

## Anand V. Panangadan

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<b>EDUCATION</b>	<b>Ph.D.</b> , Computer Science University of California, Los Angeles (UCLA) Advisor: Michael G. Dyer	2002
	<b>M.S.</b> , Computer Science University of California, Los Angeles (UCLA)	1999
	<b>B.Tech.</b> , Computer Science and Engineering Indian Institute of Technology, Bombay	1996
<b>PROFESSIONAL EXPERIENCE</b>	<b>Assistant Professor</b> Department of Computer Science California State University, Fullerton	2015- present
	<b>Senior Research Associate</b> Ming Hsieh Department of Electrical Engineering University of Southern California (USC)	2013- 2015
	<b>Post-doctoral Affiliate</b> NASA Jet Propulsion Laboratory (JPL) California Institute of Technology	2008- 2012
	<b>Research Specialist VI</b> Saban Research Institute Children's Hospital Los Angeles (CHLA)	2004- 2012
	<b>Post-doctoral Research Scholar</b> Computer Science Department University of Southern California (USC) Supervisors: Maja Mataric and Gaurav Sukhatme	2003-2004
	<b>Post-doctoral Research Scholar</b> Computer Science Department University of California, Los Angeles (UCLA) Supervisor: Adnan Darwiche	2002-2003
<b>SUMMARY OF EXPERTISE</b>	<b>Computer science areas:</b> Artificial intelligence (Ph.D. major) Machine learning (Ph.D. thesis) Databases Sensor networks Networking (Ph.D. minor) Computer science theory (Ph.D. minor)	

Robotics (Post-doc at USC Robotics Lab)  
 Computer architecture  
 Programming languages: C, C++, Java, Python, Matlab, shell script  
 Operating systems: Windows, Linux

**Application domains:**

Healthcare (Children’s Hospital Los Angeles)  
 Earth science (NASA JPL)  
 Oil and gas (Center for Interactive Smart Oilfield Technologies at USC)

**TEACHING  
 EXPERIENCE**

**Instructor**

California State University, Fullerton  
 • *CPSC 583: Expert Systems Design and Theory*  
 • *CPSC 313: The Computer Impact*  
 • *CPSC 301: Programming Lab Practicum*

**Teaching Assistant/Associate/Fellow**

Computer Science Department, UCLA  
 • *Logic Design of Digital Systems* 1997-2001  
 • *Computer Systems Architecture* 1997, 2000  
 • *Digital Design Project Lab* 2000

**Instructor**

Center for Talented Youth (CTY), Johns Hopkins University  
 • *Theoretical Foundations of Computer Science* 1997

**TEACHING  
 AWARDS**

**Best Teaching Assistant Award 2001-2002**  
 (both student and faculty nominated categories)  
 Computer Science Department, UCLA

**STUDENTS CO-  
 ADVISED**

**Graduate student, Ming-Hsieh Department of Electrical Engineering, USC:**  
 Shuping Liu

**Graduate students, Department of Computer Science, USC:**  
 Chung Ming Cheung, Palash Goyal, Greg Harris, Om Patri, Ketan Singh,  
 Ajitesh Srivastava, Yinuo Zhang

**Summer intern, USC:**

Chao Shang

**RELEVANT  
 GRADUATE  
 COURSES**

**Networks and Systems:**

Advanced Computer Networks	Parallel Programming
Advanced Operating Systems	Advanced Topics in Internet Research
Parallel Computer Architectures	Information Management Systems

**Artificial Intelligence:**

Machine Perception	Artificial Neural Systems
Language and Thought	Symbolic Reasoning
Problem Solving and Search	Reasoning with Partial Beliefs

**Algorithms:**

Design and Analysis of Algorithms	Graph Algorithms
Randomized Algorithms	Online Algorithms
Distributed Algorithms	Quantum Computing

**PROJECT  
EXPERIENCE****Energy-efficient signal processing on 3D memory-integrated multicore platforms**

PI: **A. Panangadan** and V. Prasanna; Sponsor: Air Force Research Laboratory

This project will develop algorithmic optimizations for 3D memory-integrated multicore platforms.

**Analyzing spread of influence in social networks for transportation applications**

PIs: L. Abellera, **A. Panangadan**; Sponsor: University of California Center on Economic Competitiveness in Transportation (US Department of Transportation and Caltrans)

The goal of this project is to apply social network analysis and text analysis methods to social media content on transportation services and identify the sources of the beliefs expressed in this content. The analysis is expected to reveal misinterpretations of some features of transportation services. The patterns of information spread can be used by service providers to address misinformation at their sources.

