

Yu-Chia Chen

(206) 739-4801 • 5032 11th Ave. NE, Seattle, WA 98105
yuchaz@uw.edu • <http://linkedin.com/in/yuchaz> • <http://github.com/yuchaz>

EDUCATION	University of Washington , Seattle, WA Ph.D. in Electrical Engineering, 3.92/4.00	Sep 2016 – present
	National Taiwan University , Taipei, Taiwan B.S. in Physics, 3.72/4.20	Sep 2011 – Jun 2015
KNOWLEDGE & SKILLS	Research areas <ul style="list-style-type: none">• Manifold learning, Unsupervised learning, Geometric data analysis Technical skills <ul style="list-style-type: none">• Python, MATLAB, JavaScript, C++, PHP, Shell scripts, SQL, Latex	
WORK EXPERIENCE	Microsoft Research , Redmond, WA Research Intern	Jun 2018 – Sep 2018
	<ul style="list-style-type: none">• Proposed an novel approach to model large scale dynamic networks based on stochastic block model [C.1].• Extended the model to study causal impact on networks.	
	University of Washington , Seattle, WA Teaching assistant	Jan 2017 – Dec 2017
	<ul style="list-style-type: none">• Course taught: Fundamentals of Electrical Engineering, Discrete Time Linear Systems, Devices And Circuits I, Digital Signal Processing (graduate level course)	
RESEARCH EXPERIENCE	Psychological Warfare Group of M.N.D. , Taipei, Taiwan Front-end Developer.	Aug 2015 – Jul 2016
	<ul style="list-style-type: none">• Developed a cloud-based file exchanging platform, which enable user to search, view and share streaming media.• Technology used: JavaScript (<i>react.js</i>), HMTL/CSS.	
	Geometric Data Analysis Group , University of Washington Advisor: professor Marina Meilă.	Apr 2017 – present
	<ul style="list-style-type: none">• Studying large scale manifold learning algorithms and geometric data analysis.• With applications to experimental data of molecular dynamics and materials science.	
	<u>Research Projects</u> <i>Selecting the independent coordinates of manifolds with large aspect ratios.</i> <ul style="list-style-type: none">• Criterion based subset selection algorithm for finding independent coordinates that produce smooth embedding [P.1].• Low computational overhead in combinatorial search space. <i>Randomized graph Laplacian construction algorithm for large scale manifold learning.</i> <ul style="list-style-type: none">• Random projection based partitioning scheme in efficiently constructing approximate neighbor graph.• Generate well conditioned graph Laplacian which lends itself to fast and simple eigen-solvers. <i>Leveraging semi-supervised learning with intrinsic geometric information.</i> <ul style="list-style-type: none">• Embed geometric information (graph laplacian) in the kernel of Gaussian process• Predict the energy and potential reaction coordinates of molecules dynamics data. <i>Kernel bandwidth estimation by minimizing manifold deformation.</i> <ul style="list-style-type: none">• Minimize the distortion as a function of kernel bandwidth of the manifold constructed by local tangent spaces.• Find optimal kernel bandwidth for constructing high quality graph laplacian.	
	Photonics Lab , University of Washington Advisor: professor Lih Lin.	Sep 2016 – Dec 2016
	<ul style="list-style-type: none">• Investigated high accuracy mass sensing using Nanostructure-enhanced laser tweezers integrated MEMS• Worked on the stem cell trapping and patterning assisted by laser tweezers [C.2].	
	Semiconductor Laboratory , National Taiwan University Advisor: professor Yang-Fang Chen.	Feb 2014 – Jun 2015
	<ul style="list-style-type: none">• Investigated bio-photonics devices with wide spectrum range [J.1].• Studied Perovskite and CdTe core shell quantum dots assisted random laser in bio-inspired materials [J.2].	

PUBLICATIONS	Conference papers		
	[C.1] Yu-Chia Chen, Avleen Bijral, and Juan Lavista Ferres. On Dynamic Network Models and Application to Causal Impact. In <i>Proceedings of the 25TH ACM SIGKDD Conference on Knowledge Discovery & Data Mining</i> . ACM, 2019. (To appear)		
	[C.2] Peifeng Jing, Kosuke Winston, Yu-Chia Chen, Benjamin S Freedman, and Lih Y Lin. Patterning and colonizing stem cells with optical trapping. In <i>Optical Trapping Applications</i> , pages OtM4E–2. Optical Society of America, 2017		
	Journal papers		
	[J.1] 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. <i>Optics express</i> , 23(12):16224–16231, 2015		
	[J.2] 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. <i>Scientific reports</i> , 5:8965, 2015		
	Preprints & workshop papers		
	[P.1] Yu-Chia Chen and Marina Meilă. Selecting the independent coordinates of manifolds with large aspect ratios. <i>arXiv preprint arXiv:1907.01651</i> , 2019		
	[P.2] 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.		
	HONORS & AWARDS	Taipower Academic Scholarship	May 2012 & May 2013
Second prizes in the Physics Scholastic Ability Contest, Kaohsiung, Taiwan		Dec 2010	
LANGUAGES	Mandarin: Native. English: Fluent.		
REFERENCES	Marina Meilă		
	Department of Statistics, University of Washington mmp2@uw.edu		
	Avleen Bijral		
	Microsoft Corporation avbijral@microsoft.com		
	Les Atlas		
	Department of Electrical & Computer Engineering, University of Washington atlas@u.washington.edu		
	Yang-Fang Chen		
	Department of Physics, National Taiwan University, yfchen@phys.ntu.edu.tw		