陳威全 Wei Chien Benny Chin

Personal Data

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Short Bio

Wei Chien Benny Chin is currently working with the lab on some researches, which include constructing a transportation network analysis framework based on Taipei City's open data, and developing a space-time diffusion model for tracking the spreading chain of a disease. In addition, he is also passionate about contributing to the open-source community, specifically in the spatial analysis and cartography field.

Research Interests

- Methods for spatial analysis on point patterns
- Methods for space-time analysis for understanding the development of point events
- Geospatial network analysis and transportation geography
- Spatial and space-time computational algorithms
- Geographical data visualisation

Education

2014 - Current	Ph.D., Department of Geography, National Taiwan University. Thesis: A point data exploration algorithm for understanding the space-time progression pattern of the movement process of point events. Advisor: Prof. Tzai-Hung WEN
2011 - 2013	M.Sc., Department of Geography, National Taiwan University. Thesis: Geographically Modified PageRank Algorithm: Measuring the importance of nodes in a geospatial network. Advisor: Prof. Tzai-Hung WEN
2007-2011	B.Sc., Department of Geography, National Taiwan University. Thesis: The Spatial Relationship between Urbanization factors, Environmental quality and Health quality. Advisor: Prof. Mei-Hui LI

Publication

SSCI Journal Article

- **Chin, W. C. B.**, Wen, T. H., Sabel, C. E., & Wang, I. H. A geo-computational algorithm for exploring the structure of diffusion progression in time and space. *Scientific Reports* 7: 12565. DOI: 10.1038/s41598-017-12852-z
  (Journal rank: 10/64 in Multidisciplinary Sciences)
- Wen, T. H., **Chin, W. C. B.**, & Lai, P. C. (2017) Understanding the topological characteristics and flow complexity of urban traffic congestion. *Physica A: Statistical Mechanics and its Applications* 473: 166-177. DOI: 10.1016/j.physa.2017.01.035
  (Journal rank: 23/79 in Physics, Multidisciplinary Science, times cited: 3)

- Wen, T. H., Tsai, C. T., & **Chin, W. C. B.** (2016). Evaluating the role of disease importation in the spatiotemporal transmission of indigenous dengue outbreak. *Applied Geography* 76: 137-146. DOI: 10.1016/j.apgeog.2016.09.020
  (Journal rank: 10/77 in Geography, times cited: 1)

- **Chin, W. C. B.**, & Wen, T. H. (2015). Geographically Modified PageRank Algorithms: Identifying the Spatial Concentration of Human Movement in a Geospatial Network. *PLoS ONE* 10(10): e0139509. DOI: 10.1371/journal.pone.0139509
  (Journal rank: 15/64 in Multidisciplinary Sciences, times cited: 9)

- Wen, T. H., & **Chin, W. C. B.** (2015). Incorporation of Spatial Interactions in Location Networks to Identify Critical Geo-Referenced Routes for Assessing Disease Control Measures on a Large-Scale Campus. *International journal of environmental research and public health* 12(4): 4170-4184. DOI: 10.3390/ijerph120404170
  (times cited: 1)

- Lee, J., Lay, J. G., **Chin, W. C. B.**, Chi, Y. L., & Hsueh, Y. H. (2014). An Experiment to Model Spatial Diffusion Process with Nearest Neighbor Analysis and Regression Estimation. *International Journal of Applied Geospatial Research* 5(1), 1-15. DOI: 10.4018/ijagr.2014010101
  (times cited: 4)

Book Chapter

- Wen, T. H., **Chin, W. C. B.**, & Lai, P. C. (2016). Link structure analysis of urban street networks for delineating traffic impact areas. In M. Nemiche, M. Essaaidi (eds.), *Advances in Complex Societal, Environmental and Engineered Systems, Nonlinear Systems and Complexity 18*. Part 2: 203-220. Springer: Switzerland. DOI: 10.1007/978-3-319-46164-9_10, ISBN: 978-3-319-46164-9.

TSSCI Journal Article

- 郭年真，林民浩，陳威全，溫在弘 (2016)。剖析台灣民眾的就醫流動：利用引力模式評估就醫距離與醫療資源分布的影響。台灣衛誌 35(2)：136-151。DOI: 10.6288/TJPH201635104086
  (eng. info) Lin, M. H., Kuo, R. N., Chin, W. C. B., & Wen, T. H. (2015). Profiling the patient flow for seeking healthcare in Taiwan: using gravity modeling to investigate the influences of travel distance and healthcare resources. *Taiwan Journal of Public Health* 35(2): 136-151. DOI:10.6288/TJPH201635104086.
  (times cited: 1)

Manuscript in preparation

- **Chin, W. C. B.**. The characteristics of geographical space in clustering analysis. (first draft)

CONFERENCE

- 2017 - Lifestyle of a city: An urban life footprint analysis using Twitter data in Tokyo, in **TGSW 2017 - 1st CiC Student Workshop**, Tsukuba, Japan. **Young Scientist Award**

- 2017 - Exploring space-time diffusion process of Dengue Fever in Kaohsiung City, Taiwan, accepted for oral presentation in **7th Asian Seminar in Regional Science**, Taipei, Taiwan.