**OCICATS (Online community input classification to advance transportation services) – a GIS-based decision-support tool**

PIs: L. Abellera, **A. Panangadan**; Sponsor: University of California Center on Economic Competitiveness in Transportation (US Department of Transportation and Caltrans)

The goal of this project is to develop a tool using machine learning techniques to discover factors affecting public transit rider satisfaction using social media data. This tool is intended to reveal features of ridership that are not evident to transit agencies. The online GIS-based tool is to be accessed by transportation planners to determine areas of service where they can focus their resources either for the short term or long term.

**IEEE IPDPS Conference Student Participation Support Principal**

PI: **A. Panangadan**, V. Prasanna; Sponsor: NSF

This award funds student travel to attend the IEEE International Parallel & Distributed Processing Symposium (IPDPS) 2015 conference to be held in Hyderabad, India. IPDPS is a premier international conference for presenting research results, problem solutions, and insights on new challenges in parallel and distributed computing. Attending IPDPS will provide students with opportunities for technical growth and broader engagement with the community.

**Integrated Optimization**

PI: V. Prasanna; Sponsor: Center for Interactive Smart Oilfield Technologies (CiSoft), USC

This project aims to develop methods to rapidly integrate heterogeneous datasets that arise in enterprise-scale industrial applications. I am co-advising a group of students as we apply Semantic Web techniques, time-series modeling and mining algorithms, and text analysis to real-world use-cases from our corporate sponsor.

#### **Sensor web personal alert and tracking system (PATS)**

PI: S. Monacos; Sponsor: DHS

PATS is a wireless network of low-power sensor nodes for tracking of wildland firefighters. Each node contains sensors (GPS, accelerometer, temperature) to continuously monitor the environment around a firefighter. I developed embedded software for these nodes and a multi-hop packet routing protocol to relay sensor data to the command center.

#### **GLYDER: Global cyclone detection and tracking from multiple remote sensors**

PI: A. Talukder; Sponsor: NASA AISR

GLYDER is a system that retrieves and processes diverse remote-sensing satellite image sources (GOES imager, TRMM, QuikSCAT) to automatically detect and track tropical cyclones. GLYDER exploits the different spatial and temporal characteristics of these data sources to provide an accurate cyclone track. I developed image processing and data fusion algorithms in this project.

#### **DEFT: Distributed embedded fault-tolerant control of resource constrained sensor networks**

PI: **A. Panangadan**, C. Raghavendra, A. Talukder; Sponsor: NSF CSR

DEFT is a framework for coordinated sensing in low-power wireless sensor networks. The idea is to compute a sophisticated joint control policy before deployment; approximations of this policy are then executed at an embedded sensor node using its limited resources. I explored the use of Markov Decision Processes and Kalman filters for generating such controllers.

#### **Autonomous in-situ control and resource management in distributed heterogeneous sensor webs (CARDS)**

PI: A. Talukder; Sponsor: NASA AIST

The New York Harbor Observation and Prediction System (NYHOPS) is an operational network of coastal monitoring sensors coupled with a predictive model of ocean conditions. I developed an adaptive sampling algorithm to increase the accuracy of model forecasts by incorporating sensor measurements, including from underwater robot vehicles. I also developed Google Earth-based visualization software to display ocean forecasts.

#### **Remote vital signs monitoring**

PI: W. McGrath; Sponsor: AGA

I developed signal processing algorithms for a system that could remotely detect heart beat patterns from reflected microwaves. My algorithms significantly reduced the number of false positives returned by the system.

**Multi-modality sensing for *in vivo* alcohol quantitation using integrated optimization (MUSIQ)**

PI: M. Faupel; Sponsor: NIH/NIAAA

At the Children's Hospital Los Angeles, I worked on a wireless network of wearable medical sensors (a "body sensor network"). The system could transfer sensor measurements to a remote health professional via the cellular network and over the Internet. I developed sensor control and signal processing algorithms for this system.

**Identifying human interactions using laser range-finders**

PI: M. Mataric and G. Sukhatme; Sponsor: ONR MURI

For my post-doctoral work at USC, I developed probabilistic models that describe human movement patterns in real-world situations, and especially of interactions between people. Movement of people was tracked using laser range-finders. The models were then used for automatically detecting anomalous behavior.

