Chao-Yuan Wu

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Work Experience

Feb 2021-present — **Facebook AI Research (FAIR)**, Seattle, WA
Research Scientist

May 2018-Dec 2019 — **Facebook AI Research (FAIR)**, Seattle, WA
Researcher / External Research Collaborator (Sep 2018-Dec 2019)
Research Intern (May-Aug 2018)
- Mentor: Ross Girshick
- Video understanding [CVPR 2019] and efficient video model training [CVPR 2020].

Sep 2016-Dec 2017 — **Amazon**, Palo Alto, CA
Applied Scientist Intern
- Mentor: R Manmatha & Alex Smola
- Image embedding learning [ICCV 2017] and action recognition [CVPR 2018].

May-Aug 2016 — **Google**, Mountain View, CA
Intern
- Mentor: Gowtham Ramani Kumar & Amr Ahmed
- Shopping query modeling [WWW 2017].

Jan-Aug 2015 — **Netflix**, Los Gatos, CA
Research Intern
- Mentor: Chris Alvino
- Modeling navigation signals in recommender systems [RecSys 2016].

Education

2015-2021 — **The University of Texas at Austin,** Austin, TX, USA
Ph.D. in Computer Science
- Advisor: Philipp Krähenbühl

2013-2015 — **Carnegie Mellon University,** Pittsburgh, PA, USA
M.S. in Machine Learning
- Advisor: Alex Smola

2007-2012 — **National Taiwan University,** Taipei, Taiwan
B.S. in Electrical Engineering

Awards

- **Facebook Fellowship**, 2019-2021
- **NVIDIA Graduate Fellowship Finalist**, 2019-2020
- **NeurIPS Top 10% Reviewer**, 2020
- **Graduate Dean's Prestigious Fellowship Supplement Fellow**, 2019
- **CVPR Outstanding Reviewer Award**, 2019

REFEREED CONFERENCE PAPERS

18 **MeMViT: Memory-Augmented Multiscale Vision Transformer for Efficient Long-Term Video Recognition**
Chao-Yuan Wu*, Yanghao Li*, Karttikeya Mangalam, Haoqi Fan, Bo Xiong, Jitendra Malik, Christoph Feichtenhofer*
CVPR 2022 **(oral)**

17 **Improved Multiscale Vision Transformers for Classification and Detection**
Yanghao Li*, Chao-Yuan Wu*, Haoqi Fan, Karttikeya Mangalam, Bo Xiong, Jitendra Malik, Christoph Feichtenhofer*
CVPR 2022

16 **A ConvNet for the 2020s**
Zhuang Liu, Hanzi Mao, Chao-Yuan Wu, Christoph Feichtenhofer, Trevor Darrell, Saining Xie
CVPR 2022

15 **Masked Feature Prediction for Self-Supervised Visual Pre-Training**
Chen Wei*, Haoqi Fan, Saining Xie, Chao-Yuan Wu, Alan Yuille, Christoph Feichtenhofer*
CVPR 2022

14 **Reversible Vision Transformers**
Karttikeya Mangalam, Haoqi Fan, Yanghao Li, Chao-Yuan Wu, Bo Xiong, Christoph Feichtenhofer, Jitendra Malik
CVPR 2022 **(oral)**

13 **Towards Long-Form Video Understanding**
Chao-Yuan Wu, Philipp Krähenbühl
CVPR 2021

12 **Memory Optimization for Deep Networks**
Aashaka Shah, Chao-Yuan Wu, Jayashree Mohan, Vijay Chidambaram, Philipp Krähenbühl
ICLR 2021 **(spotlight)**

11 **A Multigrid Method for Efficiently Training Video Models**
Chao-Yuan Wu, Ross Girshick, Kaiming He, Christoph Feichtenhofer, Philipp Krähenbühl
CVPR 2020 **(oral)**

10 **Fashion++: Minimal Edits for Outfit Improvement**
Wei-Lin Hsiao, Isay Katsman*, Chao-Yuan Wu*, Devi Parikh, Kristen Grauman
ICCV 2019

9 **Long-Term Feature Banks for Detailed Video Understanding**
Chao-Yuan Wu, Christoph Feichtenhofer, Haoqi Fan, Kaiming He, Philipp Krähenbühl, Ross Girshick
CVPR 2019 **(oral)**

8 **Video Compression through Image Interpolation**
Chao-Yuan Wu, Nayan Singhal, Philipp Krähenbühl
ECCV 2018

7 **Compressed Video Action Recognition**
Chao-Yuan Wu, Manzil Zaheer, Hexiang Hu, R Manmatha, Alex Smola, Philipp Krähenbühl
CVPR 2018 **(spotlight)**

6 **Sampling Matters in Deep Embedding Learning**
Chao-Yuan Wu, R Manmatha, Alex Smola, Philipp Krähenbühl
ICCV 2017

5 **Doubly Greedy Primal-Dual Coordinate Descent for Sparse Empirical Risk Minimization**
Qi Lei, Ian En-Hsu Yen, Chao-Yuan Wu, Inderjit S Dhillon, Pradeep Ravikumar
ICML 2017

4 **Recurrent Recommender Networks**
Chao-Yuan Wu, Amr Ahmed, Alex Beutel, Alex Smola, How Jing
WSDM 2017

