

Po-Cheng (Johnny) Pan

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RESEARCH INTERESTS

Computer Vision, Image Processing and Machine Learning

EDUCATION

National Taiwan University, Taipei, Taiwan (R.O.C.)

9/2011-6/2015

- Bachelor of Science in Electrical Engineering
- Overall GPA: 4.12/4.30
- Rank: 12/201 (top 6%)
- Selected Courses (*: graduate-level courses)
 - The Design and Analysis of Algorithms*, Digital Visual Effects*, Multimedia Signal Processing*, Machine Learning and Having it Deep and Structured*, Data Structure and Programming

PUBLICATION

Journal Paper

- Hui-Tang Chang, **Po-Cheng Pan**, Yu-Chiang Frank Wang and Ming Syan Chen, "Recomposition and Retargeting of Photographic Images," submitted to 2015 IEEE Transactions on Multimedia

Conference Paper

- Hui-Tang Chang, **Po-Cheng Pan**, Yu-Chiang Frank Wang and Ming Syan Chen, "R2P: Recomposition and Retargeting of Photographic Images," ACM Multimedia 2015

HONORS & AWARDS

Presidential Award, National Taiwan University

- **Three times:** Fall 2011(6/185), Fall 2012(10/208), Spring 2015(1/225)
- Awarded to students ranked top 5% in their departments

RESEARCH EXPERIENCE

Multimedia and Machine Learning Lab

3/2014-6/2015

Advisor: Dr. Yu-Chiang Frank Wang (Academia Sinica, Taiwan)

- **R2P: Recomposition and Retargeting of Photographic Images**
 - Proposed a novel approach to enhance images' aesthetic by automatically altering the composition and aspect ratio of the input image according to a reference image
 - No need to require pre-collected data or predetermined aesthetic rule like prior works
 - Published on ACM Multimedia Conference 2015
- **Image Emotion Classification**
 - Built an image emotion classifier by combining Gaussian Mixture Model with Bag of Words, which achieved ~50% accuracy on IAPS datasets

Media IC and System Lab

9/2013-7/2015

Advisor: Prof. Shao-Yi Chien (NTU EE)

- **High Dynamic Range Image (HDR) Construction with Region Covariance**
 - Proposed a patch-based HDR construction method that integrates alignment and reconstruction jointly
- **Local Contrast Preserving Decolorization with Saliency Map**
 - Proposed a novel grayscale transformation approach that can enhance the original luminance contrast, especially the salient parts of images
 - Increased color contrast preserve ratio by 5% over other methods

Networking and Multimedia Lab

9/2014-1/2015

Advisor: Prof. Tsung Nang Lin (NTU EE)

- **Mac Remoter**
 - Developed an App on iPad that allows users to remotely control the MacBook as a Magic Trackpad
 - Used the gyroscope inside iPad to turn it into a steering wheel for driving simulation games

Communication Systems Lab

3/2014-6/2014

Advisor: Prof. Ping-Cheng Yeh (NTU EE)

- **Wireless Audio Transmission Project: Pitch Shifter**
 - Implemented a phase vocoder in Matlab for shifting the pitch of voice in real-time
 - Built communication between two radio wave transceivers to transmit audio signal wirelessly by LabVIEW

SELECTED PROJECTS

Automatic Speech Recognition System

3/2015-7/2015

- Implemented a deep neural network and N-best Viterbi algorithm to get n-best phone sequences and used Weighted Finite State Machine to decode them into word sequences
- Built a Recurrent Neural Network Language Model to rescore all possible word sequences to get the best one

Special Effect Film

3/2015-7/2015

- Created 3D models by Blender 3D and used match moving to insert them into live-action footage

Query-by-Singing/Humming System Based on Dynamic Programming

9/2014-1/2015

- Implemented a system based on pitch tracking and dynamic time warping that allows users to find a song from music databases by singing or humming a short snippet of the song

Functionally Reduced And-Inverter Graph

9/2013-1/2014

- Implemented optimization techniques to reduce the digital circuit size and simulation time by finding functionally equivalent candidate (FEC) pairs in C++

WORK EXPERIENCE

Second Lieutenant of Coast Guard Administration, Taiwan

8/2015-Present

- Ensured the security of Taiwan's coasts and protected oceanic resources

Research Assistant, Research Center for IT Innovation, Academia Sinica

3/2014-6/2015

- Participated in research projects on Photographic Aesthetics and Image Emotion Classification

EXTRACURRICULAR ACTIVITIES

Member of NTUEE Basketball Team

9/2011-6/2015

Activity Planner of NTUEE Camp

7/2012&7/2013

- Planned a 6-day event for 100+ high school students and introduced electrical engineering to them through various activities

SKILLS & LANGUAGES

- Spoken Language: Chinese (native), English (fluent), Japanese (beginner)
- Programming Languages: C/C++, Java, Matlab, Objective-C
- Tools: Visual Studio, LaTeX, PSpice, XCode, Blender 3D, CUDA, Kaldi