

## 國立清華大學課程大綱

科號	10920KTLT722200	組別		學分	3	人數限制	35
上課時間	星期四下午第五六七節			教室	推廣教育大樓 9426 教室		
科目中文名稱	潛在語意分析專題						
科目英文名稱	Topics in Latent Semantic Analysis						
任課教師	呂菁菁、林書宇						
擋修科目	無			擋修分數	無		
一、課程說明	<p>有別於傳統的語義學分析方法，「潛在語意分析」提出了另一個可行的思維。</p> <p>「潛在語意分析」的應用層面極廣，在課堂中將引導同學思索目前「潛在語意分析」在各個語言相關領域的應用，並進一步安排學習活動讓同學一起討論還有甚麼可能的應用範圍。</p> <p>為了讓主修文科的同學對於「潛在語意分析」的概念有更具體的了解，課堂中將介紹簡單的演算法並逐步引導同學實作。</p> <p>這個課的目標在於傳統語言學的書籍中較常見到的分析方式以外，擴展同學對於語意的想像。經過同學們以自身有興趣的語料進行分析之後，這堂課將帶給修課同學們不一樣的觀點。</p>						
二、指定用書	Bellegarda, J. (2007). Latent semantic mapping: principles & applications. Morgan & Claypool Publishers.						
三、參考書籍	<p>Sidorov, G. (2019). <i>Syntactic n-grams in Computational Linguistics</i>. Cham : Springer International Publishing</p> <p>Zhao, H. (2020). Feature learning and understanding. Cham : Springer International Publishing.</p>						
四、教學方式	前三週由教師介紹有關潛在語意分析的理論，第四週至第六章由教師帶領同學一步一步進行實作，第七週至第十七週由實際課題中，讓同學了解潛在語意分析的實際應用，並在第七週至第十七週中複習實作。						
五、教學進度	Week1~Week 3：有關潛在語意分析的理論						

Jones, M., & Love, B. C. (2007). Beyond common features: The role of roles in determining similarity. *Cognitive Psychology*, 55(3), 196-231. doi:10.1016/j.cogpsych.2006.09.004

Jones, M. N. (2019). When does abstraction occur in semantic memory: insights from distributional models. *Language Cognition and Neuroscience*, 34(10), 1338-1346. doi:10.1080/23273798.2018.1431679

Jorge-Botana, G., Olmos, R., & Luz?n, J. M. (2020). Bridging the theoretical gap between semantic representation models without the pressure of a ranking: some lessons learnt from LSA. *Cognitive Processing*, 21(1), 1-21. doi:10.1007/s10339-019-00934-x

Li, L., Jin, L., Zhang, Z. Q., Liu, Q., Sun, X., & Wang, H. Q. (2020). Graph Convolution Over Multiple Latent Context-Aware Graph Structures for Event Detection. *Ieee Access*, 8, 171435-171446. doi:10.1109/access.2020.3024872

Sirotin, Y. B., Kimball, D. R., & Kahana, M. J. (2005). Going beyond a single list: Modeling the effects of prior experience on episodic free recall. *Psychonomic Bulletin & Review*, 12(5), 787-805. doi:10.3758/bf03196773

Vigliocco, G., Vinson, D. P., Lewis, W., & Garrett, M. F. (2004). Representing the meanings of object and action words: The featural and unitary semantic space hypothesis. *Cognitive Psychology*, 48(4), 422-488. doi:10.1016/j.cogpsych.2003.09.001

Week 4~Week 6 : 實作

Gong, C., Tang, J. Y., Li, Z., & Iop. (2019). An End-to-End Named Entity Recognition Model for Chinese. In 2019 5th International Conference on Mechanical Engineering and Automation Science (Vol. 692).

Lee, J., Yoon, W., Kim, S., Kim, D., Kim, S., So, C. H., & Kang, J. (2020). BioBERT: a pre-trained biomedical language representation model for biomedical text mining. *Bioinformatics*, 36(4), 1234-1240. doi:10.1093/bioinformatics/btz682

Yu, S. S., Su, J. D., & Luo, D. (2019). Improving BERT-Based Text Classification With Auxiliary Sentence and Domain Knowledge. *IEEE Access*, 7, 176600-176612. doi:10.1109/access.2019.2953990