**Logical reasoning on embedded systems**

PI: A. Darwiche

For my post-doctoral work at UCLA, I demonstrated that reasoning algorithms based on propositional logic could be executed even on low-power computing platforms if an efficient representation is used. I programmed a Sony Aibo robot to execute a plan that was computed offline and stored as an Ordered Binary Decision Diagram in the robot's memory.

**Construction using autonomous agents in a simulated environment**

Advisor: M. G. Dyer

In my PhD dissertation research, I demonstrated how connectionist agents could construct arbitrary structures in a simulated environment. The goal was to build a group of autonomous agents that could rearrange objects in their environment to form arbitrary shapes. I achieved these objectives by coupling a behavior-based architecture with explicit spatial representation.

**SERVICE****Program Committee:**

Twentieth National Conference on Artificial Intelligence (AAAI 05), Workshop on Sensor Networks for Earth and Space Science Applications (ESSA) at IPSN 2009, International Workshop on Crowdsourced and Volunteered Geographic Information at ACM SIGSPATIAL GIS 2012, International Workshop on Scalable Computing For Real-Time Big Data Applications (SCRAMBL) at CCGrid'14, 22nd IEEE International Conference on High Performance Computing (HiPC)

**Organizing Committee:**

4th International Workshop on Parallel and Distributed Computing for Large Scale Machine Learning and Big Data Analytics (ParLearning) at IPDPS 2015, Hardware Accelerated Data Mining (HADM) at ICDM 2015

**Local Arrangements Committee:**

International Joint Conferences on Artificial Intelligence (IJCAI 2009)

**Judge:**

California State Science Fair 2004, 2007, 2011, 2013, 2015

**Department Teaching Assistant Coordinator:**

Computer Science Department, UCLA

**Reviewer:**

*IEEE Sensors Journal, IEEE Systems Journal, IEEE Communications Magazine, IEEE Transactions on Human-Machine Systems, International Journal of Computational Intelligence and Healthcare Informatics, IEEE Transactions on Image Processing, Journal of Applied Optics, International Journal of Social Robotics, International Conference on Data Mining, IEEE Aerospace Conference, IEEE/RSJ 2010 International Conference on Intelligent Robots and Systems, 35<sup>th</sup> IEEE International Conference on Distributed Computing Systems (ICDCS), 24th International World Wide Web Conference (WWW 2015) poster session*

<b>AWARDS</b>	<b>DARPA Forecasting Chikungunya Challenge</b>	2015
	<i>Best Presentation Award</i>	
	DARPA	
	<b>NASA Space Act Award and Certificate of Recognition</b>	2009
	<i>Online 3D Visualization of Large-Area Distributed Sensor Web Predictions for Coastal and Environmental Monitoring</i>	
	NASA (Award #NPO 46899)	
	<b>Departmental Fellowship</b>	1996-1997
	Computer Science Department, UCLA	
	<b>Certificate of Merit for Outstanding Academic Performance</b>	1992
	Central Board of Secondary Education, Government of India	
<b>PATENTS</b>	– S. P. Monacos and <b>A. Panangadan</b> . Wireless Sensor Node for Autonomous Monitoring and Alerts in Remote Environments, United States Patent No. 9,070,268 B2, assignors to California Institute of Technology, June 30, 2015.	
	– A. Srivastava, <b>A. Panangadan</b> , C. Chelmiss, V. K. Prasanna. Models for Word Relatedness using Inter-Context Similarity, assignors to Chevron USA Inc. Filed June 2014.	
	– O. P. Patri, <b>A. Panangadan</b> , C. Chelmiss, N. Reyna, R. G. McKee. Shapelet-based oilfield equipment failure prediction and detection, assignors to Chevron USA Inc. Filed January 2015.	
	– O. Patri, V. Sorathia, <b>A. Panangadan</b> , and V. K. Prasanna. Complex Event Processing for Dynamic Data, United States Patent Application 14/177,099, assignors to Chevron USA Inc. Filed February 2014.	
	– Y. Zhang, <b>A. Panangadan</b> , R. G. McKee, M. Theron, B. D. Gamble, V. K. Prasanna. System and method for fuzzy ontology matching and search across ontologies, assignors to Chevron USA Inc. Filed April 2014.	
<b>JOURNAL PUBLICATIONS</b>	– <b>A. Panangadan</b> , S. Liu, A. Talukder and C. S. Raghavendra, Coordinated Sensing of Networked Body Sensors using Markov Decision Processes, <i>Applied</i>	

*Artificial Intelligence*, 27(2), pp. 126-150, 2013.

