.
- International Conference on Machine Learning, 2014.
- Australian Joint Conference on Artificial Intelligence, 2012.
- Association for the Advancement of Artificial Intelligence (AAAI), 2008.
- Uncertainty on Artificial Intelligence (UAI), 2011.
- IEEE Transactions on Robotics, 2006 to present.
- Journal of Robotics and Autonomous Systems, 2005 to present.
- Journal of Field Robotics, 2007 to present.
- International Journal of Robotics Research, 2008 to present.
- Robotics Science and Systems Conference, 2007 to present.
- IEEE International Conference on Robotics and Automation, 2006 to present.
- IEEE/RSJ International Conference on Intelligent Robots, 2006 to present.
- International Joint Conference on Artificial Intelligence (IJCAI), 2009, 2011, 2013.

## Patents

- APPA 2008901043, Method and System For Exploiting Information From Heterogeneous Sources
- APPA 2009900054, A Method and System of Data Modelling
- APPA 2009902150, A Method and System for Data Analysis and Synthesis
- APPA 2008904884, A Method of Establishing and Maintaining a Model of Terrain Data
- APPA 2009904466, A method and system for multiple dataset Gaussian process modeling
- APPA 2009901935, Integrated Automation System With Picture Compilation System
- APPA 2009902773, A method of Characterising a Resource

## Supervision

### Current PhD students

- Thushan Vidudhaka Ganegedara
- Ransalu Senanayake
- Rafael dos Santos de Oliveira
- Philippe Morere
- Tom Blau
- Sheila Caceres
- Yuan-Shuo Kelvin Hsu
- Harrison Tri Tue Nguyen
- Matthew Ma
- Louis Tiao
- Rafael Carvalhaes Possas
- Anthony Tompkins (Masters student)

### Alumni

- Gilad Francis (PhD)
- Charika de Alvis (PhD)
- Carlos Vido (Masters)
- Lionel Ott (PhD)
- Roman Marchant (PhD)
- Kai Zhan (PhD)
- Lachlan McCalman (PhD)
- Sachinthaka Abeywardana (PhD)
- Vitor Guizilini (PhD)
- Bertrand Douillard (PhD)
- Alistair Reid (co-supervised with Salah Sukkarieh) (PhD)
- Joop van de Ven (PhD)
- Simon O'Callaghan (PhD)
- Francisco Zubizarreta (Masters)
- Markus Schneider (Masters)

## Peer-Review Publications

### Books

1. O. Brock, J. Trinkle, **F.T. Ramos**, editors. Proceedings of Robotics Science and Systems IV, 2009. MIT Press.
2. **F.T. Ramos** Recognising, representing and mapping natural features in unstructured environments, 2009. VDM-Verlag.

## Book Chapters

3. L. Ott, **F.T. Ramos**. Real-Time Clustering for Long-Term Autonomy. In *The 13th International Symposium on Experimental Robotics (ISER)*, Springer Tracts in Advanced Robotics (STAR), Springer-Verlag, 2012.
4. M. Bryson, A. Reid, C. Hung, **F.T. Ramos**, S. Sukkarieh. Cost-Effective Mapping using Unmanned Aerial Vehicles in Ecology Monitoring Applications. *The 12th International Symposium on Experimental Robotics (ISER)*, Springer Tracts in Advanced Robotics (STAR), Springer-Verlag, 2010.
5. V. Guizilini, **F.T. Ramos**. Multi-Task Learning for Outdoor Visual Odometry. *The 12th International Symposium on Experimental Robotics (ISER)*, Springer Tracts in Advanced Robotics (STAR), Springer-Verlag, 2010.
6. **F.T. Ramos**, W. Kadous, D. Fox. Learning to associate image features with CRF-Matching. *The 11th International Symposium on Experimental Robotics (ISER)*, Springer Tracts in Advanced Robotics (STAR). , Springer-Verlag, 2009.
7. B. Douillard, D. Fox, **F.T. Ramos**. A spatio-temporal probabilistic model for multi-sensor multi-class object recognition. *The 13th International Symposium of Robotics Research (ISRR)*, In Press, 2010.
8. **F.T. Ramos**, J. Nieto, H. Durrant-Whyte. Combining object recognition and SLAM for extended map representations. *The 10th International Symposium of Experimental Robotics (ISER 2006)*, Springer Tracts in Advanced Robotics (STAR), Springer-Verlag, 2006.
9. B. Upcroft, M.F. Ridley, L. Ong, B. Douillard, T. Kaupp, S. Kumar, T. Bailey, **F.T. Ramos**, A. Makarenko, A. Brooks, S. Sukkarieh, H. Durrant-Whyte. Multi-level state estimation in an outdoor decentralised sensor network. *The 10th International Symposium of Experimental Robotics (ISER 2006)*, Springer Tracts in Advanced Robotics (STAR), Springer-Verlag, 2006.

