

## Address

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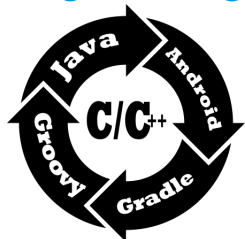
## Mail

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## Web Profile

farley.dynagrid.net

## Programming



## Preference

Developer ★★★★★  
Researcher ★★★★★  
PM ★★★★★

## Art and Honor



## Languages

English ★★★★★  
Mandarin ★★★★★  
Taiwanese ★★★★★

# FarleyLai

## Computer Scientist

## Experience

2012 - Now

### Research Assistant

University of Iowa, Iowa City, IA

- Optimizing the memory management of stream programs through code analysis with experimental results outperforming the MIT StreamIt by up to 8.7X in various benchmarks while saving memory usage by up to 96%
- Developed CSense - a stream processing toolkit for Android that offers efficient memory management, automatic concurrency control and integration with MATLAB components. Performance boosts up to 19X and 45% reduction in CPU usage compared with baseline.
- Developed mobile sensing applications based on CSense including AudioSense to capture listening context for hearing aid, ActiSense to recognize human activities and SpeakerIdentifier to identify speakers in conversations.
- Given two full-length lectures on file systems in the operating systems class

2011 - 2012

### Teaching Assistant

University of Iowa, Iowa City, IA

Conducting office hours, taking class notes and grading in Discrete Structures and Networking & Security.

2004 - 2009

### Project Leader, Advanced Engineer

Uniform Industrial Corporation, Taiwan

- Practiced eXtreme Programming to lead a project of developing multi-channel video streaming software (RTSP/RTP/RTCP) for Windows and browser ActiveX/DirectShow plugins in a one-month tight schedule
- Developed an embedded Perl web server to improve rendering server pages from seconds to the blink of an eye for video conferencing products, and a video player adapted from VLC displaying private event information for IP surveillance cameras
- Independently assigned to support another department in manually decompiling the Magnetic Ink Character Recognition (MICR) sources in Moto 68K assembly for U.S. check readers

2001 - 2002

### Part-time Software Engineer

Avectec.com, Inc., Hsinchu, Taiwan

Developed a mobile phone based call center in Java that accesses contacts over IR and sends/receives SMS notifications. Implemented an Outlook like email client analyzing keywords in messages and automatically replying useful information from a remote SQL knowledge base.

## Education

2011 - Now

### Ph.D. in Computer Science

University of Iowa, Iowa City, IA

Academics: 3.83 cGPA

Graduation: 09/2016 expected

Formal Methods, Big Data Technologies, Distributed Computing, Pattern Recognition, Image Processing, Signal Processing, Randomized Algorithms, Artificial Intelligence, High Performance Computer Architectures ...

2002 - 2004

### MS in CS and Information Engineering

Nation Central University, Taiwan

Academics: 4.0/4.0 GPA with thesis

1998 - 2002

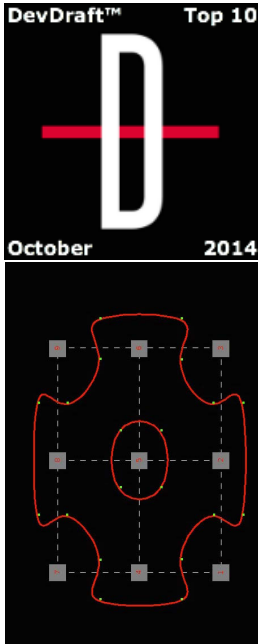
### BS in Industrial Engineering

National Tsing-Hua University, Taiwan

Minor in Computer Science

Activities: Rover Scout Crew

## Projects



### **Numbers Game Challenge, Finals and Badge Design** *DevDraft*, Oct. 14'/15'

- Ranked top 10 out of 1500 participants and conquered a two-player turn-based game with 100% code correctness that requires determining which player wins if both play optimally in 14'. My bottom-up approach allows to search for the solution in  $O(\log\log N)$  big integer operations.

- Exclusively invited to design badges for DevDraft 2015 finals

### **Dict Eye** *BoilerMake Hackathon*, Feb. 14'

- Developed an Android app to recognize vocabulary from video subtitles while displaying definitions in real-time. Statistics are collected for users to review in flashcards with spaced repetition. The real-time text tracking is supported by Qualcomm Vuforia.

### **Text-Independent Speaker Identification** *Pattern Recognition*, Fall 13'

- The only one in class manually computed MFCCs and implemented GMM based speaker identification by hand. Score A+.

### **Comparison of Image Registration Methods** *Advanced Image Processing*, Spr. 13'

- Evaluated four image registration methods on cross-modality 3D volume datasets by comparing sum of squared differences, correlation coefficient, joint entropy, normalized mutual information and employed t-test to show pairwise statistical significance. Better visualizations than others and scored A.

### **Light Field Contour Tracking w/ IRIS Motes** *Wireless Sensor Networks*, Fall 11'

- Assuming a grid deployment of wireless motes with light sensors, each mote sends feedback to a laptop to detect events of interest such as smoke blob form, vanish, merge, split, expand, shrink and move. Ideas from experience in surveillance industry.

## Publications

Farley Lai, Daniel Schmidt, Octav Chipara

### **Static Memory Management for Efficient Mobile Sensing Applications**

*ACM SIGBED International Conference on Embedded Software (EMSOFT), 2015*

Farley Lai, Syed Shabih Hasan, Austin Laugesen, Octav Chipara

### **CSense: A Stream-Processing Toolkit for High-Rate Mobile Sensing Applications**

*ACM/IEEE International Conference on Information Processing in Sensor Networks, 2014*

Syed Shabih Hasan, Farley Lai, Octav Chipara, Yi-Hsien Wu

### **AudioSense: Enabling Real-time Evaluation of Hearing Aid Technology In-Situ**

*IEEE International Conference on Computer-Based Medical Systems, Best Student Award, 2013*

Farley Lai, Shing-Tssan Huang

### **Optimal Alternators with Reduced Space Complexity**

Proves an optimal fair scheduling is strongly fair on rings of any size.

*Master Thesis, 2004*

## Leadership

2001

### **Lion Camp**

[Hsinchu, Taiwan](#)

Planned Day of Pokémon as the camp climax. Designed an RPG based on the Triple Triad in Final Fantasy VIII, allowing participants to power up with earned points. Teams strategically cooperated to defeat bosses. I believe few other camps in the world deliver similar experience.

2000

### **Rover Recruit Camp**

[Hsinchu, Taiwan](#)

As camp host in charge of the schedule, promotion and budget control. Nearly half of the 30+ college participants finally joined our crew, boosting the recruit rate twice. Ended up better than break-even with sufficient fund-raising.