

Fayin Li

Department of Computer Science
George Mason University
Fairfax, VA, 22030

Office: (703) 993-1557; Fax: (703) 993-1710

Cell: (703) 623-4067

Email: fli@cs.gmu.edu, fli1@gmu.edu

URL: <http://cs.gmu.edu/~fli>

RESEARCH INTERESTS

- Computer Vision, Machine Learning and its Application
- Appearance Based Location/Face/Object Recognition
- Open Set Recognition
- Automatic Gesture Recognition and Human Computer Interaction
- Video Tracking and Surveillance
- Statistical Learning Theory
- Robotics, Data Mining, Image Processing and Pattern Recognition
- Time-Frequency Analysis and its Application

TECHNICAL SUMMARY

- Expert-level knowledge of theory and practice in many fields of computer vision, machine learning and pattern recognition
- Over 10 publications in the top computer science journals and proceedings.
- Outstanding Graduate Student Awards.
- Extremely strong mathematics background.
- Eight years' experience in object-oriented software development.
- Experience with multi-threaded application design and implementation.
- Programming Languages: C/C++ (8 years), MFC (6 years), .NET, STL, Matlab(5 years), Windows Hardware Driver (2 years), OpenGL, Java, Perl, ...
- Operating Systems: MS Windows 9X/NT/XP, Unix, SunOS/Solaris, Linux.
- Networks: socket-level and packet-level programming in Windows and UNIX.

EDUCATION

Ph.D. in Computer Science (Expected in summer 2005)

George Mason University

Cumulative GPA: 3.96 / 4.00

Thesis Title: Recognizing Objects and Human Activities

Thesis Advisor: Professor Jana Kosecka and Harry Wechsler

M.E. in Pattern Recognition and Intelligent System, July 1999

Institute of Automation, Chinese Academy of Sciences (CAS)

Cumulative GPA: 90/100

B.E. in Electrical Engineering, July 1996

Huazhong University of Science and Technology (HUST), Cumulative GPA: 89/100

Graduated with Honors, ranked top 5% in the department

RESEARCH EXPERIENCE

Research Assistant **8/2000 - present**
George Mason University, Department of Computer Science
Computer Vision and Robotics Laboratory and Center for Distributed and Intelligent Computation

- Open Set Face/Object Recognition using Transductive Inference
- Motion Estimation using Statistical Learning Theory
- Automatic Gesture Recognition from Video
- Probabilistic Location Recognition
- Feature Selection and Object Recognition using Boosting and Transduction

Research Assistant **5/2002 – 12/2002**
Cooperated with Dr. V.C.Chen, Radar Division, Naval Research Laboratory

- Analysis of Micro-Doppler Signatures
- Mathematical Derivation and Simulation

Course Project **03/2003 – 05/2003**
George Mason University, Department of Computer Science, Computer Graphics Laboratory

- Track the motion from traditionally animated cartoons
- Represent the motion with key-shape and kernel-based deformation
- Produce expressive, exaggerated and non-realistic animations and re-targeting

Course Project **Fall, 2001**
George Mason University, Department of Computer Science, Computer Vision and Robotics Laboratory

- Automatically construct mosaics of architectural environments from a sparse set of uncalibrated views using the environment constrains

Research Specialist, **07/1999 - 08/2000**
Character Recognition Laboratory, Hanwang Technologies, Inc, Beijing, China

- Fast Image Rotation Algorithm in binary image
- Chinese Census Form Processing and Recognition System (In the market)
- Human-Identification Card Processing and Recognition System (In the market)
- Real-time Image Capturing and Processing system (PCI Card Driver and Image Processing Software)
- Business Card Scanning, Processing and Recognition System (In the market)

TEACHING EXPERIENCE

Teaching Assistant **8/2000 - 12/2000**
George Mason University, Department of Computer Science

- Gave weekly recitations for an undergraduate CS course: Computer Science I.
- Held weekly office hours and lab assistant to provide additional instruction to students.
- Assisted instructor with exam proctoring and grading.