## Journal Articles

10. **F.T. Ramos**, L. Ott, Hilbert maps: scalable continuous occupancy mapping with stochastic gradient descent. In *International Journal of Robotics Research*, vol. 35, no 14, 2016.
11. M. Schneider, W. Ertel, **F.T. Ramos**. Expected Similarity Estimation for Large-Scale Batch and Streaming Anomaly Detection. *Machine Learning*, pp. 1–29, 2016.
12. V. Guizilini, **F.T. Ramos**. Online Self-Supervised Learning for Dynamic Object Segmentation. *International Journal of Robotics Research*, vol. 34, no. 4–5, pp. 559–581, 2015.
13. K. Zhan, S. Faux, **F.T. Ramos**. Multi-scale Conditional Random Fields for First-Person Activity Recognition on Elder and Patient Assistance. *Pervasive and Mobile Computing*, vol. 16, Part B, pp. 251–267, 2015.
14. L. Ott, **F.T. Ramos**. Unsupervised Online Learning for Long-Term Autonomy. *International Journal of Robotics Research*, vol. 32, no. 14, pp 1724–1741, 2013.
15. V. Guizilini, **F.T. Ramos**. Semi-Parametric Learning for Visual Odometry. *International Journal of Robotics Research*, vol. 32, no. 5, pp 526–546, 2013.
16. S. O’ Callaghan, **F.T. Ramos**. Gaussian process occupancy maps. *International Journal of Robotics Research*, vol. 31, no. 1, pp 42–62, 2012.
17. Z. Suna, J. van de Ven, **F.T. Ramos**, X. Maoc, H. Durrant-Whyte. Inferring Laser Scan Matching Uncertainty with Conditional Random Fields. *Journal of Robotics and Autonomous Systems*, vol. 60, no. 1, pp. 83–94, 2012.
18. **F.T. Ramos**, B. Upcroft, S. Kumar, H. Durrant-Whyte. A Bayesian approach for place recognition. *Journal of Robotics and Autonomous Systems*, vol. 60, no. 4, pp 487–497, 2012.
19. K. Granstrom, T. Schon, J. Nieto, **F.T. Ramos**. Learning to close loops from range data. *International Journal of Robotics Research*, vol. 30, no 14, pp 1728–1754, 2011.

