

2015 European Conference on Mobile Robots (ECMR 2015)

**Lincoln, United Kingdom
2-4 September 2015**



IEEE Catalog Number: CFP1511V-POD
ISBN: 978-1-4673-9164-1

TABLE OF CONTENTS

A FAST PROBABILISTIC EGO-MOTION ESTIMATION FRAMEWORK FOR RADAR	1
<i>Rapp, M. ; Barjenbruch, M. ; Dietmayer, K. ; Hahn, M. ; Dickmann, J.</i>	
ANTICIPATE YOUR SURROUNDINGS: PREDICTIVE COLLISION DETECTION BETWEEN DYNAMIC OBSTACLES AND PLANNED ROBOT TRAJECTORIES ON THE GPU	7
<i>Hermann, A. ; Mauch, F. ; Fischnaller, K. ; Klemm, S. ; Roennau, A. ; Dillmann, R.</i>	
TOWARDS EVASIVE MANEUVERS WITH QUADROTORS USING DYNAMIC VISION SENSORS	15
<i>Mueggler, E. ; Baumli, N. ; Fontana, F. ; Scaramuzza, D.</i>	
SHOW ME YOUR MOVES! CONVEYING NAVIGATION INTENTION OF A MOBILE ROBOT TO HUMANS	23
<i>May, A.D. ; Dondrup, C. ; Hanheide, M.</i>	
DECISION THEORETIC SEARCH FOR SMALL OBJECTS THROUGH INTEGRATING FAR AND NEAR CUES	29
<i>Karthik, M.S. ; Mittal, S. ; Malik, G. ; Krishna, K.M.</i>	
LOCAL REGION DETECTOR + CNN BASED LANDMARKS FOR PRACTICAL PLACE RECOGNITION IN CHANGING ENVIRONMENTS	35
<i>Neubert, P. ; Protzel, P.</i>	
LIFE-LONG SPATIO-TEMPORAL EXPLORATION OF DYNAMIC ENVIRONMENTS	41
<i>Krajník, T. ; Santos, J.M. ; Duckett, T.</i>	
EXPLORATION UNDER SPARSITY CONSTRAINTS	49
<i>Manss, C. ; Shutin, D. ; Ruiz, A.V. ; Wiedemann, T. ; Mueller, J.</i>	
AN EVALUATION OF ROBUST COST FUNCTIONS FOR RGB DIRECT MAPPING	55
<i>Concha, A. ; Civera, J.</i>	
WHERE AM I? AN NDT-BASED PRIOR FOR MCL	63
<i>Kucner, T.P. ; Magnusson, M. ; Lilienthal, A.J.</i>	
SEMAP - A SEMANTIC ENVIRONMENT MAPPING FRAMEWORK	69
<i>Deeken, H. ; Wiemann, T. ; Lingemann, K. ; Hertzberg, J.</i>	
R2D2 RELOADED: DYNAMIC VIDEO PROJECTION ON A MOBILE SERVICE ROBOT	75
<i>Stricker, R. ; Muller, S. ; Gross, H.-M.</i>	
PLANNING OF MULTIPLE ROBOT TRAJECTORIES IN DISTINCTIVE TOPOLOGIES	81
<i>Rosmann, C. ; Hoffmann, F. ; Bertram, T.</i>	
FLOOR DETERMINATION IN THE OPERATION OF A LIFT BY A MOBILE GUIDE ROBOT	87
<i>McAree, O. ; Aitken, J.M. ; Boorman, L. ; Cameron, D. ; Chua, A. ; Collins, E.C. ; Fernando, S. ; Law, J. ; Martinez-Hernandez, U.</i>	
VISION-BASED MARKOV LOCALIZATION ACROSS LARGE PERCEPTUAL CHANGES	93
<i>Naseer, T. ; Suger, B. ; Ruhnke, M. ; Burgard, W.</i>	
APPROXIMATE SURFACE RECONSTRUCTION AND REGISTRATION FOR RGB-D SLAM	99
<i>Holz, D. ; Behnke, S.</i>	
ON BENCHMARKING OF FRONTIER-BASED MULTI-ROBOT EXPLORATION STRATEGIES	107
<i>Faigl, J. ; Kulich, M.</i>	
TIME DEPENDENT PLANNING ON A LAYERED SOCIAL COST MAP FOR HUMAN-AWARE ROBOT NAVIGATION	115
<i>Kollmitz, M. ; Hsiao, K. ; Gaa, J. ; Burgard, W.</i>	
GEOMETRY MATTERS: PLACE RECOGNITION IN 2D RANGE SCANS USING GEOMETRICAL SURFACE RELATIONS	121
<i>Himstedt, M. ; Maehle, E.</i>	
NOVEL APPROACH FOR CALCULATING MOTION FEEDBACK IN TELEOPERATION	127
<i>Lachele, J. ; Venrooij, J. ; Pretto, P. ; Zell, A. ; Bulthoff, H.H.</i>	
AN EXTENSION OF GHMMS FOR ENVIRONMENTS WITH OCCLUSIONS AND AUTOMATIC GOAL DISCOVERY FOR PERSON TRAJECTORY PREDICTION	133
<i>Perez-Hurtado, I. ; Capitan, J. ; Caballero, F. ; Merino, L.</i>	
ROBOT NAVIGATION IN HAND-DRAWN SKETCHED MAPS	140
<i>Boniardi, F. ; Behzadian, B. ; Burgard, W. ; Tipaldi, G.D.</i>	
DEVELOPMENT OF A LOW-COST UNMANNED SURFACE VEHICLE FOR DIGITAL SURVEY	146
<i>Mancini, A. ; Frontoni, E. ; Zingaretti, P.</i>	