- A. Talukder and **A. Panangadan**, Extreme event detection and assimilation from multimedia sources, *Multimedia Tools and Applications*, May 2012.
  - A. Talukder, **A. Panangadan**, N. Georgas, T. Herrington, and A. F. Blumberg, Integrated operational control of unattended distributed coastal sensor web systems with mobile autonomous robots. *Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Journal of*, 3(4), pp. 442-450, 2010.
  - **A. Panangadan**, M. Mataric and G. Sukhatme, Tracking and modeling of human activity using laser rangefinders. *International Journal of Social Robotics*, 2(1), pp. 95-107, 2010.
  - **A. Panangadan** and M.G. Dyer, Construction in a simulated environment using temporal goal sequencing and reinforcement learning, *Adaptive Behavior*, 17(1), pages 81-104, 2009.
- CONFERENCE PUBLICATIONS**
- Y. Zhang, **A. Panangadan** and V. K. Prasanna, UFOMQ: An Algorithm for Querying for Similar Individuals in Heterogeneous Ontologies, *The 17th International Conference on Big Data Analytics and Knowledge Discovery (DaWak)*, Valencia, Spain, 2015.
  - C. Shang, **A. Panangadan** and V. K. Prasanna, Event Extraction from Unstructured Text Data, *26th International Conference on Database and Expert Systems Applications (DEXA)*, Valencia, Spain, 2015.
  - C. M. Cheung, P. Goyal, G. Harris, O. Patri, **A. Panangadan**, C. Chelmis, R. McKee, M. Theron, T. Nemeth, and V. K. Prasanna, Rapid Data Integration and Analysis for Upstream Oil and Gas Applications. *SPE Annual Technical Conference and Exhibition (ATCE)*, September 2015, Houston, TX, USA, 2015 (To Appear)
  - Y. Zhang, **A. Panangadan** and V. K. Prasanna, Integration of Heterogeneous Web Services for Event-based Social Networks, *The 16th IEEE International Conference on Information Reuse and Integration (IEEE IRI)*, San Francisco, California, 2015.
  - C. M. Cheung, Y. Zhang, **A. Panangadan** and V. K. Prasanna, Computational Cost of Querying for Related Entities in Different Ontologies, *The 16th IEEE International Conference on Information Reuse and Integration (IEEE IRI)*, San Francisco, California, 2015.
  - S. Singapura, **A. Panangadan** and V. K. Prasanna, Performance Modeling of Matrix Multiplication on 3D Memory Integrated FPGA, *22nd Reconfigurable Architectures Workshop (RAW), 29th Annual International Parallel & Distributed Processing Symposium (IPDPS)*, Hyderabad, India, 2015.
  - S. Singapura, **A. Panangadan** and V. K. Prasanna, Towards Performance Modeling of 3D Memory Integrated FPGA Architectures, *11th International Symposium on Applied Reconfigurable Computing (ARC)*, Bochum, Germany, 2015.
  - G. Harris, **A. Panangadan** and V. K. Prasanna, Learning of Performance Measures from Crowd-sourced Data with Application to Ranking of Investments, *The 19th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Ho Chi Minh City, Vietnam, 2015.

