

Chi-An (Kevin) Wei

Skype: wei.kevin2

kevinwei3@gmail.com | +886-932-103-024

OBJECTIVE:

RESEARCH INTERESTS

- Natural Language Processing & Artificial Intelligence
- Data Mining & Knowledge Discovering
- Intelligent Control & Integrated/Embedded System
- Cloud Computing & Virtualization

WORK EXPERIENCE

PHISON Electronics Corp., Taiwan, R. O. China

SSD Firmware Engineer

Aug 2020 ~ Current

- Customize consumer and enterprise SSD firmware based on customer's requests.

Technical Mission of the R. O. C. to the Republic of Honduras, International Cooperation and Development Fund, Ministry of Foreign Affairs, Taiwan, R. O. China

Assistant Technician

Sep 2019 ~ Jul 2020

Program: Taiwan Youth Overseas Service

- Assist project manager of the *Expanding Avocado Seedling Production Project* in technical mission with Taiwanese smart agriculture company to develop smart agriculture technologies in Honduras.
- Assist officers in technical mission and the Embassy of the R. O. C. about information questions as an informatics specialist serviceman.

PIXNET Intern Program at NCKU, PIXNET Digital Media Corporation, Taiwan, R. O. China

Intern

Jul 2019 ~ Sep 2019

Task Name: Article Recommendation through Graph Built from User's Log

Advisor: Cyrus Chiu

- Survey papers related to graph-based recommendation systems such as DeepWalk, Node2vec, and Alibaba's side information approach.
- Design workflows and implement algorithms to evaluate recommendation system based on graph.
- Proposed an offline evaluation using browsing behavior to assess models.

Teacher Assistance, Department of Information and Telecommunications Engineering, Ming Chuan University, Taiwan, R. O. China

Digital System & Application of Digital System

Sep 2014 ~ Jan 2015

Microcontroller System & Application of Microcontroller System

Feb 2015 ~ Jun 2015

Data Structure

Sep 2015 ~ Jan 2016

Signal and Systems

Feb 2016 ~ Jun 2016

- Assisted over 80 students.

EDUCATION

KTH Royal Institute of Technology, Stockholm, Sweden

Jan 2019 ~ Jun 2019

One-semester Exchange Student

- One-semester exchange student nominated by National Cheng Kung University, Taiwan, R. O. China

National Cheng Kung University, Taiwan, R. O. China

Jun 2016 ~ Jul 2019

Master of Science in Computer Science and Information Engineering

- Master Thesis: *Identifying Argument Components in Online Debates through Directed Graph and Argument-oriented Summarization*, advised by Hung-Yu Kao
- Overall GPA: 3.96/4.3

Ming Chuan University, Taiwan, R. O. China

Sep 2012 ~ Jun 2016

Bachelor of Science in Information and Telecommunications Engineering

- Graduation Thesis: *Strategy of Team Cooperation on Middle-Sized Soccer Robot in Competition*, advised by Shu-Yin Chiang
- Overall GPA: 3.95/4.0 (Major GPA: 4.0/4.0)
- Overall ranked 1st in class and department

JOURNAL PAPERS

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- Shu-Yin Chiang, Chi-An Wei & Ching-Yi Chen. (2016). Real-Time Self-Localization of a Mobile Robot by Vision and Motion System. *International Journal of Fuzzy Systems*, 18(6), pp 999–1007. doi: 10.1007/s40815-016-0220-y

CONFERENCE PAPERS

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- Shu-Yin Chiang, Chi-An Wei and Ching-Yi Chen. (2015). *Real-time Self-Localization of a Mobile Robot by Vision and Motion System*. 2015 International Conference on Fuzzy Theory and Its Applications (iFUZZY), Yilan, Taiwan, Nov. 2015. Yilan, Taiwan: IEEE.
 - Chi-An Wei and Hung-Yu Kao. (2019). *Identifying Argument Components in Online Debates through Directed Graph and Argument-oriented Summarization*. Proceedings of the 31th Conference on Computational Linguistics and Speech Processing (ROCLING 2019), New Taipei City, Taiwan, Oct. 2019. Taipei, Taiwan: ACLCLP.