20. D. Douillard, D. Fox, **F.T. Ramos**, H. Durrant-Whyte. Classification and semantic mapping of urban environments, *International Journal of Robotics Research*, vol. 30, no. 1, pp. 5–32, 2011.
21. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. A mine on its own, *IEEE Robotics and Automation Magazine*, vol. 17, no. 2, pp. 63–73, 2010.
22. M. Bryson, A. Reid, **F.T. Ramos**, S. Sukkarieh. Airborne Vision-based mapping and classification of large farmland environments. *Journal of Field Robotics*, vol. 27, no. 5, pp. 632–655, 2010.
23. A. Kadkhodaie-Ilkhchi, S. Monteiro, **F.T. Ramos**, P. Hatherly. Rock recognition from MWD data: A comparative study of boosting, neural networks and fuzzy logic. *IEEE Geoscience and Remote Sensing Letters*, vol. 7, no. 4, pp. 680–684, 2010.
24. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. Gaussian process modeling of large-scale terrain. *Journal of Field Robotics*, vol. 26, no. 10, pp. 812–840, 2009.
25. **F.T. Ramos**, S. Kumar, B. Upcroft, H. Durrant-Whyte. A natural feature representation for unstructured environments. *IEEE Transactions on Robotics*, vol. 24, no. 6, pp. 1329–1340, 2008.
26. **F.T. Ramos**, B. Dickson, S. Kumar. Denoising aerial Gamma-ray surveying through non-linear dimensionality reduction. *Journal of Field Robotics*, vol. 24, no. 6, pp. 849–861, 2007.
27. T. Kaupp, B. Douillard, **F. T. Ramos**, A. Makarenko, B. Upcroft. Shared environment representation for a human-robot team performing information fusion. *Journal of Field Robotics*, vol. 24, no. 11–12, pp. 911–942, 2007.
28. **F.T. Ramos**, F.G. Cozman. Anytime anytime probabilistic inference. *International Journal of Approximate Reasoning*, vol. 38, no. 1, pp. 53–80, 2005.

## Peer-reviewed conference papers

29. R. Senanayake, **F.T. Ramos**. Bayesian Hilbert Maps for Dynamic Continuous Occupancy Mapping. In *Conference on Robotics Learning (CoRL)*, 2017.
30. V. Guizilini, **F.T. Ramos**. Variational Hilbert Regression with Applications to Terrain Modeling. In *International Symposium on Robotics Research (ISRR)*, 2017.
31. G. Francis, L. Ott, **F.T. Ramos**. Functional Path Optimisation for Exploration in Continuous Occupancy Maps. In *International Symposium on Robotics Research (ISRR)*, 2017.
32. R. Oliveira, L. Ott, **F.T. Ramos**. Bayesian Optimisation for Safe Navigation under Localisation Uncertainty. In *International Symposium on Robotics Research (ISRR)*, 2017.
33. R. Inoue, V. Guizilini, M.H. Terra, **F.T. Ramos**. Markovian Jump Linear Systems-based filtering for Visual and GPS Aided Inertial Navigation System. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017.
34. V. Guizilini, **F.T. Ramos**. Learning to Reconstruct 3D Structures for Occupancy Mapping. In *Robotics: Science and Systems (RSS)*, 2017. **Best Paper Award Finalist**
35. G. Francis, L. Ott, **F.T. Ramos**. Stochastic Functional Gradient for Motion Planning in Continuous Occupancy Maps. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.
36. P. Morere, R. Marchant, **F.T. Ramos**. Sequential Bayesian Optimisation for POMDPs and Environment Monitoring with UAVs. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.
37. C. De Alvis, L. Ott, **F.T. Ramos**. Online Learning for Scene Segmentation With Laser-Constrained CRFs. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.

