

Jia Pan

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RESEARCH INTERESTS Robot Motion Planning, GPGPU for Robotics, Machine Learning in Robotics, Computer Graphics, Computer Vision

EDUCATION **University of North Carolina at Chapel Hill**, Chapel Hill, NC, USA
Ph.D. Candidate, Department of Computer Science **Aug 2008 – present**

- Advisor: Prof. Dinesh Manocha

Chinese Academic of Sciences, Beijing, China
M.Eng, National Laboratory of Pattern Recognition
Institute of Automation GPA: 91/100 (major 93.5/100) **Aug 2005 – Jul 2008**

Tsinghua University, Beijing, China
B.Eng., Department of Automation
Major: Control Science and Engineering GPA: 90.5/100 (major 92/100) **Sep 2001 – Jul 2005**

PROFESSIONAL EXPERIENCE **Department of Computer Science**
University of North Carolina at Chapel Hill
Research Assistant **Jan 2009 – present**

- Motion planning and its applications
- GPGPU for robotics, graphics and GIS
- Machine learning in robotics

Willow Garage
Summer Intern **May 2011 – Aug 2011**

- New collision library FCL
- Motion planning with uncertainty

National Laboratory of Pattern Recognition
Chinese Academy of Sciences
Research Assistant **July 2005 – Aug 2008**

- Motion capture system implementation
- Digital geometry processing
- Machine learning in graphics and vision

Robotics Lab
Tsinghua University
Research Assistant **June 2003 – Sep 2004**

- Undergraduate research program for Robocup

PUBLICATIONS

- [1] Chonhyon Park, **Jia Pan**, Dinesh Manocha, *Real-time Optimization-based Planning in Dynamic Environments using GPUs*, submitted, 2012.
- [2] **Jia Pan**, Sachin Chitta, Dinesh Manocha, *Faster Sample-based Motion Planning using Instance-based Learning*, submitted, 2012.
- [3] Chonhyon Park, **Jia Pan**, Dinesh Manocha, *ITOMP: Incremental Trajectory Optimization for Real-time Replanning in Dynamic Environments*, International Conference on Automated Planning and Scheduling (ICAPS), 2012.