RESEARCH EXPERIENCE

PIXNET Intern Program at NCKU, PIXNET Digital Media Corporation, Taiwan, R. O. China*Intern*

Jul 2019 ~ Sep 2019

Task Name: Article Recommendation through Graph Built from User's Log

Advisor: Cyrus Chiu

- Achieved article recommendation based on a graph built from browsing behavior, which been used to analyze the relationship between articles.
- Proposed an offline evaluation method which used to assess the performance of graph and Word2vec.
- Training data can be reduced and remain the same performance as large and sparse one after applying graph as the data structure.
- Recommendation performance can achieve acceptable result since graph can raise the interaction between different browsing behaviors.
- **Technique: DeepWalk, Node2vec, Word2vec**

Application and Service Development about IoT of Anti-disease, Ministry of Science and Technology

(National Science Council), Taiwan, R. O. China

Project Member

Sep 2018 ~ Aug 2019

Project Name: Dialogue and Natural Conversation System of Medical and Public Health Integration Service about Artificial Intelligence through Cloud

Advisor: Hung-Yu Kao

- By using Line API and the cooperation of the department of medical to build a chatbot that provides free conversation and inquiry for users.
- Using BERT, CRF, and NER to identify symptom by their description.
- **Technique: Line API, BERT, CRF, NER**

Research Assignment, CTCI Corporation, Taiwan, R. O. China*Project Member (Algorithm Consultant)*

Nov 2018 ~ Dec 2018

Project Name: Proof of Concept for Automatically Extract Specifications from Datasheets

Advisor: Hung-Yu Kao

- Providing the proof of concept for automatically extract required specification items from the datasheet.
- Proposed a workflow for highlighting the paragraph which contains the keywords related to a given specification requirement.

Research Assignment, Industrial Economics and Knowledge Center, Industrial Technology Research

Institute, Taiwan, R. O. China

Project Member (Algorithm Co-developer)

Aug 2018 ~ Nov 2018

Project Name: Text Mining Assisting Tools for Observation of Forward-looking Technology

Advisor: Hung-Yu Kao

- Build a system for finding paragraphs related to a given query and linking the research topic it belongs through the result of learning labeled keywords.
- Finding extra keywords for a specific topic by leveraging a character-level vector model and a small set of labeled keywords under research topics.
- **Technique: Word2vec, fastText**

Master Thesis, Intelligent Knowledge Management Laboratory, National Cheng Kung University, Taiwan, R. O. China*Author*

Sep 2017 ~ Jul 2018

Thesis Title: Identifying Argument Components in Online Debates through Directed Graph and Argument-oriented Summarization

Advisor: Hung-Yu Kao

- Aim to solve the argument component extraction task which highlights the argumentative sentences for further applications.
- Improved 8% on the argument component extraction task by building an argument-oriented directed graph which represents each argumentative debate article for PageRank.
- Proposed an argumentative sentence representation through the combination of word vector and the subjectivity strength of word via expanding a subjectivity lexicon.
- Leveraged and discussed the methods aim to enrich the semantic of debate article via the extra corpus.
- **Technique: TextRank, Directed Graph, PageRank, Lexicon Expansion, Argument Representation, Dense NN**

Fundamental Research Project of Industrial Engineering, Ministry of Science and Technology (National Science Council), Taiwan, R. O. China

Hardware Co-developer (Undercover Project Member)

Jan 2018 ~ Feb 2018

Project Name: Development and Study of Gesture Feedback and Hearing Feedback in Touch Devices for the Elderly (I)

Project ID: MOST106-2221-E006-156

Advisor: Shuo-Fang Liu

- Co-develop a bluetooth device which contains quad vibration motors to measure accurate feedback from the experiment target.
- Enhance features of the customized quad vibration motors device by redesign its firmware and relevant software from scratch.
- Provide the feature to activate quad vibration motors in any order, duration (in ms), delay (in ms), and power.
- By customize an optimal protocol between firmware and software, the testing equipment can perform much flexible operation than before.
- **Technique: Bluetooth, Arduino, Visual C++**

Big Data Technologies and Tools Research Project of Government, Ministry of Science and Technology (National Science Council), Taiwan, R. O. China

Project Manager

Dec 2016 ~ Jul 2017

Project Name: Constructing a mixed and streaming data analysis and visualize environment on Apache

Spark: Constructing a text processing environment on Apache Spark

Advisor: Hung-Yu Kao

- Achieved processing Chinese corpus to generate sentiment lexicon.
- Developed a Word2vec and Chinese dictionary of MOE (Ministry of Education, Taiwan, R. O. China) based wordnet of Chinese words.
- Featuring 4 times faster on generating Chinese sentiment lexicon between local and clustered machines.
- Constructed the program structure, dispatch jobs to individual project members.
- **Technique: WordNet, Word2vec, Java, Spark, NLP for Chinese**

