Ping-Chia (Amber) Tsai

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EDUCATION

National Taiwan University (NTU) 2010.09 – 2014.06 (expected)

- Bachelor of Science, Department of Electrical Engineering
- Overall GPA: 3.82/4.0; Major GPA: 3.88/4.0

HONORS & AWARDS

- Mayor's Award, Kaohsiung First Girls' High School, Kaohsiung, Taiwan 2010.06
  Awarded by Kaohsiung City Government to No. 1 students graduated from each high school
- Admission to Department of Electrical Engineering, National Taiwan University 2010.04
  The only student recommended by Kaohsiung First Girls' High School without taking the nationwide College Entrance Examination
- Honorable Mention, Kaohsiung City Science Academic Contest – Chemistry 2009.11
  Awarded by Kaohsiung City Government with honor in written test and experiment

RESEARCH INTERESTS

- Digital Signal Processing related to Acoustics, Video/Audio Processing, or Communications

PUBLICATIONS

[1] Ning Lin*, Ping-Chia Tsai*, and Homer H. Chen, "Music Recommendation Based on Artist Novelty and Similarity," submitted to *2014 IEEE International Workshop on Multimedia Signal Processing* (*MMSP*). (* Co-first authors) (*pdf*)

[2] Ping-Chia Tsai, Yan-Chun Chen, Jhao-Ting Chen, and Mike Y. Chen, "Mind Map," Poster Presentation, National Taiwan University, 2013. (*pdf*)

RESEARCH EXPERIENCE AND SELECTED PROJECTS

Multimedia Processing and Communications (MPAC) Lab 2012.08 – present

Music Recommendation System

- Advisor: Professor Homer H. Chen
- Jointly proposed a statistical screening algorithm with my teammate (with equal contributions) to pick artists with highest *similarity* and lowest *popularity* based on criteria defined from the collected favorite songs of 100 artists from over 100 listeners
- Results have shown that the recommended songs are close to the listener's preference with 76% accuracy (with respect to a listener's preference) and 80% novelty (the degree of a listener's *unfamiliarity* with the song). Further improvements over the existing algorithm are underway to increase its accuracy and novelty.

Image and Vision Lab 2013.09 – present

Interactive Multimedia

- Advisor: Professor Yi-Ping Hung
- Developing methods to further improve the precision of gaze tracking by 30-40% (over the current 10%)

Mind Map Fall 2013

- Advisor: Professor Mike Y. Chen
- An iOS app (to serve as a product prototype) by which participants can record and organize their thoughts or flow of minds during brainstorming
- Has a drawing function that is distinct from general mind map
- Learned the basic knowledge on human-computer interaction and how to create a mobile phone app

Simulation of Low-Density Parity-Check (LDPC) Code Spring 2013

- Advisor: Professor Ping-Cheng Yeh
- Simulated the LDPC code used in 802.11n by encoding incoming signals by multiplication with a large-scale sparse matrix
- Results have shown that the code can reduce the error rate of the original BPSK code by almost 100%.

Functionally Reduced And-Inverter Graph (FRAIG) Fall 2012

- Advisor: Professor Chung-Yang Huang
- Wrote a C/C++ program to parse digital circuits described in the AIGER format
- Provided optimization functions to reduce the circuit size and simulation time by finding functionally equivalent candidate (FEC) pairs
- Learned how to model, optimize, and simulate digital circuits to verify their correctness in short time

WORK EXPERIENCE

Developer Intern, Cardinal Blue, Taipei, Taiwan 2013.09 – present

- Analyzed users' feedback of PicCollage, a photo app with over 50 million downloads
- Developed a new statistical algorithm to interpret the data of users' behavior
- Making suggestions to some specific functions to further improve users' preference to the app

SELECTED COURSES

- Engineering Mathematics – Linear Algebra (A+), Complex Variable (A+)
- Advanced Statistics (I) (A+), Advanced Statistics (II) (A+), Algorithm (A+)
- Data Structure and Programming (A+), Introduction to Computer Networks (A)
- Mobile Phone Programming (A+)

EXTRACURRICULAR ACTIVITIES

Electrical Engineering Camp 2011.07, 2012.07, 2013.07

- Instructor and Activity Planner
- Designed 6-day activities for 100+ high school students attending the EE Camp; gave these high school students basic lectures on EE and led the 6-day activities

Orientation Camp of Department of Electrical Engineering 2011.08, 2012.08

- Instructor and Fundraiser

  Led and Introduced EE freshmen to the new NTU study environment; solicited corporate sponsorship

TESTS

- TOEFL: 97/120 (Reading: 30; Listening: 26; Writing: 21; Speaking: 20)
- GRE: Verbal 150/170; Quantitative 170/170; Analytical Writing 3.0/6.0

SKILLS

- Programming Proficiencies: C/C++, Matlab, Python, Objective-C, Ruby on Rails
- Tools: Github, Heroku, Last.fm API
- Languages: Mandarin Chinese (fluent), Taiwanese (fluent), German (beginner)

HOBBIES

- Piano (level 6): Started to play piano at age four and attended government sponsored music lessons in elementary school for professional training; won Honorable Mention in Kaohsiung City Music Competition in 2003 (*video*)
- French Horn: Started to play French horn at age nine and became leader of the French horn team in the Kaohsiung Municipal Yan-Cheng Elementary School Orchestra which won First Place in Kaohsiung City Music Competition in 2003 and 2004 (*video*); won many individual Awards on French Horn Solo, including Third Prize and First Prize in Taiwan Music Competition – Kaohsiung in 2002 and 2003, respectively, and First Prize in Kaohsiung City Music Competition in 2003 (*video*)
- Choir: Selected to join Century Youth-Children's Choir–one of the most famous youth choirs in Taiwan often invited to travel around the world to perform shows for particular events–from 2004 to 2008; performed at Kaohsiung City Annual Concert & Show in Kaohsiung Cultural Center each year and the Music Festival in Spain in 2008 (*video*); joins National Taiwan University EE Choir in the senior year and had a performance on NTUEE Night in December, 2013