38. R. Senanayake, S. O’Callaghan, **F.T. Ramos**. Learning Highly Dynamic Environments with Stochastic Variational Inference. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2017.
39. V. Guizilini, **F.T. Ramos**. Unsupervised Feature Learning for 3D Scene Reconstruction with Occupancy Maps. In *Association for the Advancements of Artificial Intelligence (AAAI)*, 2017.
40. R. Oliveira, L. Ott, **F.T. Ramos**. Active Perception for Modelling Energy Consumption in Off-Road Navigation. In *Australasian Conference on Robotics and Automation (ACRA)*, 2016.
41. R. Senanayake, L. Ott, S. O’Callaghan, **F.T. Ramos**. Spatio-Temporal Hilbert Maps for Continuous Occupancy Representation in Dynamic Environments. In *Advances in Neural Information Processing Systems (NIPS)*, 2016.
42. A. Hata, **F.T. Ramos**, D. Wolf. Particle Filter Localization on Continuous Occupancy Maps. In *The 15th International Symposium on Experimental Robotics (ISER)*, 2016.
43. D. Shen, **F.T. Ramos**. Kernel Embeddings of Longitudinal Data. In *Advances in Artificial Intelligence: 29th Australasian Joint Conference (AI2016)*, 2016.
44. C. de Alvis, L. Ott, **F.T. Ramos**. Urban Scene Segmentation With Laser-Constrained CRFs. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016.
45. V. Guizilini, **F.T. Ramos**. Large-Scale 3D Scene Reconstruction with Hilbert Maps. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2016.
46. T. Ganegedara, L. Ott, **F.T. Ramos**. Online Adaptation of Deep Architectures with Reinforcement Learning. In *European Conference on Artificial Intelligence (ECAI)*, 2016.
47. D. Habermann, C. Vido, F. Osorio, **F.T. Ramos**. Road Junction Detection from 3D Point Clouds. In *International Joint Conference on Neural Networks (IJCNN)*, 2016.
48. R. Senanayake, S. O’Callaghan, **F.T. Ramos**. Predicting Spatio-Temporal Propagation of Seasonal Influenza using Variational Gaussian Process Regression. In *Association for the Advancement of Artificial Intelligence (AAAI)*, 2016.
49. C. Vido, **F.T. Ramos**. From Grids to Continuous Occupancy Maps through Area Kernels. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2016.
50. K.C.T. Vivaldini, V. Guizilini, M. Oliveira, T.H. Martinelli, D. Wolf, **F.T. Ramos**. Route planning for active classification with UAVs. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2016.
51. A. Bewley, L. Ott, **F.T. Ramos**, B. Upcroft. ALExTRAC: Affinity Learning by Exploring Temporal Reinforcement within Association Chains. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2016.
52. **F.T. Ramos**, L. Ott, Hilbert maps: scalable continuous occupancy mapping with stochastic gradient descent. In *Robotics: Science and Systems (RSS)*, 2015.
53. M. Gerardo-Castro, T. Peynot, R. Fitch, **F.T. Ramos**, Non-Parametric Consistency Test for Multiple- Sensing-Modality Data Fusion. In *International Conference on Information Fusion*, 2015.
54. J. R. Souza, C. Mendes, V. Guizilini, K. Vivaldini, A. Colturato, **F.T. Ramos**, K. Castelo Branco, D. Wolf. Automatic Detection of Ceratocystis Wilt in Eucalyptus Crops from Aerial Images. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2015.
55. V. Guizilini, **F.T. Ramos**. A Non-Parametric Online Platform for Air Quality Prediction. In *Association for Advancements of Artificial Intelligence Conference (AAAI)*, 2015.
56. S. Abeywardana, **F.T. Ramos**. Nonparametric Variational Bayes Quantile Regression. In *Association for Advancements of Artificial Intelligence Conference (AAAI)*, 2015.
57. L. Ott, L. Pang, **F.T. Ramos**, S. Chawla. On Integrated Clustering and Outlier Detection. In *Neural Information Processing Systems (NIPS)*, 2014.

