**研究計畫書**

**研究題目：**

**暫時想不到**

**申請人：劉宗妮**

目錄

[一、 摘要 2](#_Toc462858666)

[二、 研究動機與目的 2](#_Toc462858667)

[三、 文獻回顧 3](#_Toc462858668)

[四、 研究架構與方法 18](#_Toc462858669)

[五、 預期成果 20](#_Toc462858670)

[六、 參考文獻 21](#_Toc462858671)

**暫時想不到標題**

1. **摘要**
2. **研究動機與目的**
3. **文獻回顧**

一、環境品質監測與指標發展

二、非監督式分群法與資料融合

三、自組織映射神經網路

四、類別型資料的空間相依性

五、多時序趨勢檢驗

1. **研究架構與方法**

一、研究資料與區域

二、環境資料前處理

三、自組織映射神經網路演算法

四、類別空間自相關

五、Mann-Kendall趨勢檢驗法

1. **預期成果**

本研究藉由實作出GTWR模型，將其應用於空品推估上，並將其與原始GWR進行比較，以此來探討將時間維度納入模型推估時的優勢，預期成果如下：

1. 透過時空帶寬優化方法，產製出研究區間內最佳的時空帶寬，並用於空品模式的建模。
2. 將時空維度納入模型推估，並將GTWR與GWR進行模型適配度比較，以此探討時間維度於空品模式建模的優勢。
3. **參考文獻**
4. Abraham, S., & Li, X. (2014, August). A Cost-effective Wireless Sensor Network System for Indoor Air Quality Monitoring Applications. In FNC/MobiSPC (pp. 165- 171).
5. Boubrima, A., Bechkit, W., & Rivano, H. (2019). On the deployment of wireless sensor networks for air quality mapping: Optimization models and algorithms. IEEE/ACM Transactions on Networking, 27(4), 1629-1642.
6. Brunsdon, C., Fotheringham, A. S., & Charlton, M. E. (1996)."Geographically weighted regression: a method for exploring spatial nonstationarity". Geographical analysis, 28(4), 281-298.
7. Crespo, R., Fotheringham, S., & Charlton, M. (2007). Application of geographically weighted regression to a 19-year set of house price data in London to calibrate local hedonic price models. In Proceedings of the 9th International Conference on Geocomputation. National University of Ireland Maynooth.
8. Cressie, N. A., & Wikle, C. (2011). Statistics for Spatio-Temporal Data.
9. Elminir, H. K. (2005). Dependence of urban air pollutants on meteorology. Science of the Total Environment, 350(1-3), 225-237.
10. Fotheringham, Stewart A., Chris Brunsdon, and Martin Charlton. Geographically Weighted Regression: the analysis of spatially varying relationships. John Wiley & Sons, 2002.
11. Huang, Bo, Bo Wu, and Michael Barry. "Geographically and temporally weighted regression for modeling spatio-temporal variation in house prices." International Journal of Geographical Information Science 24.3 (2010): 383-401.
12. Hu, S. C., Wang, Y. C., Huang, C. Y., & Tseng, Y. C. (2011). Measuring air quality in city areas by vehicular wireless sensor networks. Journal of Systems and Software, 84(11), 2005-2012.
13. Liu, J. H., Chen, Y. F., Lin, T. S., Lai, D. W., Wen, T. H., Sun, C. H., ... & Jiang, J. A. (2011, November). Developed urban air quality monitoring system based on wireless sensor networks. In 2011 Fifth International Conference on Sensing Technology (pp. 549-554). IEEE.
14. Luo, J., Du, P., Samat, A., Xia, J., Che, M., & Xue, Z. (2017). Spatiotemporal pattern of PM 2.5 concentrations in mainland China and analysis of its influencing factors using geographically weighted regression. Scientific reports, 7(1), 1-14.
15. Monks, P. S., Granier, C., Fuzzi, S., Stohl, A., Williams, M. L., Akimoto, H., ... & Blake, N.(2009). Atmospheric composition change–global and regional air quality. Atmospheric environment, 43(33), 5268-5350.
16. Sorbjan, Z. (2003). Air pollution meteorology. AIR QUALITY MODELINGTheories, Methodologies, Computational Techniques and Available Databases and Software, 1.
17. Tai, A. P., Mickley, L. J., & Jacob, D. J. (2010). Correlations between fine particulate matter (PM2. 5) and meteorological variables in the United States: Implications for the sensitivity of PM2. 5 to climate change. *Atmospheric environment*, *44*(32), 3976-3984.
18. Tian, J., & Chen, D. (2010). A semi-empirical model for predicting hourly ground-level fine particulate matter (PM2. 5) concentration in southern Ontario from satellite remote sensing and ground-based meteorological measurements. *Remote Sensing of Environment*, *114*(2), 221-229.
19. Yi W. Y., Lo K. M., Leung K. S., Leung Y., Meng M. L. (2015). “A Survey of Wireless Sensor Network Based Air Pollution Monitoring Systems”. Sensors, 15(12), 31392- 31427.