

TZU-HSIN YANG

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Research Interests

Causal Inference, Interpretable Machine Learning, Reinforcement Learning, Game Theory in AI, Robotics

Education

National Cheng Kung University, Tainan, Taiwan

Jul. 2018

M.Sc in Computer and Communication Engineering, Supervised by Jen-Wei Huang

Overall GPA: 4/4.3

Thesis: DNA: General Deterministic Network Adaptive Framework for Multi-Round Multi-Party Influence Maximization.

National Chiao Tung University, Hsinchu, Taiwan

Jun. 2016

B.Sc in Electrical and Computer Engineering

Overall GPA: 3.1/4.3

Work Experience

Data Scientist, KKBOX

Jun. 2019 – Present

- User Behavior Analysis
 - Churn Prediction: *User behavior insight discovery / Churn user prediction with boosting methods*
 - Subscription Prediction: *Time series analysis with ARIMA / Modeling user journeys via semantic embeddings*
- Music Recommendation system
 - Seed songs selection: *Personalized song prediction*
- Public Opinion System
 - Crawler Pipeline: *CI/CD pipeline using GitLab and Jenkins*
 - NER Model: *Using CkipTagger library for named entity recognition*

Deep Learning Scientist and Bioinformatician, Insilico Medicine

Aug. 2018 – May. 2019

- Molecules Generation: *Development of generative models to generate potential valid molecules*
- MRI Brain Image Analysis: *Development of Unet model to segment images*

iOS developer, National Cheng Kung University, Main Library

Aug. 2017 – Jun. 2018

- Development of a mobile library app

Teaching Assistant, National Cheng Kung University, Department of Electrical Engineering

Sep. 2016 – Jun. 2017

- Teaching assistant for CS101 (Introduction to Computers) (C++)

Publications

DNA: General Deterministic Network Adaptive Framework for Multi-Round Multi-Party Influence

Maximization., accepted paper in The 5th IEEE International Conference on Data Science and Advanced Analytics Oct. 2018

- **First author:** generate node-selection policies to maximize influence on social network in the long term with graph mining and reinforcement learning methods

Invited Talk

IEEE International Conference on Data Science and Advanced Analytics (DSAA), [\[Slide\]](#)

Oct. 2018

Projects

COVID19 Global Forecasting, *Kaggle Competition mainly held by The White House OSTP* Mar. 2020

- Forecast confirmed cases and fatalities between March 25 and April 22 by region
 - Using vector autoregressive moving average model (VARIMA) to predict regional values simultaneously
 - Top 13% in the competition

MolHack: Apply deep learning to speedup drug validation, *Kaggle Competition held by Insilico Medicine* Apr. 2018 – May. 2018

- Given ligand-pharmacophore pairs, predict the stability of the complex
 - Applying a regressor based on deep neural network on well-preprocessed data
 - Won 2nd place in the competition

KKBOX Data Game: TV Show Recommendation, *Kaggle Competition held by KKBOX* Jun. 2017

- Design an algorithm to predict what users will watch next
 - Exploratory data analysis / Linear regression

Social Relationship inference from Urban Footprint, *National Cheng Kung University* Sep. 2016 – Jan. 2017

- Design an algorithm to predict whether people are friends on social media with users' check-in data
 - User and behavior similarity estimation

Mining Geo-Social Services for Optimal Location Placement, *National Cheng Kung University* Sep. 2016 – Jan. 2017

- Design an algorithm to rank top 20 locations for hotels and theaters placement
 - Hill climbing optimization with NDCG ranking score

Energy Consumption Analysis and Prediction for Household Planning, *National Cheng Kung University* Sep. 2016 – Jan. 2017

- Design an algorithm to predict a household electricity consumption
 - Feature selection with random forest and linear regression modeling

Programming Languages

PYTHON, C++, R, SCALA, SQL, HTML, CSS, JAVASCRIPT, MATLAB, SWIFT, MONGODB

Certificate

TOEFL iBT Scores: 96 (R28, L20, S23, W25)

GRE Scores: 311 (V144, Q167, AWA3.0)

Microsoft Certified: Azure Fundamentals

Relevant Coursework

University courses: Linear Algebra, Differential Equation, Probability, Intelligent Data Analysis

Online courses: ML, DS and DL with Python (Udemy), Statistics with R Capstone (Coursera)

References

Research Advisor **Jen-Wei Huang, Ph.D.**,
Professor, National Cheng Kung University, Taiwan
Email: jwhuang@mail.ncku.edu.tw

Course Instructor **Hsun-Ping Hsieh, Ph.D.**,
Professor, National Cheng Kung University, Taiwan
Email: hphsieh@amazon.com

Research Mentor **Emmanuel Salawu, Ph.D.**,
Research Scientist, Amazon Web Services, Washington, D.C., USA
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