PUBLICATIONS

Journal Papers

- Fayin Li and Harry Wechsler, "Open Set Face Recognition Using Transduction", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, accepted, 2005.
- Jana Kosecka, Fayin Li and Xiaolong Yang, "Global Localization and Relative Positioning based on Scale-Invariant Keypoints", *Journal of Robotics and Autonomous Systems*, accepted, 2005.
- V. Chen, Fayin Li, S. Ho and H. Wechsler, "Micro-Doppler Effect in Radar – Phenomenon, Model and Simulation Study", *IEEE Trans. on Aerospace and Electronic Systems*, accepted, 2005.
- H. Wechsler, Z. Duric, Fayin Li and V. Cherkassky, "Motion Estimation Using Statistical Learning Theory", *IEEE Trans. Pattern Analysis and Machine Intelligence*, Vol. 28, No. 4, 466 - 478, 2004.
- Z. Duric, W. Gray, R. Heishman, Fayin Li, A. Rosenfeld, C. Schunn and H. Wechsler, "Integrating Perceptual and Cognitive Modeling for Adaptive and Intelligent HCI", *Proceeding of IEEE*, vol. 90, No. 7, 1272 - 1289, 2002.
- V. Chen, Fayin Li, S. Ho and H. Wechsler, "Analysis of Micro-Doppler Signatures", *Proc. of IEE on Radar, Sonar and Navigation*, Vol. 150, No. 4, 271 - 276, 2003.

Conference Papers

- Fayin Li and Jana Kosecka, "Probabilistic Location Recognition using Reduced Feature Set", *submitted to Computer Vision and Pattern Recognition (CVPR 2005)*, 2004.
- J.Kosecka and Fayin Li, "Vision Based Markov Localization", *23rd IEEE International Conference on Robotics and Automation (ICRA 2004)*, New Orleans, USA, April 24 - May 1, 2004
- Fayin Li and Harry Wechsler, "Watch List Face Surveillance Using Transductive Inference", to appear in the 1st International Conference on Biometric Authentication (*ICBA 2004*), Hong Kong, 15 - 17 July, 2004.
- Z. Duric, Fayin Li, H. Wechsler and V. Cherkassky, "Controlling Model Complexity in Flow Estimation", *9th Int. Conf. on Computer Vision (ICCV 2003)*, Nice, France, 2003
- Fayin Li and H. Wechsler, "Open World Face Recognition with Credibility and Confidence Measures", *4th Int. Conf. on Audio and Video-Based Biometric Person Authentication (AVBPA 2003)*, Surrey, UK., 2003.
- Z. Duric, Fayin Li, Y. Sun and H. Wechsler, "Using Normal Flow for Detection and Tracking of Limbs in Color Images", *16th Int. Conf. on Pattern Recognition (ICPR 2002)*, Quebec-City, Canada, 2002.
- Jana Kosecka, Wei Zhang and Fayin Li, "Mosaic Construction from a Sparse Set of Views", *1st International Symposium on 3D Data Processing Visualization and Transmission (3DPVT 2002)*, Padova, Italy, June, 2002
- H. Wechsler, Z. Duric and Fayin Li, "Hierarchical Interpretation of Human Activities Using Competitive Learning", *16th Int. Conf. on Pattern Recognition (ICPR 2002)*, Quebec-City, Canada, 2002

- H. Wechsler, Z. Duric, Fayin Li and V. Cherkassky, "Motion Estimation Using VC - Generalization Bounds", 16th *Int. Conf. on Pattern Recognition (ICPR 2002)*, Quebec-City, Canada, 2002
- Z. Duric, Fayin Li and H. Wechsler, "Recognition of Arm Movements", 5th *Int. Conf. on Automatic Face and Gesture Recognition (FGR 2002)*, College Park, MD, 2002.

PATENTS

- Fayin Li and Harry Wechsler, "Open Set Recognition", Patent #60/623064, submitted on March 10, 2005.

PROFESSIONAL ACTIVITIES

Reviewer for Pattern Recognition Letters, Computer Vision and Image Understanding, IEEE Trans. on Neural Networks.
 Int. Conf. on Pattern Recognition (ICPR) and Computer Vision and Pattern Recognition (CVPR).
 Student Member of IEEE

AWARDS AND HONOR

- Outstanding Graduate Student, School of Information Technology, George Mason University (top 1%), 2002
- High Potential Research Assistant Fellowship, George Mason University, 2000 – 2003
- Outstanding Student Scholarship, HUST, 1993-1995

PERSONAL DATA

- Citizen of P. R. CHINA
- U.S. F-1 Visa

REFERENCES

Dr. Harry Wechsler (Advisor)

Director, Center for Distributed and Intelligent Computation
 Professor, Department of Computer Science
 George Mason University, Fairfax, VA, 22030
 Email: wechsler@cs.gmu.edu
 Tel: +1 (703) 993 1533
 Fax: +1(703) 993 1710

Dr. Jana Kosecka (Co-advisor)

Assistant Professor, Department of Computer Science
 George Mason University, Fairfax, VA, 22030
 Email: kosecka@cs.gmu.edu
 Tel: +1 (703) 993 1876
 Fax: +1(703) 993 1710

Dr. Zoran Duric

Associate Professor, Department of Computer Science
 George Mason University, Fairfax, VA, 22030
 Email: zduric@cs.gmu.edu
 Tel: +1 (703) 993 1717
 Fax: +1(703) 993 1710