Course Project, Multilingual and Crosslingual Information System, National Cheng Kung University, Taiwan, R. O. China

Project Member (Algorithm Co-developer)

May 2017 ~ Jun 2017

Project Name: Chatbot for User Poetry Scoring using Classical Chinese Poetry

Advisor: Wen-Hsiang Lu and Chung-Ping Young

- Using classical Chinese poetry to develop a chatbot which learned from it to score poetry written by a user and predict which classical Chinese poetry author of existing poetry does the user behaved similarly.
- Training a model to predict which similar classical Chinese poetry author is similar to a user by poetry written by a user and LSTM model.
- Implement the feature to analysis and show tone pattern and rhyme.
- **Technique: LSTM**

Quora Question Pairs, Featured Prediction Competition, Kaggle*Own Research*

Apr 2017 ~ May 2017

- Predict whether the two question statements on Quora are similar or not.
- Construct sentence representation of the question pair by basic statistics and analysis for XGBoost to learn and predict the similarity between them.
- Training advanced model by leveraging LSTM network to achieve better prediction performance.
- Final ranked in the top 45%
- **Technique: XGBoost, Feature Engineering, LSTM**

ITS Academic Research Project, Far Eastern Electronic Toll Collection Company (FETC), Taiwan, R. O. China*Project Member (WebUI Developer) / Project*

Jan 2016 ~ Apr 2017

Manager (Since Jan 2017)

Project Name: Big Data Analysis: The Case of FETC Device Monitoring Data

Advisor: Hung-Yu Kao

- Achieved a system that predicts failure of freeway toll collection devices via analysis its logs.
- Designed a web interface with animation enabled for the user to interact with the backend programs.
- Self-learned basic HTML, JavaScript, D3.js and PHP syntax to achieve the task requirements.
- **Technique: HTML, JavaScript, D3.js, Python, Java, SQL, Data Analysis**

WSDM Cup 2017, ACM International Conference on Web Search and Data Mining*Team Member (Data Analyst)*

Sep 2016 ~ Dec 2016

Task Name: Vandalism Detection

Advisor: Hung-Yu Kao

- Achieved vandalism detection on Wikipedia pages via its revision data.
- Constructed and initiated the goal that targets vandalism detection via Wikipedia's revision data.
- Decoded fields and meanings from Wikipedia's revision file, constructed preprocessing tools to discover features from the dataset.
- **Technique: Data Analysis, Python**

Big Data Analysis for Semiconductor Manufacturing, Taiwan Semiconductor Manufacturing Company (TSMC), Taiwan, R. O. China*Team Leader*

Sep 2016 ~ Dec 2016

Advisor: Hung-Yu Kao

- Achieved semiconductor yield prediction via TSMC manufacturing data.
- Constructed the materials and background knowledge to achieve the task.
- Developed a feature extraction and analysis workflow for TSMC's factoring dataset.
- **Technique: Data Analysis, Python, Traditional ML**

Research Assignment, Industrial Technology Research Institute, Taiwan, R. O. China

Project Member (Data Analyst)

Sep 2016 ~ Nov 2016

Project Name: Predict Failing Car Component through Customer Service Record in Automobile Manufactory

Advisor: Hung-Yu Kao

- Predict which component is possible to fail through automobile customer service records and records from repair factory.
- Construct a bag-of-words vector model to represent customer feedback records based on underlying statistics and analysis of natural language processing.
- Training different machine learning methods and comparing the pros and cons between these methods through the bag-of-words vector model to propose the proof of content for the task.
- **Technique: Data Analysis, Python, Traditional ML**

Task Assignment, NCKU E-motor Technology Research Center, Higher Education Sprout Project, Ministry of Education, Taiwan, R. O. China

Project Member (WebUI Developer)

Sep 2016 ~ Nov 2016

Task Name: NCKU E-motor Technology Research Center Website Development

Advisor: Hung-Yu Kao

- Design a website to promote and present the information and related technology of NCKU E-motor technology research center.
- Self-learned HTML and PHP syntax to implement the login and sitemap feature.
- **Technique: HTML, PHP**

FIRA Competition Research Project, Robotics Research Center, Ming Chuan University, Taiwan, R. O. China