58. M. Schneider, **F.T. Ramos**, Transductive Learning for Multi-Task Copula Processes. In *European Conference on Artificial Intelligence (ECAI)*, 2014.
59. S. O’Callaghan, **F.T. Ramos**, Gaussian process occupancy maps for dynamic environments. In *The 14th International Symposium on Experimental Robotics (ISER)*, 2014.
60. R. Marchant, **F.T. Ramos**, S. Sanner, Sequential Bayesian Optimisation for Spatial-Temporal Monitoring. In *Uncertainty in Artificial Intelligence (UAI)*, 2014.
61. R. Marchant, **F.T. Ramos**, Bayesian Optimisation for Informative Continuous Path Planning. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2014.
62. J. Souza, R. Marchant, L. Ott, D. Wolf, **F.T. Ramos**, Bayesian Optimisation for Active Perception and Smooth Navigation. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2014.
63. A. Bewley, V. Guizilini, **F.T. Ramos**, B. Upcroft, Online Self-Supervised Multi-Instance Segmentation of Dynamic Objects. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2014.
64. K. Zhan, S. Faux, **F.T. Ramos**, Multi-scale Conditional Random Fields for First-Person Activity Recognition, In *IEEE International Conference on Pervasive Computing and Communications (PerCom)*, 2014.
65. K. Zhan, V. Guizilini, **F.T. Ramos**. Dense Motion Segmentation for First-Person Activity Recognition. In *IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV)*, 2014.
66. M. P. Gerardo-Castro, T. Peynot and **F.T. Ramos**. Laser-Radar Data Fusion with Gaussian Process Implicit Surfaces. In *Field and Service Robotics Conference (FSR)*, 2013.
67. A. Reid and S. O’Callaghan and E. V. Bonilla and L. McCalman and T. Rawling and **F. Ramos**. Bayesian Joint Inversions for the Exploration of Earth Resources. In *International Joint Conference on Artificial Intelligence (IJCAI)*, 2013.
68. L. Ott, **F.T. Ramos**. Multi-Sensor Clustering using Layered Affinity Propagation. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2013.
69. A. Reid, **F.T. Ramos**, S. Sukkarieh. Bayesian fusion for multi-modal aerial images. In *Proceedings of the Robotics: Science and Systems (RSS) IX*, 2013.
70. V. Guizilini, **F.T. Ramos**. Online Self-Supervised Segmentation of Dynamic Objects. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2013.
71. L. McCalman, S. O’Callaghan, **F.T. Ramos**. Multi-Modal Estimation with Kernel Embeddings for Learning Motion Models. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2013.
72. S. Garg, A. Singh, **F.T. Ramos**. Efficient Space-Time Modeling For Informative Sensing. In *Sixth International Workshop on Knowledge Discovery from Sensor Data*, 2012.
73. A. Ball, D. Rye, **F.T. Ramos**, M. Velonaki. Unsupervised clustering of people from ‘Skeleton’ data. 7th ACM/IEEE International Conference on Human-Robot Interaction, New York, NY, USA: Association for Computing Machinery (ACM), 2012.
74. R. Marchant, **F.T. Ramos**. Bayesian Optimisation for Intelligent Environmental Monitoring. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2012.
75. S. Garg, A. Singh, **F.T. Ramos**. Learning Non-Stationary Space-Time Models for Environmental Monitoring. In *Association for the Advancements of Artificial Intelligence (AAAI)*, 2012.
76. K. Zhan, **F.T. Ramos**. Activity Recognition from a Wearable Camera. In *IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV)*, 2012.
77. N. Chehade, A.P. Ozisik, J. Gomez, **F.T. Ramos**, G. Pottie. Detecting Stumbles with a Single Accelerometer. In *Engineering in Medicine and Biology Conference (EMB)*, 2012.

