

Haotian Sun

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EDUCATION

Tianjin University, Tianjin, China

Sep 2014 - Jun 2018

B.E. in Electronic Engineering, Overall GPA: 3.79/4.0 | 89.6/100, Rank: Top 10%

Core Courses: Calculus, Linear Algebra, Probability and Statistics, Integral Transformation, Complex Function, C++ Programming, Signal and System, Microcomputer Principle, Digital Image Processing, Pattern Recognition

Nanyang Technological University, Singapore

Aug 2016 - Dec 2016

Exchange Student at the School of Electrical and Electronic Engineering

Core Courses: Data Structure and Algorithms (A+) and Electromagnetics (A+)

PUBLICATION

Haotian Sun, Xin Guan, Jing Xian *et al.*, *Automatic Fingering Annotation for Piano Score via HMM with Hybrid States of Single Note and Chord*, accepted by Journal of Fudan University(Natural Science).

RESEARCH EXPERIENCES

The Automatic Annotation of Piano Fingering Based on HMM

Apr 2017 - Sep 2017

Undergraduate Research Assistant, Tianjin University

- Researched several mainstream methods in automatic decision of piano fingering, including dynamic programming and Hidden Markov Model.
- Developed a method to automatically annotate the fingering for both hands and applied it to both single note and chords.
- Built and trained a model based on the hidden Markov model, and implemented Viterbi algorithm with the model parameters to create the most appropriate piano fingering sequence for piano players to refer to.
- Used 5-fold cross validation and obtained the average accuracy of 57.84%.

The Object Classification and Detection System of the Milk Tea in the Market

Mar 2017 - Oct 2017

Undergraduate Research Assistant, Tianjin University

- Researched state-of-the-art methods in object detection and recognition and compared the capacity in processing of fine-grained objects of them.
- Implemented the model Faster-RCNN on TensorFlow and optimized it by introducing some tricks.
- Trained the model and tested it on manually labeled milk tea dataset, achieving the F-score up to 60.35.
- Applied the whole system to the market, helping the market manage products efficiently with the economic benefit up to one hundred thousand RMB.

Multimedia Recommendation System Based on Mobile Device

Apr 2016 - Apr 2017

Group Leader, Tianjin University

- Led a 4-student group to build a recommendation system, which would search the matching image to a given photo and was used for providing the introduction information of the paintings in a gallery.
- Determined the outline of the project, and organized the group to complete research on the mainstream image hashing algorithms and target extraction methods.
- Implemented the algorithms to extract the target region from the background of a image taken by the camera and developed an Android App to realize that function.
- Investigated several camera Apps and absorbed the advantages of them into my application as the UX and UI designer.

SELECTED COURSE PROJECTS

The Mechanical Arm to Automatically Sort the Objects with Different Color

Aug 2017 - Sep 2017

Group Leader, Tianjin University

- Implemented algorithm to recognize color and to sort objects in C code, cross-compiling it by a Mips-gcc compiler.
- Assembled the units of a mechanical arm, connected it to a microcontroller, and wrote the C code to let the General Purpose Input Output of the microcontroller output the Pulse Width Modulation wave control the movement of the mechanical arm.
- Used bottle caps in different colors to test the mechanical arm device and modified the codes to make the movement of the arm as precise as possible.

The Sine Wave Digital Signal Generator

Apr 2017 - Jul 2017

Group Leader, Tianjin University

- Based on a C8051 microcontroller, wrote the C code to generate the digital sampling signal and control the button on the development board that sets the frequency and amplitude of the signal.
- Designed a filter and amplified circuit and soldered the circuit board, connecting the microcontroller to the circuit.
- Tested the error, and altered parameters of components to optimize the whole system to output the sine wave signal precisely.

AWARDS AND SCHOLARSHIPS

- Scholarship for Outstanding Students of Tianjin University(3 / 30) Sep 2016
- Scholarship for Outstanding Students Cadres of Tianjin University(3 / 30) Sep 2015

ACTIVITIES

NBA 5v5 Campus Competition

Jul 2017 - Aug 2017

Captain, Beijing, China

- Led the basketball team of the school as the captain, winning the championship in the Tianjin region and 3rd place in Northern China.

World Economic Forum - Annual Meeting of the New Champions

Jun 2016

Volunteer, Tianjin, China

- Helped dispose the assembly hall and guided participants for the meeting.

Enactus in Tianjin University

Sep 2014 - Jan 2015

Media Operation, Tianjin, China

- Responsible for operation and maintenance of the official media account of the association.

SKILLS

Technical: C, C++, MATLAB, Java, Python, ChucK, LaTeX, Arduino, TensorFlow, Keras, OpenCV, Shell Script

GRE: Quantitative: 170 (97%) Verbal: 158 (80%) Analytical Writing: 4.5 (82%)

TOEFL:109 (Speaking: 23)