KNOWLEDGE-BASE TOPOLOGICAL EXPLORATION FOR MOBILE ROBOTS	152
<i>Kosnar, K. ; Vonasek, V. ; Preucil, L.</i>	
ATTITUDE STABILIZATION CONTROL OF AN AERIAL MANIPULATOR USING A QUATERNION-BASED BACKSTEPPING APPROACH.....	158
<i>Di Lucia, S. ; Tipaldi, G.D. ; Burgard, W.</i>	
AN INTEGRATED CONTROL FRAMEWORK FOR LONG-TERM AUTONOMY IN MOBILE SERVICE ROBOTS.....	164
<i>Mudrova, L. ; Lacerda, B. ; Hawes, N.</i>	
IMAGE FEATURES AND SEASONS REVISITED.....	170
<i>Krajník, T. ; Cristoforis, P. ; Nitsche, M. ; Kusumam, K. ; Duckett, T.</i>	
BAYESIAN SENSOR FUSION FOR MULTI-PLATFORM LANDMINES DETECTION	177
<i>Prado, J. ; Filipe, S. ; Marques, L.</i>	
A GEOMETRIC APPROACH TO MULTIPLE VIEWPOINT HUMAN BODY POSE ESTIMATION	183
<i>Lora, M. ; Ghidoni, S. ; Munaro, M. ; Menegatti, E.</i>	
EVALUATION OF REGISTRATION METHODS FOR SPARSE 3D LASER SCANS	189
<i>Razlaw, J. ; Droschel, D. ; Holz, D. ; Behnke, S.</i>	
MOVING-HORIZON NONLINEAR LEAST SQUARES-BASED MULTIROBOT COOPERATIVE PERCEPTION.....	196
<i>Ahmad, A. ; Bulthoff, H.H.</i>	
A PROPOSAL FOR SEMANTIC MAP REPRESENTATION AND EVALUATION.....	204
<i>Capobianco, R. ; Serafin, J. ; Dichtl, J. ; Grisetti, G. ; Iocchi, L. ; Nardi, D.</i>	
PROBABILISTIC PRIMITIVE REFINEMENT ALGORITHM FOR COLORED POINT CLOUD DATA.....	210
<i>Ekekrantz, J. ; Thippur, A. ; Folkesson, J. ; Jensfelt, P.</i>	
EMPLOYING ANDROID DEVICES FOR AUTONOMOUS CONTROL OF A UGV	218
<i>Harding, R.J. ; Whitty, M.A.</i>	
USING HYBRID PLANNING FOR PLAN REPARATION.....	224
<i>Bechon, P. ; Barbier, M. ; Lesire, C. ; Infantes, G. ; Vidal, V.</i>	
MAGNETIC FIELD SLAM EXPLORATION: FREQUENCY DOMAIN GAUSSIAN PROCESSES AND INFORMATIVE ROUTE PLANNING	230
<i>Kemppainen, A. ; Vallivaara, I. ; Rönig, J.</i>	
RETRIEVAL OF ARBITRARY 3D OBJECTS FROM ROBOT OBSERVATIONS.....	237
<i>Bore, N. ; Jensfelt, P. ; Folkesson, J.</i>	
INEXPENSIVE, RELIABLE AND LOCALIZATION-FREE NAVIGATION USING AN RFID FLOOR.....	245
<i>Khaliq, A.A. ; Pecora, F. ; Saffiotti, A.</i>	
GENERATING TOPOLOGICALLY CONSISTENT TRIANGLE MESHES FROM LARGE SCALE KINECT FUSION	252
<i>Igelbrink, T. ; Wiemann, T. ; Hertzberg, J.</i>	
TOWARDS FULLY AUTONOMOUS ENERGY EFFICIENT COVERAGE PATH PLANNING FOR AUTONOMOUS MOBILE ROBOTS ON 3D TERRAIN.....	258
<i>Dogru, S. ; Marques, L.</i>	
SEMI-SUPERVISED SEMANTIC LABELING OF ADAPTIVE CELL DECOMPOSITION MAPS IN WELL-STRUCTURED ENVIRONMENTS	264
<i>Shahbandi, S.G. ; Astrand, B. ; Philippsen, R.</i>	
LINE-OF-SIGHT-BASED TOF CAMERA'S RANGE IMAGE FILTERING FOR PRECISE 3D SCENE RECONSTRUCTION	272
<i>Ghorpade, V.K. ; Checchin, P. ; Trassoudaine, L.</i>	
KAIRO 3: MOVING OVER STAIRS & UNKNOWN OBSTACLES WITH RECONFIGURABLE SNAKE-LIKE ROBOTS.....	278
<i>Pfotzer, L. ; Staehler, M. ; Hermann, A. ; Roennau, A. ; Dillmann, R.</i>	
MODEL-BASED INTEGRATION TESTING OF ROS PACKAGES: A MOBILE ROBOT CASE STUDY	284
<i>Ernits, J. ; Halling, E. ; Kanter, G. ; Vain, J.</i>	
FPGA BASED COMBINATORIAL ARCHITECTURE FOR PARALLELIZING RRT	291
<i>Malik, G.S. ; Gupta, K. ; Krishna, K.M. ; Chowdhury, S.R.</i>	
VISUAL ROAD FOLLOWING USING INTRINSIC IMAGES.....	297
<i>Krajník, T. ; Blazicek, J. ; Santos, J.M.</i>	
EVENT-BASED CONTROL STRATEGY FOR THE GUIDANCE OF THE AEROSONDE UAV.....	303
<i>Socas, R. ; Dormido, S. ; Dormido, R.</i>	

