# Yi-Wei **Chen**

Ph.D. Candidate

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## Research Focus

Defect detection, hyperparameter optimization, early stopping, neural architecture search, object detection, video generation, distributed optimization, label noise, Bayesian optimization, distributed system, embedded system.

## Work Experience

### Data Analytics at Texas A&M (DATA) Lab
*College Station, U.S.A.*
RESEARCH ASSISTANT
*Aug. 2018 -*
- Reduced 4× network parameters of auto-encoders for defection detection by evolutionary search.
- Deployed tiny YOLOv1 (432KB) to MAXIM78000 edge device with Camera input and LCD output.
- Invented a model parallelism for neural architecture search with 1.18× speedup.
- Improved 3% accuracy under high-level symmetric label noise by a new neural architecture search.
- Wrote a survey of Automated Machine Learning, including automated feature engineering, hyperparameter tuning, and neural architecture search.

### Amazon.com
*Seattle, U.S.A.*
APPLIED SCIENTIST INTERN
*Sep. 2021 - Jan. 2022*
- Built an auto video generation framework to animate image highlights for hundreds of miscellaneous product categories.
- Established the image filter using ResNet to exclude text-intensive images.
- Designed text and geometric object detectors using Amazon Rekognition and DeepLab to capture headlines, descriptions, and rectangular subjects.
- Utilized Navier-Stoker inpainter and OpenShot animator to animate captured subjects in product images.
- Accelerated the video generation from 30 minutes (human) to 3 minutes (our framework), getting 10× speedup.

### Microsoft Corporation
*Redmond, U.S.A.*
RESEARCH INTERN
*May. 2021 - Aug. 2021*
- Proposed adaptive constraint early stopping (ACE) algorithm to find optimal hyperparameters under specific constraints.
- Modeled the expected evaluation cost to tailor the constraint interval to different constraint cost.
- Developed a new early stopping by using constraint violations.
- Improved feasible AUC of LGBM model from 0.801 to 0.852, getting 6% improvement.

### Trend Micro
*Taipei, Taiwan*
SOFTWARE ENGINEER
*Feb. 2016 - Aug. 2018*
- Customized rules in YARA format for scanning suspicious objects
- Interacted with Microsoft Active Directory (AD) via LDAPv3 protocol, including password authentication, searching AD users and groups, and querying parent groups of an AD user and total members of an AD group.
- Fulfilled secure connection with CheckPoint Firewalls via SSL certificate and CheckPoint SDK OPSEC.
- Integrated Palo Alto Panorama and virtual systems of Palo Alto Firewalls via PAN XAPI.

## Education

### Texas A&M University
*College Station, U.S.A.*
PH.D. CANDIDATE IN COMPUTER SCIENCE AND ENGINEERING
*Aug. 2018 -*
- GPA: 4.0/4.0

### National Taiwan University (NTU)
*Taipei, Taiwan*
M.S. IN COMPUTER SCIENCE AND INFORMATION ENGINEERING
*Feb. 2014 - Sep. 2015*
- GPA: 4.04/4.30
- Thesis: Virtual Hadoop: MapReduce over Docker Containers with an Auto-Scaling Mechanism for Heterogeneous Environments

### National Taiwan University (NTU)
*Taipei, Taiwan*
B.S. IN ELECTRICAL ENGINEERING
*Sep. 2008 - Jun. 2012*
- GPA: 3.79/4.00 (84.25/100)

# Publications

JOURNAL PAPER

- **Yi-Wei Chen**, Qingquan Song, Xia Hu, "Techniques for Automated Machine Learning", ACM SIGKDD Explorations Newsletter, Dec. 2021
- **Yi-Wei Chen**, Qingquan Song, Xi Liu, P.S. Sastry, Xia Hu, "On Robustness of Neural Architecture Search under Label Noise", Frontiers in Big Data, Jan. 2020

CONFERENCE PAPER

- **Yi-Wei Chen**, Chi Wang, Amin Saied, Rui Zhuang, "ACE: Adaptive Constraint-aware Early Stopping in Hyperparameter Optimization", ACM SIGKDD AutoML Workshop, Washington, DC, USA, Aug. 2022
- **Yi-Wei Chen**, Shih-Hao Hung, Chia-Heng Tu, Chih Wei Yeh, "Virtual Hadoop: MapReduce over Docker Containers with an Auto-Scaling Mechanism for Heterogeneous Environments", 2016 Research in Adaptive and Convergent Systems (RACS), Odense, Denmark, Oct. 2016
- Guanchu Wang, Zaid Pervaiz Bhat, Zhimeng Jiang, **Yi-Wei Chen**, Daochen Zha, Alfredo Costilla Reyes, Afshin Niktash, Gorkem Ulkar, Erman Okman, Xuanting Cai, Xia Hu, "BED: A Real-Time Object Detection System for Edge Devices", Conference on Information and Knowledge Management (CIKM), Atlanta, Georgia, U.S.A., Oct. 2022
- Daochen Zha, Zaid Pervaiz Bhat, **Yi-Wei Chen**, Yicheng Wang, Sirui Ding, Jiaben Chen, Kwei-Herng Lai, Mohammad Qazim Bhat, Anmoll Kumar Jain, Alfredo Costilla Reyes, Na Zou, Xia Hu, "AutoVideo: An Automated Video Action Recognition System", International Joint Conference on Artificial Intelligence (ICJAI), Messe Wien, Vienna, Austria, Jul. 2022

# Technical Skills

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| **Languages** | Python, C, Bash, Java, C, C++, Ruby, HTML, PHP, Verilog, MATLAB |
| **Tools** | PyTorch, Tensorflow, HuggingFace, RAY, FLAML, AWS, Azure, Scikit-Learn, Git, Perforce, Trello, JIRA, Latex, Docker, Flask, Django, Ruby-on-Rails, Hadoop |