3 **Predicting Latent Structured Intents from Shopping Queries**
Chao-Yuan Wu, Amr Ahmed, Gowtham Ramani Kumar, Ritendra Datta
WWW 2017

2 **Using Navigation to Improve Recommendations in Real-time**
Chao-Yuan Wu, Christopher V Alvino, Alex Smola, Justin Basilico
RecSys 2016

1 **Jointly Modeling Aspects, Ratings and Sentiments for Movie Recommendation (JMARS)**
Qiming Diao, Minghui Qiu, Chao-Yuan Wu, Alex Smola, Jing Jiang, Chong Wang
KDD 2014

OTHER PUBLICATIONS

4 **Lossless Image Compression through Super-Resolution**
Sheng Cao, Chao-Yuan Wu, Philipp Krähenbühl, *arXiv* 2020

3 **Joint Training of Ratings and Reviews with Recurrent Recommender Networks**
Chao-Yuan Wu, Amr Ahmed, Alex Beutel, Alex Smola, *ICLR Workshop* 2017

2 **Explaining reviews and ratings with PACO: Poisson Additive Co-Clustering**
Chao-Yuan Wu, Alex Beutel, Amr Ahmed, Alex Smola, *WWW* 2016 (Poster)

1 **Spectral Methods for Nonparametric Models**
Hsiao-Yu Fish Tung, Chao-Yuan Wu, Manzil Zaheer, Alex Smola, *arXiv* 2017

TEACHING

11.22.2021 **CSE290D Guest Lecture, UCSC**
Title: Towards Scalable Video Understanding.

2019 Fall **CS 342 Neural Networks**
Co-created with Philipp Krähenbühl

2019 Fall **Online CS 395T Deep Learning**
Co-created with Philipp Krähenbühl

INVITED TALKS

6.25.2021 **LOVEU Workshop at CVPR 2021**
Title: Towards Long-Form Video Understanding

5.12.2020 **University of Bristol**
Visual Information Laboratory Seminar Series (VILSS)
Title: On Efficiently Modeling Videos

5.6.2020 **UC Berkeley**
Title: Perception in the Dynamic World

4.7.2020 **MIT**
Vision Seminar
Title: On Efficiently Modeling Videos

5.10.2017	**Amazon Machine Learning Conference** Title: Sampling Matters in Deep Embedding Learning.
7.28.2015	**Quora Inc.** (host: Dr. Xavier Amatriain) Title: Joint Modeling of Ratings and Reviews.
8.29.2014	**University of Illinois at Urbana-Champaign** CS591 Seminar: Advanced Topics on Data Mining Title: Jointly Modeling Aspects, Ratings and Sentiments for Recommendation.
10.17.2014	**Netflix Inc.** (host: Dr. Xavier Amatriain) Title: Joint Modeling of Movie Ratings and Reviews & Spectral Methods.
10.20.2014	**Google Inc.** (host: Dr. Sujith Ravi) Title: Spectral Methods for HDP & Jointly Modeling for Movie Recommendation.

Open-source Software

2022	MeMViT (PyTorch) https://github.com/facebookresearch/MeMViT
2021	Object Transformer (PyTorch) https://github.com/chaoyuaw/lvu
2020	A Multigrid Method for Efficiently Training Video Models (PyTorch) https://github.com/facebookresearch/SlowFast/tree/master/projects/multigrid
2020	Lossless Image Compression through Super-Resolution (PyTorch) https://github.com/caoscott/SReC
2019	Fashion++: Minimal Edits for Outfit Improvement (PyTorch) https://github.com/facebookresearch/FashionPlus
2019	Video long-term feature banks (Caffe2) https://github.com/facebookresearch/video-long-term-feature-banks
2018	Video Compression through Image Interpolation (PyTorch) https://github.com/chaoyuaw/pytorch-vcii
2018	CoViAR: action recognition on compressed videos (PyTorch and C++) https://github.com/chaoyuaw/pytorch-coviar
2017	Image embedding learning with distance-weighted sampling (MXNet) https://github.com/chaoyuaw/incubator-mxnet/tree/master/example/gluon/embedding_learning

Press Coverage

2020 Lossless Image Compression through Super-Resolution

- The Next Web
  - https://thenextweb.com/neural/2020/04/27/researchers-claim-this-ai-model-achieves-better-compression-rates-than-pngs/
- Eyerys
  - https://www.eyerys.com/articles/news/srec-lossless-image-compression-method-using-super-resolution-models

2019 Fashion++: Minimal Edits for Outfit Improvement [ICCV 2019]

- Vogue Business
  - https://www.voguebusiness.com/technology/facebook-ai-fashion-styling
- VentureBeat
  - https://venturebeat.com/2019/09/18/fashion-uses-ai-to-make-unfashionable-outfits-stylish-with-minimal-tweaks/
- Facebook AI Blog
  - https://ai.facebook.com/blog/building-ai-to-inform-peoples-fashion-choice/

PROFESSIONAL SERVICE

Area Chair: CVPR 2023
Journal Reviewer: TPAMI, TIP, TMM
Reviewer: CVPR 2018, 2019, 2020, 2021,2022
Reviewer: ICCV 2019, 2021
Reviewer: ECCV 2018, 2020
Reviewer: NeurIPS 2019, 2020, 2021, 2022
Reviewer: ICLR 2019, 2020, 2023

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