78. V. Guizilini, **F.T. Ramos**. Semi-parametric Models for Visual Odometry. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2012.
79. L. Ott, **F.T. Ramos**. Unsupervised Incremental Learning for Long-Term Autonomy. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2012.
80. H. Zhou, P. Hatherly, S. Monteiro, **F.T. Ramos**, F. Oppolzer, E. Nettleton, S. Scheduling. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2012.
81. J. van de Ven, **F.T. Ramos**. Distributed Anytime MAP Inference. In *Uncertainty in Artificial Intelligence (UAI)*, 2011.
82. S. O'Callaghan, **F.T. Ramos**. Continuous Occupancy Mapping with Integral Kernels. In *Association for the Advancements of Artificial Intelligence (AAAI)*, 2011.
83. A. Melkumyan, **F.T. Ramos**. Multi-Kernel Gaussian Processes. In *International Joint Conference on Artificial Intelligence (IJCAI)*, 2011.
84. S. Monteiro, J. van de Ven, **F.T. Ramos**, P. Hatherly. Learning 3D Geological Structure from Drill-Rig Sensors for Automated Mining. In *International Joint Conference on Artificial Intelligence (IJCAI)*, 2011.
85. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. Non-stationary dependent Gaussian processes for data fusion in large-scale terrain modeling. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
86. H. Zhou, P. Hatherly, **F.T. Ramos**, E. Nettleton. An Adaptive Data Driven Model for Characterizing Rock Properties from Drilling Data. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
87. V. Guizilini, **F.T. Ramos**. Visual Odometry Learning for Unmanned Aerial Vehicles. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
88. J.F. Zubizarreta, **F.T. Ramos**. Multi-Task Learning of System Dynamics with Maximum Information Gain. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
89. A. Reid, **F.T. Ramos**, S. Sukkarieh. Multi-Class Classification of Vegetation in Natural Environments using an Unmanned Aerial System. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
90. S. O'Callaghan, S. Singh, A. Alempijevic, **F.T. Ramos**. Learning Navigational Maps by Observing Human Motion Patterns. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2011.
91. C. Cadena, D. Galvez-Lopez, **F.T. Ramos**, J. D. Tardos, J. Neira. Robust Place Recognition with Stereo Cameras. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2010.
92. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. Large-scale terrain modeling from multiple sensors with dependent Gaussian processes. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2010.
93. H. Zhou, **F.T. Ramos**, E. Nettleton. Improving Kernel Methods through Complex Data Mapping. In *IEEE International Conference on Data Mining (ICDM)*, 2010.
94. S. O'Callaghan, **F.T. Ramos**, H. Durrant-Whyte. Gaussian process occupancy maps incorporating sensor and location uncertainty. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
95. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. Gaussian process fusion for large-scale terrain modeling. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
96. H. Zhou, S. Monteiro, P. Hatherly, **F.T. Ramos**, E. Nettleton, F. Oppolzer. Automated rock recognition with wavelet feature space projection and Gaussian process classification. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.



