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Tai-Hsu Lin (林泰旭)

Department of Computer Science, Columbia University
Mobile Phone: +886-929-679-957 (Taiwan)
E-mail: lord.lth@gmail.com
Personal page: <http://mpac.ee.ntu.edu.tw/~lth/index.html>

Personal Information

Gender: Male
Date of Birth: 12/28/1985
Citizenship: ROC, Taiwan
Marital Status: Single

Research Interest

My present research topics include *online photo collections, computational photography and image/video editing*.

Awards and Honors

International Awards:

1. Honorable Mention, ACM ICPC World Final, 2005.
2. Various places in ACM ICPC Asia Regional Contest from 2004 – 2007 (**five** times total).
3. Silver Medal (1st), the 15th International Olympiad in Informatics, 2003.

Domestic Awards:

1. 2th place, National College Programming Contest, 2004.
2. 2th place, National College Programming Contest, 2006.
3. 3th place, National College Programming Contest, 2007.

Education

Bachelor of Science, Electrical Engineering *Sep. 2004~Jun. 2008*
National Taiwan University, Taipei, Taiwan
Overall GPA: 3.75/4.0(86.31/100), Major GPA: 3.86/4.0 (89.05/100)

Publications

C.-K. Liang, **T.-H. Lin**, B.-Y. Wong, C. Liu, Homer Chen, “*Programmable Aperture Photography: Multiplexed Light Field Acquisition*”, ACM SIGGRAPH 2008.

Professional Experiences

Research Experiences:

Light Field Photography (9/2007~6/2008)

We built an efficient, low-cost, high spatial and angular resolution light field acquisition system based on aperture multiplexing. I was in charge of the multi-view stereo depth estimation algorithm in our SIGGRAPH submission. Our stereo quality ranked 5th place on the Middlebury stereo rank-list in April 2008.

NTUEE GICE Multimedia Processing and Communications (MPAC) Lab

Undergraduate Researcher, 9/2006~6/2008

I worked under Prof. Homer Chen and Dr. Chia-Kai Liang, participating in several research projects in the lab. Past projects and implementations included *a SIFT feature matching library, an image segmentation library, fast bilateral filtering, panorama stitching, bundle adjustment*

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with initialization, MRF optimization, multi-view stereo and image super-resolution.

NTUEE GIEE Media IC and System Lab

Undergraduate Researcher, 3/2008~6/2008

I worked under Prof. Shao-Yi Chien on a research project in content-aware image/video deformation. The project covered *saliency-based visual attention modeling, optimization-based image warping and image over-segmentation.*

NTUEE GIEE Laboratory of Dependable System III

Undergraduate Researcher, 3/2006~10/2006

I worked under Prof. Chung-Yang Huang in formal verification in the EDA field. I joined the engine study group in the lab, exploring modern techniques in solving verification problems such like SAT, *pseudo-boolean optimization, (integer) linear programming and logic function representation.*

Working Experiences:

Environmental Analysis Laboratory - Taoyuan, Taiwan

Substitutive Serviceman, 8/2008~6/2009

This is an alternative for the mandatory military service of male citizens in Taiwan. I was assigned to the substitutive service by the government because of my near-sightedness. In the institute, I primary worked on the maintenance/update of the information system/electronic facilities on a scale of 400 personal computers. I also taught the staffs about the usage of these equipments.

TRI Test Research, Inc - Hsinchu, Taiwan

Technical Consultant, 7/2007~6/2008

I was the core developer of a high-speed automated optical inspection system on PCB boards. This project involved geometric pattern matching and feature detection. Our system's performance is comparable with the Cognex Patmax under practical situations and has a better P-R curve.

Course Projects

Computer Vision and Computer Graphics:

- 1) **Interactive 3D Video Game based on Real-time Segmentation** (*Fall, 2007, Networking and Multimedia Lab*)
- 2) **Face Morphing** (*Fall, 2007, Digital Image Processing*)

In (1), we developed a 3D computer game that players can interact with the scene. The interactivity was achieved by segmenting the player image from the camera in real-time. We developed the game with OGRE 3D. In (2), we implemented a face morphing software based on the Active Appearance Model. Key components include Laplacian warping and Graph-cut region selection.

Hardware Design:

- 1) **A 5-level Pipelined MIPS CPU** (*Spring, 2007, Digital System Design*)
- 2) **A Pipelined Signed 6x6 MAC** (*Fall, 2006, Integrated Circuit Design*)
- 3) **DX-BALL** (*Summer, 2006, Digital Circuit Lab*)

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In (1), we designed a pipelined MIPS CPU with hazard handling. We synthesized our CPU using TSMC 0.18 μ m model, achieving 50MHZ clock speed. In (2), I designed a highly optimized MAC with Wallace tree, Booth encoding and Carry-select adder. My performance is the best in the course. In (3), we designed a video game on FPGA that mimics a popular block-breaking game DX-BALL 2. The game features VGA display, mouse control, SRAM/EPROM controller and realistic physical simulation in less than 3500 gates.

Electronic Design Automation:

- 1) **Proof Construction for SAT Solvers** (*Fall, 2006, Logic Synthesis and Verification*)
- 2) **Large Scale Floor-planning based on B*-tree** (*Spring, 2006, Introduction to EDA*)
- 3) **A Binary Decision Diagram Library** (*Spring, 2005, Data-Structure and Programming*)

In (1), we explored the problem to generate resolution proofs for UNSAT claims from SAT solvers. We showed that the chronological order of learned clauses is vital for the solution verification in polynomial time, and we gave an efficient algorithm in either case. In (2), I improved over the existing B*-tree packing algorithm and gave better results than that on the original paper. In (3), I implemented a complete library for BDD, including a circuit parser and an easy-to-use console.

Technical Skills

Programming Language: C, C++, .NET Framework, Matlab
Graphics Tool: Photoshop, 3D Studio MAX

Language

Chinese: Native
English: Adequate

Activities

Reviewer of
1. IEEE ICIP 2008.
2. IEEE TCSVT.

ACM Student Member – Awarded by ICPC World Final (05-06) and SIGGRAPH (08-09).
NTUEE Academic Association – Chief of the computer programming teaching section in the NTUEE camp, 9/2005 ~ 8/2007.

References

Homer H. Chen, Professor. Department of Electrical Engineering, National Taiwan University	886-2-33663549 homer@cc.ee.ntu.edu.tw
Winston H. Hsu, Assistant Professor. Department of Computer Science and Information Engineering, National Taiwan University	886-2-33664888 ext. 512 winston@csie.ntu.edu.tw
Chiou-Shann Fuh, Professor. Department of Computer Science and Information Engineering, National Taiwan University	886-2-23625336 ext.327 fuh@csie.ntu.edu.tw
Shao-Yi Chien, Associate Professor. Department of Electrical Engineering, National Taiwan University	886-2-33663668 sychien@cc.ee.ntu.edu.tw