- [4] **Jia Pan**, Liangjun Zhang, Dinesh Manocha, *Collision-free and Smooth Trajectory Computation in Cluttered Environments*, In submission, 2012.
- [5] **Jia Pan**, Sachin Chitta, Dinesh Manocha, *FCL: A General Purpose Library for Collision and Proximity Queries*, IEEE International Conference on Robotics and Automation (ICRA), 2012.
- [6] **Jia Pan**, Dinesh Manocha, *Bi-level Locality Sensitive Hashing for K-Nearest Neighbor Computation*, International Conference on Data Engineering (ICDE), 2012.
- [7] **Jia Pan**, Dinesh Manocha, *GPU-based Parallel Collision Detection for Fast Motion Planning*, International Journal of Robotics Research (IJRR), 2011.
- [8] **Jia Pan**, Dinesh Manocha, *Fast GPU-based Locality Sensitive Hashing for K-Nearest Neighbor Computation*, International Conference on Advances in Geographic Information Systems (SIGSPATIAL GIS), 2011.
- [9] **Jia Pan**, Sachin Chitta, Dinesh Manocha, *Probabilistic Collision Detection between Noisy Point Clouds using Robust Classification*, International Symposium on Robotics Research (ISRR), 2011.
- [10] **Jia Pan**, Liangjun Zhang, Dinesh Manocha, *Collision-Free and Curvature-Continuous Path Smoothing In Cluttered Environments*, Robotics: Science and Systems Conference (RSS), 2011.
- [11] **Jia Pan**, Dinesh Manocha, *GPU-based Parallel Collision Detection for Real-Time Motion Planning*, Workshop on Algorithmic Foundation of Robotics (WAFR), 2010.
- [12] **Jia Pan**, Christian Lauterbach, Dinesh Manocha, *Efficient Nearest-Neighbor Computation for GPU-based Motion Planning*, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2010.
- [13] **Jia Pan**, Christian Lauterbach, Dinesh Manocha, *g-Planner: Real-time Motion Planning and Global Navigation using GPUs*, AAAI Conference on Artificial Intelligence (AAAI), 2010.
- [14] **Jia Pan**, Liangjun Zhang, Dinesh Manocha, *Retraction-based RRT planner for Articulated Models*, IEEE International Conference on Robotics and Automation (ICRA), 2010.
- [15] **Jia Pan**, Liangjun Zhang, Ming C. Lin, Dinesh Manocha, *A Hybrid Approach for Synthesizing Human Motion in Constrained Environments*, Journal of Visualization and Computer Animation 21(3-4), 137-149 (2010).
- [16] **Jia Pan**, Liangjun Zhang, Ming C. Lin, Dinesh Manocha, *A Hybrid Approach for Synthesizing Human Motion in Constrained Environments*, International Conference on Computer Animation and Social Agents (CASA), 2010.
- [17] Liangjun Zhang, **Jia Pan**, Dinesh Manocha, *Motion Planning of Human-Like Robots using Constrained Coordination*, IEEE-RAS International Conference on Humanoid Robots (Humanoids), 2009.
- [18] Liangjun Zhang, **Jia Pan**, Dinesh Manocha, *Motion Planning and Synthesis of Human-Like Characters in Constrained Environments*, The 2nd International Workshop on Motion in Games (MIG, invited paper), 2009.
- [19] **Jia Pan**, Qing Yang, Chunhong Pan, *Intrinsic Scale Space on Manifolds with Migration Tracking*, Pacific Conference on Computer Graphics and Applications (PG, poster paper), 2008.
- [20] **Jia Pan**, Huaiyu Wu, Chunhong Pan, Qing Yang, *A Novel Scheme for Efficient Cross-parameterization*, Computer Graphics International (CGI), 2007.
- [21] Huaiyu Wu, Chunhong Pan, **Jia Pan**, Qing Yang, *A Sketch-based Interactive Framework for Real-time Mesh Segmentation*, Computer Graphics International (CGI), 2007.
- [22] Huaiyu Wu, Chunhong Pan, Qing Yang, **Jia Pan**, Songde Ma, *Mean-value Laplacian Coordinates for Triangular Meshes*, International Conference on Computer Graphics, Imaging and Visualization (CGIV), 2006.

- [23] **Jia Pan**, Sachin Chitta, Dinesh Manocha, *Proximity Computations between Noisy Point Clouds using Robust Classification*, RSS 2011 Workshop: RGB-D: Advanced Reasoning with Depth Cameras, 2011.
- [24] **Jia Pan**, Dinesh Manocha, *Closing the Loop between Motion Planning and Task Execution using Real-Time GPU-based Planners*, AAAI 2010 Workshop: Bridging the Gap between Task and Motion Planning, 2010.
- [25] **Jia Pan**, Liangjun Zhang, Ming C. Lin, Dinesh Manocha, *Synthesizing Human-Like Walking in Constrained Environments*, IEEE Humanoids 2009 Workshop: Modeling, Simulation and Optimization of Bipedal Walking, 2009.

THESIS [26] **Jia Pan**, *Research about Several Problems in Digital Geometry Processing*, M.S. Thesis of National Laboratory of Pattern Recognition (NLPR), Chinese Academy of Sciences, 2008.

[27] **Jia Pan**, *Key-frame Extraction for Motion Capture Data*, B.S. Thesis of Tsinghua University, 2005.

AWARDS NSF Travel Scholarship, ICDE, 2012
NSF Travel Grants, ACM SIGSPATIAL, 2011
Excellent Bachelor Thesis of Tsinghua University, Beijing, 2005
1st prize in Student Research Training (SRT), Tsinghua University, Beijing, 2004
3rd prize in Mathematic Model Design Competition, Tsinghua University, Beijing, 2004
Excellent Student Scholarship, Tsinghua University, Beijing, 2002-2004
2nd prize in China Undergraduate Mathematical Contest in Modeling, 2003

COURSES TAKEN Computer vision, Machine Learning, Control Theory, Algorithms of Motion, Computational Geometry, Physics-based Modeling and Simulation, Robotics, Computational Photography, Computer Graphics, Sound Rendering, Computer and Network Security, Virtual Reality.

PROGRAMMING C, C++, Matlab, Perl, Python, L^AT_EX 2_ε, SQL, Java, CUDA

REFEREES *Available on request.*