- 2017 - Applying space-time information to explore disease processes: The dynamic patterns of Dengue Fever in Kaohsiung City, 1998-2015. Poster session in **Annual Meeting of the SRA-Taiwan 2017**, Taichung, Taiwan. **Excellent Student Poster Award**

- 2016 - Profiling topological characteristics of street network to identify urban traffic congestion, in **15th Conference for Global Spatial Data Infrastructure Association (GSDI)**, Taipei, Taiwan.

- 2016 - 從路段的連接性與流率分析城市內街道的流量以探討城市交通擁塞問題，發展研究年會，臺北，臺灣。
  Understanding urban traffic congestion by analyzing the link structure and the vehicle flows of urban street network, in **8th Conference on Development Studies**, Taipei, Taiwan.

- 2016 - Link structure analysis of urban road networks for identifying traffic impact areas, in **NetSci 2016**, Seoul, South Korea.

- 2015 - A Web-based Framework for Monitoring Spatial-temporal Clustering of Epidemics in Taiwan, in **FOSS4G 2015**, Seoul, South Korea.

- 2014 - 考量地理特性的 PageRank 演算法：評估地理網絡節點之重要性，中國地理學會年會，臺北，臺灣。
  Geographically modified PageRank algorithms: Measuring the importance of nodes in a geospatial network, in **Annual Meeting of The Geography Society of China located in Taipei**, Taipei, Taiwan.

- 2013 - Geographically modified PageRank Algorithm: Measuring the importance of nodes in a geospatial network, in **AAG Annual Meeting 2013**, Los Angeles, USA.

- 2012 - 整合 PageRank 與空間互動模型於網絡都市的拓樸動態分析，中國地理學會年會，臺北，臺灣。
  Integration of PageRank and Spatial Interaction Modeling to Analyze Topological Dynamics of Networked Cities, in **Annual Meeting of The Geography Society of China located in Taipei**, Taipei, Taiwan.

LAB PROJECT PARTICIPATIONS

2015-2018 Proposal writer and project executor	An Urban Environmental Sensing Infrastructure with Crowdsourcing and Spatial Big Data for Early Warning of Critical Conditions: A Space-Time Multi-layered Urban Mobility Model for Assessing Transmission Risk of Infectious Disease. Funded by *Ministry of Science and Technology (MOST) of Taiwan.* 3 years project
2015 Proposal writer and project executor	A Production Model for Developing Geographic Network Analysis Module. Funded by *Ministry of Science and Technology (MOST) of Taiwan.* 1 year project
2015-2017 Proposal writer and project executor (2015); data analysis (2017)	Incorporating the Seasonal Incidence into Detecting Spatial-Temporal Thresholds of Food-borne Disease Outbreaks for the Epidemic Early Warning System. Funded by *Taiwan Centers for Disease Control (CDC).* 3 years project
2016-2019 Proposal writer ; programmer (data collecting)	A Framework for High Spatial and Temporal Resolution Geodemographic Segmentation. Funded by *Ministry of Science and Technology (MOST) of Taiwan.* 3 year project
2014-2016 Proposal writer	Integration of Geographic Information with Social Network Analysis to. Establish a Geospatial Model for Predicting Tuberculosis (TB) Contacts with Latent Infection and Developing Active Disease. Funded by *Ministry of Science and Technology (MOST) of Taiwan.* 3 years project

Personal Open Source Projects

Geographical PageRank (GPR)
Description	a python package that provide functions for measuring concentration distribution in a spatial network.
Repository	https://bitbucket.org/wcchin/gpras
License	MIT license

Flow-based PageRank (FBPR)
Description	a python package that run an algorithm that calibrate the weight and PR score to meet the flow.
Repository	https://bitbucket.org/wcchin/fbpr
License	MIT license

Taiwan Geographic Open Data (TGOD)
Description	a python package that wrap some of the Taiwan open data real-time API and convert the data to dataframe format..
Repository	https://github.com/wcchin/tgod
License	BSD-3-clause license

Vector MAP ProducER (vmapper)
Description	a simple python library for creating SVG map in python.
Repository	https://github.com/wcchin/vmapper
License	MIT license

ColouringMap (colouringmap)
Description	a convenient mapping tool for generating categories and colors for making choropleth map from geopandas gdf
Project page	https://wcchin.github.io/colouringmap.html
Repository	https://github.com/wcchin/colouringmap
License	MIT license

Scholarships

Year	
2016	1st Semester Scholarship from MOE for Outstanding Overseas Chinese Graduate Student.
2015	2nd Semester Scholarship from MOE for Outstanding Overseas Chinese Graduate Student.
2012	1st Semester Scholarship from MOE for Outstanding Overseas Chinese Graduate Student.
2010	College Student Research Scholarship, National Science Council .

Languages

Chinese:	Native
English:	Upper intermediate
Malay	Basic

Skills

Programming
Working knowledge	Python, R, Netlogo, Processing, PostgreSQL
Basic knowledge	Java, Javascript, Julia, Matlab, SQLite

Cartography & GIS
Working knowledge	ArcGIS, QGIS, Illustrator
Basic knowledge	web-mapping