OLT: A TOOLKIT FOR OBJECT LABELING APPLIED TO ROBOTIC RGB-D DATASETS.....	309
<i>Ruiz-Sarmiento, J.R. ; Galindo, C. ; Gonzalez-Jimenez, J.</i>	
APPROACHES TO TIME-DEPENDENT GAS DISTRIBUTION MODELLING.....	315
<i>Asadi, S. ; Lilienthal, A.</i>	
ROBOT PLANS EXECUTION FOR INFORMATION GATHERING TASKS WITH RESOURCES	
CONSTRAINTS	321
<i>Minlue Wang ; Dearden, R. ; Hawes, N.</i>	
3D PLANNING AND TRAJECTORY OPTIMIZATION FOR REAL-TIME GENERATION OF	
SMOOTH MAV TRAJECTORIES	327
<i>Nieuwenhuisen, M. ; Behnke, S.</i>	
ROUTING AND COURSE CONTROL OF AN AUTONOMOUS SAILBOAT	334
<i>Saoud, H. ; Minh-Duc Hua ; Plumet, F. ; Ben Amar, F.</i>	
STEREO ODOMETRY BASED ON CAREFUL FEATURE SELECTION AND TRACKING.....	340
<i>Cvisic, I. ; Petrovic, I.</i>	
MODEL-DRIVEN SELF-ADAPTATION OF ROBOTICS SOFTWARE USING PROBABILISTIC	
APPROACH	346
<i>Ramaswamy, A. ; Monsuez, B. ; Tapus, A.</i>	
RAPID FREE-SPACE MAPPING FROM A SINGLE OMNIDIRECTIONAL CAMERA.....	352
<i>Lukierski, R. ; Leutenegger, S. ; Davison, A.J.</i>	
MULTI-TARGET & MULTI-DETECTOR PEOPLE TRACKER FOR MOBILE ROBOTS.....	360
<i>Corominas-Murtra, A. ; Pages, J. ; Pfeiffer, S.</i>	
Author Index	