- O. Patri, N. Reyna, **A. Panangadan** and V. K. Prasanna, Predicting Compressor Valve Failures from Multi-Sensor Data, *2015 SPE Western Regional Meeting*, SPE WRM, Garden Grove, California, 2015.
- Y. Zhang, **A. Panangadan** and V. K. Prasanna, FP-CPNNQ: A Filter-Based Protocol for Continuous Probabilistic Nearest Neighbor Query, *20th International Conference on Database Systems for Advanced Applications (DASFAA)*, Hanoi, Vietnam, 2015.
- O. Patri, K. Singh, P. Szekely, **A. Panangadan** and V. K. Prasanna, Personalized Trip Planning by Integrating Multimodal User-generated Content, *Ninth IEEE International Conference on Semantic Computing (IEEE ICSC)*, Anaheim, California, 2015.
- O. Patri, A. Sharma, H. Chen, G. Jiang, **A. Panangadan** and V. K. Prasanna, Extracting discriminative shapelets from heterogeneous sensor data, *IEEE International Conference on Big Data (IEEE BigData)*, Washington DC, 2014.
- O. Patri, **A. Panangadan**, C. Chelmiss, R. McKee and V. K. Prasanna, Predicting failures from oilfield sensor data using time series shapelets, *91st Society of Petroleum Engineers Annual Technical Conference and Exhibition*, SPE ATCE, Amsterdam, 2014.
- G. Harris, **A. Panangadan** and V. K. Prasanna, Interactive query refinement for Boolean search, *Semantic Analysis of Documents Workshop (SemADoc 2014)*, *ACM Symposium on Document Engineering*, Fort Collins, September 2014.
- Y. Zhang, **A. Panangadan** and V. K. Prasanna, UFOM: Unified fuzzy ontology matching, *The IEEE International Conference on Information Reuse and Integration (IRI 2014)*, San Francisco, California, 2014.
- G. Harris, **A. Panangadan** and V. K. Prasanna, Peer review in online forums: classifying feedback-sentiment, *The IEEE International Conference on Information Reuse and Integration (IRI 2014)*, San Francisco, California, 2014.
- O. Patri, **A. Panangadan**, C. Chelmiss and V. K. Prasanna, Extracting discriminative features for event-based electricity disaggregation, *2nd IEEE Conference on Technologies for Sustainability (SusTech)*, Portland, 2014.
- O. Patri, V. Sorathia, **A. Panangadan** and V. K. Prasanna, The Process-oriented Event Model (PoEM) – a conceptual model for industrial events, *8th ACM International Conference on Distributed Event-Based Systems (DEBS 2014)*, Mumbai, 2014.
- H. Chu, Y. Xia, **A. Panangadan** and V. K. Prasanna, Wait-free primitives for initializing Bayesian network structure learning on multicore processors, *The 3rd International Workshop on Parallel and Distributed Computing for Large Scale Machine Learning and Big Data Analytics (ParLearning)*, *28th IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Phoenix, 2014.
- O. Patri, **A. Panangadan**, V. Sorathia and V. K. Prasanna, Semantic management of enterprise integration patterns: a use case in Smart Grids, *10th Workshop on Information Integration on the Web (IIWeb 2014)*, *30th IEEE International Conference on Data Engineering (ICDE)*, 2014.
- **A. Panangadan**, S. Monacos, S. Burleigh, J. Joswig, M. James, E. Chow, A. Talukder and K. Chu, A system to provide real-time collaborative situational

- awareness by Web enabling a distributed sensor network, *International Workshop on Sensor Web Enablement (SWE)*, 20th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems, Redondo Beach, California, November 6, 2012.
- **A. Panangadan** and A. Talukder, Interleaving wavelet coefficients for adaptive data transmission from pervasive sensing systems, *International Conference on Computer Communication Networks (ICCCN)*, Maui, Hawaii, 31 July – 4 August, 2011.
  - S. Liu, **A. Panangadan**, C. Raghavendra, and A. Talukder, Learning a policy for coordinated sampling in Body Sensor Networks, *Body Sensor Networks (BSN)*, Dallas, 23 – 25 May, 2011.
  - S. Liu, **A. Panangadan**, A. Talukder, and C. Raghavendra, Machine learning for automatic patient monitoring and prioritization using body sensor network systems, *18th Medicine Meets Virtual Reality International Conference (MMVR 18)*, Newport Beach, California, 8 – 12 February, 2011.
  - S. Liu, **A. Panangadan**, A. Talukder, and C. Raghavendra, Compact representation of coordinated sampling policies for body sensor networks, *Workshop on Advances in Communication and Networks (Smart Homes for Tele-Health)*, *IEEE Global Communication Conference (GlobeCom)*, Miami, Florida, 6 – 10 December, 2010.
  - K. B. Cooper, R. J. Dengler, N. Llombart, A. Talukder, **A. Panangadan**, C.S. Peay, I. Mehdi and P. H. Siegel, Fast high-resolution terahertz radar imaging at 25 meters, *SPIE Defense, Security, and Sensing*, International Society for Optics and Photonics, 2010. pp. 76710Y-76710Y.
  - **A. Panangadan** and A. Talukder, A variant of particle filtering using historic datasets for tracking complex geospatial phenomena, *18th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, San Jose, 2 – 5 November, pp. 232-239, 2010.
  - Talukder and **A. Panangadan**, Integrating mobile robots with coastal sensor networks for marine event response management, *Workshop on Robotics for Environmental Monitoring*, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Taipei, 22 October, 2010.
  - **A. Panangadan**, S. Ho, and A. Talukder, Cyclone tracking using multiple satellite image sources, *17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, Seattle, 4 – 6 November, pp. 428-431, 2009.
  - S. Liu and **A. Panangadan**, Evaluation of a Markov Decision Process-based coordinated sampling method, *Workshop on Sensor Networks for Earth and Space Science Applications*, *8th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, San Francisco, 16 April, 2009.
  - S. Liu, **A. Panangadan**, C. Raghavendra, and A. Talukder, Poster abstract: MDP framework for sensor network coordination, *8th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, San Francisco, 13 – 16 April, 2009.
  - Talukder and **A. Panangadan**, Online visualization of adaptive distributed

