

Yu-Chia Chen

PH.D. STUDENT AT THE UNIVERSITY OF WASHINGTON

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Education

University of Washington

PH.D. IN ELECTRICAL ENGINEERING

Seattle, WA

Sep. 2016 - PRESENT

- Advisor: Marina Meilă
- First author of 2 top-tier Machine Learning conference (NeurIPS, KDD) papers and 1 NeurIPS workshop poster.

National Taiwan University

B.S. IN PHYSICS

Taipei, Taiwan

Sep. 2011 - Jun. 2015

- Advisor: Yang-Fang Chen
- First author of 1 decent journal paper in Photonics.

Skills

Research Manifold learning, Geometric data analysis, Dynamic networks, Embedding

Programming Python, MATLAB, JavaScript, C++, Latex

Languages English (Professional), Mandarin (Native), Taiwanese (Native)

Publications

- [1] **YU-CHIA CHEN** and Marina Meilă. Selecting the independent coordinates of manifolds with large aspect ratios. *Advances in Neural Information Processing Systems*, 2019. (To appear)
- [2] **YU-CHIA CHEN**, Avleen S. Bijral, and Juan Lavista Ferres. On Dynamic Network Models and Application to Causal Impact. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, KDD '19, pages 1194–1204, New York, NY, USA, 2019. ACM
- [3] **YU-CHIA CHEN**, Dominique Perrault-Joncas, Marina Meilă, and James McQueen. Improved Graph Laplacian via Geometric Self-Consistency. NIPS Workshop on NIPS Highlights (MLTrain), Learn How to code a paper with state of the art frameworks, Long Beach, CA, December 2017.
- [4] Peifeng Jing, Kosuke Winston, **YU-CHIA CHEN**, Benjamin S. Freedman, and Lih Y. Lin. Patterning and Colonizing Stem Cells with Optical Trapping. In *Optics in the Life Sciences Congress (2017), Paper OtM4E.2*, page OtM4E.2. Optical Society of America, April 2017
- [5] **YU-CHIA CHEN**, Cih-Su Wang, Tsung-Yuan Chang, Tai-Yuan Lin, Hsiu-Mei Lin, and Yang-Fang Chen. Ultraviolet and visible random lasers assisted by diatom frustules. *Optics Express*, 23(12):16224–16231, June 2015
- [6] Cih-Su Wang, Chi-Shung Liao, Tzu-Ming Sun, **YU-CHIA CHEN**, Tai-Yuan Lin, and Yang-Fang Chen. Biologically inspired band-edge laser action from semiconductor with dipole-forbidden band-gap transition. *Scientific Reports*, 5:8965, March 2015

Experience

Geometric Data Analysis Group (prof. Marina Meilă), University of Washington

Seattle, WA

PH.D. STUDENT RESEARCHER

Apr. 2017 - PRESENT

- Selecting the independent coordinates of manifolds with large aspect ratios.
 - Efficient criterion based subset selection algorithm for finding independent coordinates that produce smooth embedding.
 - Paper [1] accepted to NeurIPS 2019 (acceptance rate 21.2%).
- Fast random projection based graph Laplacian construction algorithm for large scale manifold learning.
- Leveraging semi-supervised learning with intrinsic geometric information.

Microsoft Research

Redmond, WA

RESEARCH INTERN

Jun. 2018 - Sep. 2018

- Studied large scale dynamic network model based on stochastic block model (SBM) and the extension to causal impact on temporal graphs.
- Paper [2] accepted to KDD 2019 research track (acceptance rate 14.2%).

Department of Electrical & Computer Engineering, University of Washington

Seattle, WA

TEACHING ASSISTANT

Jan. 2017 - Dec. 2017

- Courses: Digital Signal Processing (graduate level), Devices And Circuits, Discrete Time Linear Systems, Fundamentals of Electrical Engineering.

Psychological Warfare Group, Ministry of National Defense

FRONT-END SOFTWARE ENGINEER (COMPULSORY MILITARY SERVICE)

- Lead engineer on cloud-based file exchanging platform, which enabled user to search, view and share streaming media.
- Technology used: JavaScript (*react.js*), HTML/CSS.

Taipei, Taiwan

Aug. 2015 - Jul. 2016

Semiconductor Laboratory (prof. Yang-Fang Chen), National Taiwan University

UNDERGRADUATE RESEARCHER

- Investigated bio-photonics devices with wide spectrum range [5].
- Studied Perovskite and CdTe core shell quantum dots assisted random laser in bio-inspired materials [6].

Taipei, Taiwan

Feb. 2014 - Jun. 2015

Extracurricular Activity

Selfie Sensei: Convolutional Neural Network based selfie instructor

COURSE PROJECT

- Built and trained the Google Inception-v3 model on 40 thousand selfies collected from twitter with hashtag *#selfie*.

Seattle, WA

Apr. 2017 - Jun 2017

Large scale medical subject heading (MeSH) term indexing

COURSE PROJECT

- Built CNN trained with *skipgram* word2vec embedding in annotating 27k MeSH terms on 12M academic articles.

Seattle, WA

Jan. 2017 - Mar. 2017

Photonics Lab, University of Washington

GRADUATE RESEARCH ASSISTANT

- Investigated high accuracy mass sensing using Nanostructure-enhanced laser tweezers and its application to stem cell patterning [4].

Seattle, WA

Sep. 2016 - Dec. 2016

ScoreMaster Team

CO-FOUNDER

- Developed online tutoring platform that matched high school students and undergraduate tutors.

Taipei, Taiwan

Dec. 2013 - Aug. 2014

Honors & Awards

2019 **Student Travel Award**, KDD 2019

Anchorage, AK

2013 **Scholarship**, Taipower Academic Scholarship

Taipei, Taiwan

2012 **Scholarship**, Taipower Academic Scholarship

Taipei, Taiwan

2010 **Second prizes**, Physics Scholastic Ability Contest

Kaohsiung, Taiwan

Courseworks

UNIVERSITY OF WASHINGTON

CSE 525 Randomized Algorithm; **EE 546** Learning and Game Theory; **STAT 512** Statistical Inference; **STAT 548** Machine Learning for Big Data; **STAT 538** Statistical Learning; **CSE 599** Interplay between Convex Optimization and Geometry; **MATH 515** Fundamental of Optimization; **EE 576** Computer Vision; **EE 595** Data Science for Sequencing; **CSE 517** Natural Language Processing; **EE 518** Digital Signal Processing.

NATIONAL TAIWAN UNIVERSITY (SELECTED)

PHYS 8049 Introduction to Quantum Computation & Information; **PHYS 4001** Optics; **PHYS 3002** Group Theory; **PHYS 3001** Complex Analysis.

References

Marina Meilă

DEPARTMENT OF STATISTICS, UNIVERSITY OF WASHINGTON

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Avleen S. Bijral

MICROSOFT CORPORATION

avbijral@microsoft.com

Les Atlas

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