97. A. Singh, **F.T. Ramos**, H. Durrant-Whyte, W. Kaiser. Modeling and decision making in spatio-temporal processes for environmental surveillance. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
98. J. Ven, **F.T. Ramos**, G.D. Tipaldi. An integrated probabilistic model for scan-matching, moving object detection and motion estimation. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
99. Z. Sun, J. Ven, **F.T. Ramos**, H. Durrant-Whyte. Inferring motion uncertainty from shape-matching. In *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.
100. S. Monteiro, R. Murphy, **F.T. Ramos**, J. Nieto. Applying boosting for hyperspectral classification of ore-bearing rocks. In *IEEE Machine Learning for Signal Processing Workshop*, 2009.
101. S. Monteiro, **F.T. Ramos**, P. Hatherly. Conditional random fields for rock characterization using drill measurements. In *IEEE International Conference on Machine Learning Applications*, 2009.
102. A. Melkumyan, **F.T. Ramos**. A sparse covariance function for exact Gaussian process inference in large datasets. In *International Joint Conference on Artificial Intelligence*, 2009.
103. G.D. Tipaldi, **F.T. Ramos**. Motion clustering and estimation with conditional random fields. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2009.
104. B. Douillard, A. Brooks, **F.T. Ramos**. A 3D laser and vision based classifier. *International Conference on Intelligent Sensors, Sensor Networks & Information Processing*, 2009.
105. S. O’Callaghan, **F.T. Ramos**, H. Durrant-Whyte. Contextual occupancy maps using Gaussian processes. In *IEEE International Conference on Robotics and Automation*, 2009.
106. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte, A. Blair. Gaussian process modeling of large-scale terrain. In *IEEE International Conference on Robotics and Automation*, 2009.
107. K. Granström, J. Callmer, **F.T. Ramos**, J. Nieto. Learning to detect loop closure from range data. In *IEEE International Conference on Robotics and Automation*, 2009.
108. S. Vasudevan, **F.T. Ramos**, E. Nettleton, H. Durrant-Whyte. Evaluation of Gaussian processes for large-scale terrain modeling. In *Proceedings of the Australasian Conference on Robotics and Automation*, 2009.
109. H. Zhou, S. Monteiro, P. Hatherly, **F.T. Ramos**, E. Nettleton, F. Oppolzer. Spectral feature selection for automated rock recognition using Gaussian process classification. In *Proceedings of the Australasian Conference on Robotics and Automation*, 2009.
110. B. Douillard, D. Fox, **F.T. Ramos**. Conditional random fields for outdoor object mapping. In *IROS workshop: Robotics Challenges for Machine Learning II*, 2008.
111. B. Douillard, D. Fox, **F.T. Ramos**. Laser and vision based outdoor object mapping. In *Proceedings of the Robotics: Science and Systems IV*, 2008.
112. J. Callmer, K. Granström, J. Nieto, **F.T. Ramos**. Tree of words for visual loop closure detection in urban SLAM. In *Proceedings of the Australasian Conference on Robotics and Automation*, 2008.
113. **F.T. Ramos**, B. Douillard, D. Fox. Conditional random fields for data association and recognition in urban environments. In *Neural Information Processing Systems Conference (NIPS), Workshop*, 2007.
114. B. Douillard, D. Fox, **F.T. Ramos**. A spatio-temporal probabilistic model for multi-sensor object recognition. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2007.
115. **F.T. Ramos**, P. Hatherly. Learning to characterise rock properties from geophysical Logs. Australian Mining Technology Conference, 2007.
116. **F.T. Ramos**, D. Fox, H. Durrant-Whyte. CRF-Matching: Conditional random fields for feature-based scan matching. In *Proceedings of Robotics Science and Systems (RSS)*, Atlanta, USA, 2007.