Project Leader

Nov 2014 ~ Jun 2016

Project Name: Middle-Size Soccer Robot

Advisor: Shu-Yin Chiang

- Lead research team to developed tons of new features and improvements on the middle-size soccer robot.
- Developed a robot team strategy system that supports control up to 5 robots with each has individual behavior.
- Constructed a robot control framework and system that can flexibly modify strategies and robot's functions in a structured way.
- Developed a localization method that based on motion system which precision up to 1 cm.
- Developed an FPGA based four wheels omni-platform motion controller.
- **Technique: Omni-mirror Image Processing, Visual C++, VHDL, Protel, Hardware Engineering**

College Student Research Scholarship for Excellent Projects, Ministry of Science and Technology

(National Science Council), Taiwan, R. O. China

Project Leader

Jul 2015 ~ Feb 2016

Project Name: Predicting Target Movement on Middle-Size Soccer Robot

Project ID: MOST 104-2815-C-130-121-E

Advisor: Shu-Yin Chiang

- Featuring a movement prediction of soccer ball through its history positions.
- Achieved higher goalkeeper defense precision after applied the result.
- Constructed a localization system that combines the pros of motion and image localization method.
- **Technique: Visual C++**

College Student Research Project, Ming Chuan University, Taiwan, R. O. China*Project Leader*

Sep 2013 ~ Jan 2016

Project Name: Strategy of Team Cooperation on Middle-Sized Soccer Robot in Competition

Advisor: Shu-Yin Chiang

- Lead project members made a cooperation environment that grouping robots as a team.
- Lead project members to develop a solenoid kicker mechanism that uses electronic to kick the soccer ball.
- Constructed a robot cooperation strategy that controls up to 5 robots.
- Designed more efficient circuit board and power architecture that deliver power from batteries to motors.
- **Technique: Visual C++**

VOLUNTEER EXPERIENCE**Programing Training Program**, Robotics Research Center, Ming Chuan University*Speaker*

Mar 2014 ~ Dec 2015

- Teaching fundamental knowledge used for developing middle-size robot.
- Teaching concepts of C++, image processing, strategies, and middle-size robot hardware structure.
- Self-edit lecture materials and homework for members to review and practice.

SCHOLARSHIP**De-Ming Scholarship for Model Students**, Ming Chuan University, Taiwan, R. O. China*5 times*

Feb 2013 ~ Nov 2015

- Academic Excellence Award for top 1 in department.
- Acquired in Nov 2015, Feb 2015, Nov 2014, Nov 2013 and Feb 2013, respectively.

Chong-Bang Scholarship for Excellent Students, Ming Chuan University, Taiwan, R. O. China*3 times*

Nov 2013 ~ Nov 2015

- Academic Excellence Award for top 31 students in school.
- Acquired in Nov 2015, Nov 2014 and Nov 2013, respectively.

Ying-Zhao Scholarship for Excellent Students, Ming Chuan University, Taiwan, R. O. China*1 time*

Feb 2014

- Academic Excellence Award for top 2 in department.

AWARDS

2015 The Federation of International Robot-soccer Association (FIRA) - Robosot, Daejeon, Korea

1 Gold medal, 3 Silver medals

Aug 2015

- Awards acquired in leading team participate “Localization Challenge”, “Open Creative Challenge”, “Avoidance Challenge” and “Soccer Competition”, respectively.

2015 International Intelligent Humanoid Competition, Kaohsiung, Taiwan, R. O. China

Gold medal

Mar 2015

- Award acquired in participate “Small-Size Humanoid Robot - Basketball Challenge”.

2014 The Federation of International Robot-soccer Association (FIRA) Beijing - Robosot, China

1 Gold medal, 3 Silver medals

Nov 2014

- Awards acquired in leading team participate “Avoidance Challenge”, “Soccer Competition”, “Vision Challenge” and “Open Creative Challenge”, respectively.

SKILLS

- Operating System: Windows, Windows Server, Linux, macOS
- Programming Language: C, C++, Python, C#, Java, LabVIEW, MATLAB
- Integrated Development Environment: Dev-C++, Visual Studio, LabVIEW, Altera Quartus, Eclipse
- Science Computing: MATLAB, Mathcad, GeoGebra
- Database Management System: MySQL, MongoDB, Microsoft SQL Server, PostgreSQL
- Version Control: Subversion, Git, Team Foundation Version Control
- Office Suite: Microsoft Office, iWork, OpenOffice
- Development Board: Altera DE0, National Instruments myRIO, Arduino
- Hardware Description Language: VHDL
- Computer-aided Design: Protel, Altium Designer, LDK CircuitPro, SolidWorks
- Others: PCB Layout, PCB Drilling Machine, Hardware Design & Build