- sensor webs, *IEEE Aerospace Conference*, Big Sky, Montana, 7 – 14 March, 2009.
- Talukder, **A. Panangadan**, A.F. Blumberg, T. Herrington, and N. Georgas, Improving the forecast accuracy of an ocean observation and prediction system by adaptive control of the sensor network, *Eos Trans. AGU*, 89(53), Fall Meeting Supplement, Abstract IN31A-1120, 2008.
  - Talukder, **A. Panangadan**, A. Blumberg, T. Herrington, and N. Georgas, Improving the science return from coastal sensor webs using autonomous predictive control and resource management. *Eighth Annual Earth Science Technology Conference*, University of Maryland, June 24 – 26, 2008.
  - Talukder, **A. Panangadan**, T. Herrington, A. Blumberg, and N. Georgas. Autonomous adaptive resource management in sensor network systems for environmental monitoring. In *IEEE Aerospace Conference*, Big Sky, Montana, 1 – 8 March, 2008.
  - M. Venugopal, K.E. Feuvrel, D. Mongin, S. Bambot, M. Faupel, **A. Panangadan**, A. Talukder, and R. Pidva. Clinical evaluation of a novel interstitial fluid sensor system for remote continuous alcohol monitoring, *IEEE Sensors Journal*, 8(1), pages 71-80, 2008.
  - Talukder, S. M. Ali, **A. Panangadan**, and L. Chandramouli. Predictive controller for heterogeneous sensor network operation in dynamic environments. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE Press, pp. 1133-1139, 2005.
  - **A. Panangadan**, S. M. Ali and A. Talukder. Markov decision processes for control of a sensor network- based health monitoring system. In *Proceedings of the Seventeenth Innovative Applications of Artificial Intelligence Conference (IAAI)*, AAAI Press, Menlo Park, Calif., pp. 1529-1534, 2005.
  - Talukder, S. M. Ali, **A. Panangadan**, C. Jadhav, R. Pidva, R. Bhatt, L. Chandramouli, and S. Monacos. Optimal server scheduling and power management in sensor networks. In *Optical Pattern Recognition XVI, Proceedings of SPIE*, vol. 5816, pp. 221-232, 2005.
  - **A. Panangadan**, M. Mataric and G. Sukhatme. Identifying human interactions in indoor environments. In *Proceedings of the Third International Joint Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, IEEE Computer Society, pp. 1308-1309, 2004.
  - **A. Panangadan**, M. Mataric and G. Sukhatme. Detecting anomalous human interactions using laser range-finders. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE Press, pp. 2136-2141, 2004.
  - **A. Panangadan** and M.G. Dyer. Learning spatial and temporal correlation for navigation in a 2-dimensional continuous world. In *Proceedings of the 19th International Conference on Machine Learning (ICML)*, Morgan Kaufmann, pp. 474-481, 2002.
  - **A. Panangadan** and M.G. Dyer. Goal sequencing for construction agents in a simulated environment. In *Proceedings of the International Conference on Artificial Neural Networks (ICANN)*, Springer, pp. 969-974, 2002.
  - **A. Panangadan** and M.G. Dyer. Learning social behaviors without sensing. In

*From Animals to Animats 7: Proceedings of the 7th International Conference on Simulation of Adaptive Behavior (SAB)*, Bradford Book/MIT Press, 2002.

- **A. Panangadan** and M.G. Dyer. Construction by autonomous agents in a simulated environment. In *Proceedings of the International Conference On Artificial Neural Networks (ICANN)*, Springer, pp. 963-970, 2001.
- G. Chao, **A. Panangadan** and M.G. Dyer. Learning to integrate reactive and planning behaviors for construction. In *From Animals to Animats 6: Proceedings of the 6th International Conference on Simulation of Adaptive Behavior (SAB)*, Bradford Book/MIT Press, pp. 167-176, 2000.

**NON-  
REFEREED**

**PUBLICATIONS**

- **A. Panangadan** and G. Sukhatme. Data segmentation for region detection in a sensor network. CRES Technical Report 05-005, University of Southern California, 2005.
- **A. Panangadan**. Construction using autonomous agents in a simulated environment. PhD Thesis, Computer Science Department, University of California, Los Angeles, 2002.