Yu-Chi Lai

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Objective

To obtain a full time position in research & development and technical support where I can efficiently utilize my excellent programming and problem identifying and solving skills to make a strong contribution to organization goals.

Education

- Ph. D. in Computer Science UW-Madison, University of Wisconsin at Madison, August 2009
  - Advisor: Charcle Dyer
  - Dissertation: *Photorealistically animation rendering with Population Monte Carlo Energy Redistribution*
    - Applying statistical Population Monte Carlo framework on Markov Chain Monte Carlo algorithms for global illumination to reuse the sample from previous iterations and automatically adjust the sampling parameters according to the information collected previously. We also extend the formulation for considering the temporal and spatial coherence at the same time. All these enhance the rendering efficiency in global illumination.
- Ph. D. in Electrical and Computer Engineering, University of Wisconsin at Madison, May 2009
  - Advisor: John Webster
  - Dissertation: *Lesion Size Estimator in Cardiac Ablation*
    - Abstract: We apply finite element analysis on the process of cardiac ablation to determine the importance factors on the formation of lesion. Through the process we also conduct an *in-vitro* experiment to verify the simulation results. Through the process we knew that the blood flow and the target temperature have major impact on the final result.
- M.S. in Electrical and Computer Engineering, University of Wisconsin at Madison, December 2003
  - Class: Medical Instrumentation, Computer in Medicine, Image Processing, Optimal System, Fault Tolerant Computing, Biomedical Instrumentation, Project in Computer in Medicine
- M.S. in Computer Science UW-Madison, University of Wisconsin at Madison, May 2005
  - Class: Introduction to Data Structure, Database Management System: Design and Implementation, Computer Graphics, Computer Game Technology, Introduction to Computer Network, Advance in Database Management System, Computer Vision, Computer Animation, Rendering Images in Computer Graphics, and VLSI Design.
- B.S. in Electrical Engineering, National Taiwan University, Taipei, Taiwan, 1996.
  - GPA 3.78 / 4.0

Research and Experience

- Research associate, Department of Electrical Engineering, National Cheng-Kong (1998 – 2000)
  - Lead a group to write a program of satellite orbit simulation, and also participating in coding the drivers for CD-ROM and DVD, and GPS's map display system.
  - Familiar with small digital system design with DSP chip and micro-processor such as 8051, 8088
  - CD-ROM and DVD-ROM control driver firmware.
  - Instrument control interface by using Lab-view and Lab-window
  - Finish software for satellite controller simulation system, maps mapping in GPS, CD-ROM drivers, and VR in flight training system.
- Summer Internship, Raven Software (2007 summer)
  - Material editor in Unreal engine sometimes takes a long period of time to when compiling a very complex material and it sometimes generates inefficient shader codes. We develop a mechanism to simplify the code generated by the material editor to shrink the compiling time from hours to minutes. At the same

time the shader code generated is often more efficient. The short compilation time save designers' time on waiting for the result to come out.
  - The original expressions in Unreal engine are primitive. We developed new expressions in material editor to allow artists to create a material more efficiently and more expressively.
  - Unreal engine is good at supporting PC and Xbox applications. The support for PS3 applications is rare and buggy. We try to come up a standard procedure to cook the application code into PS3 tester machine in order to fix and debug the code generation utility for PS3 which is useful for the final product generation phase.
- Military service in communication department (1996 – 1998)
- Research Assistant, Department of Electrical and Computer Engineering, UW-Madison (2001 – 2004)
- Research Assistant, Department of Computer Science, UW-Madison (2005-2006)
- Teaching Experience (1994 to 1996 in National Taiwan University, 2003 – 2008 in UW-Madision)

Publication

1. Yu-Chi Lai, Steven Chenney, Shaohua Fan *"Group Motion Graphs"*, Eurographics/SIGGRAPH Symposium on Computer Animation 2005, pp. 281–290.

2. Yu-Chi Lai, Shaohua Fan, Stephen Chenney, and Charles Dyer, "*Photorealistic Image Rendering with Population Monte Carlo Energy Redistribution*", Eurographics Symposium on Rendering, 2007, pp. 287-296.

3. Yu-Chi Lai, Feng Liu, Li Zhang, and Charles Dyer, "*Efficient Schemes for Monte Carlo Markov Chain Algorithms in Global Illumination*", *Proc. 4th International Symposium on Visual Computing*, 2008.
4. Yu-Chi Lai, Feng Liu, and Charles Dyer, *"Physically-based Animation Rendering with Markov Chain Monte Carl", (submit to* Eurographics Symposium on Rendering 2009)
5. Lai, Y-C, D. Haemmerich, et al (2003). "Lesion Size estimator at different common locations with different tip temperature during cardiac radio-frequency ablation", *IEEE Transactions on Biomedical Engineering.*

Computer Skills (Self Ranking: Strong: ***; Moderate: **; Beginner: *)

PROGRAMMING: • **C++ (over 15 years of experience and really good at it) *****
• Java*** • Python** • Matlab** • Visual Basic*
• CG** • GLSL** • Matrix**

C++ API: • *FLTK**** • *OpenGL*** • *Borland C++ Builder ** • Lab-view**
• Lab-window** • *Socket**** • *OpenSSL****
• *Lac/Yacc**** • *OpenCV****

WEB DESIGN: • *HTML*** • Visual Studio 2005** • Dream weaver**
• MS Front Page* • Wiki *

OPERATING SYSTEMS: • Windows 2000/2000 server/xp/2003 server/**
• Unix solairs 9.0** • MS-DOS 6.0** • Linux***

OFFICE APPLICATIONS: • MS Office 2000/2003*** • Latex ***

Animation Software • Maya*** • 3DMax**

Graphics: Photorealistic animation rendering, hardware rendering, computer game programming, motion capture, and flock simulation

Other: Statistical analysis, medical image processing and data retrieval, feature extraction and selection, network programming, security communication programming, and database system programming.

References

1. John Webster – Professor in EE department at UW Madison
   Contact: 608-265-9239 webster@engr.wisc.edu
2. Charles Dyers – Professor in CS department at UW Madison
   Contact: 608- 262-1965 dyer@cs.wisc.edu
3. Stephen Chenney – Former Professor in CS and game programmer in Emergent Technology
3. Gil Gribb – Raven Software Tech Lead
   Contact: ggribb@ravensoft.com