117. **F.T. Ramos**, B. Dickson, H. Durrant-Whyte. Denoising with non-linear dimensionality reduction. In *Exploration Conference*, Toronto, Canada, 2007.
118. **F.T. Ramos**, J. Nieto, H. Durrant-Whyte. Recognising and modelling landmarks to close loops in outdoor SLAM. In *Proceedings of the IEEE International Conference on Robotics and Automation*, Rome, Italy, 2007.
119. J. Underwood, S. Scheduling, **F.T. Ramos**. Real-Time map building with uncertainty using colour camera and scanning laser. In *Proceedings of the Australasian Conference on Robotics and Automation*, 2007. (**Best student paper award.**)
120. S. Kumar, **F.T. Ramos**, B. Douillard, M.F. Ridley, H. Durrant-Whyte. A Novel Visual Perception Framework. In *Proceedings of the 9th IEEE International Conference on Control, Automation, Robotics and Vision*, pp. 824-829, Singapore, 2006.
121. B. Upcroft, B. Douillard, T. Kaupp, M.F. Ridley, L. Ong, S. Kumar, T.A. Bailey, **F.T. Ramos**, S. Sukkarieh, H. Durrant-Whyte. Non-Gaussian state estimation in an outdoor decentralised sensor network. In *Proceedings of the IEEE Conference on Decision and Control*, San Diego, USA, 2006.
122. **F.T. Ramos**, S. Kumar, B. Upcroft, H. Durrant-Whyte. Recognising and segmenting objects in natural environments. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, Beijing, China, 2006.
123. **F.T. Ramos**, J. Nieto, H. Durrant-Whyte. Dimensionality reduction to recognise and associate landmarks in outdoor SLAM. In *20th Annual Conference on Neural Information Processing Systems NIPS - Workshop on Novel Applications of Dimensionality Reduction*, Vancouver, Canada, 2006.
124. R. Wang, S. Kumar, **F.T. Ramos**, T. Kaupp, B. Upcroft, H. Durrant-Whyte. Probabilistic classification of hyperspectral images by learning nonlinear dimensionality reduction mapping. In *Proceedings of the 9th International Conference on Information Fusion*, Florence, Italy, 2006.
125. **F.T. Ramos**, S. Kumar, B. Upcroft, H. Durrant-Whyte. Representing natural objects in unstructured environments. In *19th Annual Conference on Neural Information Processing Systems NIPS - Workshop on Machine Learning Based Robotics*, Vancouver, Canada, 2005.
126. **F.T. Ramos**, H. Durrant-Whyte, B. Upcroft. Learning articulated motion structures with Bayesian Networks. In *Proceedings of the 8th International Conference on Information Fusion*, Philadelphia, USA, 2005.
127. T. Kaupp, A. Makarenko, **F.T. Ramos**, H. Durrant-Whyte. Human sensor model for range observations. In *Proceedings of International Joint Conference on Artificial Intelligence, Workshop on Reasoning with Uncertainty in Robotics*, Edinburgh, UK, 2005.
128. X. Wang, **F.T. Ramos**. Applying structural EM in autonomous planetary exploration missions using hyperspectral image spectroscopy. In *Proceedings of IEEE International Conference on Robotics and Automation*, Barcelona, Spain, 2005.
129. T. Kaupp, A. Makarenko, **F.T. Ramos**, S. Williams, H. Durrant-Whyte. Adaptive human sensor model in sensor networks. In *Proceedings of the 8th International Conference on Information Fusion*, Philadelphia, USA, 2005.
130. S. Kumar, **F.T. Ramos**, B. Upcroft, H. Durrant-Whyte. A statistical framework for natural features representation. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*, Edmonton, Canada, 2005. (**Best paper award out of 1250 submissions**)
131. **F.T. Ramos**, B. Upcroft, S. Kumar, H. Durrant-Whyte. A Bayesian approach for place recognition. In *Proceedings of International Joint Conference on Artificial Intelligence, Workshop on Reasoning with Uncertainty in Robotics*, Edinburgh, UK, 2005.
132. **F. T. Ramos**, H. Durrant-Whyte. Learning Complex Motion Structures. In *Proceedings of the International Conference on Machine Learning, Workshop on Statistical Relational Learning and its Connections to Other Fields*, Banff, Canada, 2004.

133. J. Ide, F. G. Cozman, **F. T. Ramos**. Generating Random Bayesian Networks with Constraints on Induced Width. In *Proceedings of European Conference on Artificial Intelligence*, Valencia, Spain, 2004.
134. **F. T. Ramos**, M. Ackermann, F. G. Cozman. RoboPET: A Semi-Autonomous Robot for Hazardous Inspections. In *Proceedings of the 17th International Congress of Mechanical Engineering*, Sao Paulo, Brazil, 2003.
135. **F.T.Ramos**, F.G.Cozman, J.Ide. Embedded Bayesian Networks: Anyspace, Anytime Probabilistic Inference. In *Proceedings of the AAAI/KDD/UAI-2002 Joint Workshop on Real-time Decision Support and Diagnosis systems*, pp. 13-19, AAAI Press, Edmonton, Canada, 2002.

### Other Publications

136. **F. T. Ramos**. Recognising, Representing and Mapping Natural Features in Unstructured Environments. PhD thesis. Australian Centre for Field Robotics, University of Sydney, Australia, 2007.
137. J. Ide, F. G. Cozman, **F. T. Ramos**. Generation of Random Bayesian Networks with Constraints on Induced Width, with Application to the Average Analysis of Quasi-random Sampling, d-Connectivity, and Loopy Propagation. *Tech. Report BT/PMR*, University of Sao Paulo, Brazil, 2004.
138. **F. T. Ramos**. Probabilistic Inference with Memory and Time Constraints (in Portuguese). MSc thesis. Escola Politecnica, University of Sao Paulo, Brazil, 2003.