	<p>Zhang, Z. C., Zhang, Z. W., Chen, H. Y., &amp; Zhang, Z. M. (2019). A Joint Learning Framework With BERT for Spoken Language Understanding. <i>IEEE Access</i>, 7, 168849-168858. doi:10.1109/access.2019.2954766</p> <p>Week 5：潛在語意分析在工業 4.0 中的應用 Wagire, A. A., Rathore, A. P. S., &amp; Jain, R. (2020). Analysis and synthesis of Industry 4.0 research landscape Using latent semantic analysis approach. <i>Journal of Manufacturing Technology Management</i>, 31(1), 31-51. doi:10.1108/jmtm-10-2018-0349</p> <p>Week 6：產品評論中的潛在語意分析 Ahmad, S. N., &amp; Laroche, M. (2016). How Do Expressed Emotions Affect the Helpfulness of a Product Review? Evidence from Reviews Using Latent Semantic Analysis. <i>International Journal of Electronic Commerce</i>, 20(1), 76-111. doi:10.1080/10864415.2016.1061471</p> <p>Week 7：化妝品評論中的潛在語意分析 Guen, K. S., &amp; Juyoung, K. (2018). Analyzing the discriminative attributes of products using text mining focused on cosmetic reviews. <i>Information Processing &amp; Management</i>, 54(6), 938-957. doi:10.1016/j.ipm.2018.06.003</p> <p>Week 8：電視廣告中的潛在語意分析 Canora, M., Garcia-Granada, F., Sanchis, E., &amp; Segarra, E. (2018). An Approach to Automatic Summarization of Television Programs. In A. Karpov, O. Jokisch, &amp; R. Potapova (Eds.), <i>Speech and Computer</i> (Vol. 11096, pp. 86-93).</p> <p>Week 9：線上評論中的潛在語意分析 Fresneda, J. E., &amp; Gefen, D. (2019). A semantic measure of online review helpfulness and the importance of message entropy. <i>Decision Support Systems</i>, 125. doi:10.1016/j.dss.2019.113117</p> <p>Week 10：顧客文字反應中的潛在語意分析 Xu, X., Wang, X. Q., Li, Y. B., &amp; Haghghi, M. (2017). Business intelligence in online customer textual reviews: Understanding consumer perceptions and influential factors. <i>International Journal of Information Management</i>, 37(6), 673-683. doi:10.1016/j.ijinfomgt.2017.06.004</p> <p>Week 11：以潛在語意分析應用於情緒分析 Liu, Y., Yu, X. H., An, A. J., &amp; Huang, X. J. (2013). Riding the tide of sentiment change: sentiment analysis with evolving online</p>
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	<p>reviews. <i>World Wide Web-Internet and Web Information Systems</i>, 16(4), 477-496. doi:10.1007/s11280-012-0179-z</p> <p>Week 12：利用潛在語意分析偵測反諷 Gonzalez, J. A., Hurtado, L. F., &amp; Pla, F. (2020). Transformer based contextualization of pre-trained word embeddings for irony detection in Twitter. <i>Information Processing &amp; Management</i>, 57(4). doi:10.1016/j.ipm.2020.102262</p> <p>Week 13：利用潛在語意分析研究言談理解 Graesser, A. C., &amp; McNamara, D. S. (2011). Computational Analyses of Multilevel Discourse Comprehension. <i>Topics in Cognitive Science</i>, 3(2), 371-398. doi:10.1111/j.1756-8765.2010.01081.x</p> <p>Week 14：以潛在語意分析建置問答系統 Liu, A. T., Huang, Z. Q., Lu, H. T., Wang, X. J., &amp; Yuan, C. X. (2019). BB-KBQA: BERT-Based Knowledge Base Question Answering. In M. Sun, X. Huang, H. Ji, Z. Liu, &amp; Y. Liu (Eds.), <i>Chinese Computational Linguistics, Ccl 2019</i> (Vol. 11856, pp. 81-92).</p> <p>Perez-Marin, D., Pascual-Nieto, I., &amp; Rodriguez, P. (2009). Computer-assisted assessment of free-text answers. <i>Knowledge Engineering Review</i>, 24(4), 353-374. doi:10.1017/s026988890999018x</p> <p>Wang, Y. M., Rong, W. G., Zhang, J. F., Zhou, S. J., &amp; Xiong, Z. (2020). Multi-turn dialogue-oriented pretrained question generation model. <i>Complex &amp; Intelligent Systems</i>, 6(3), 493-505. doi:10.1007/s40747-020-00147-2</p> <p>Week 15：潛在語意分析應用於新聞文章摘要 Yang, P., Li, W. H., &amp; Zhao, G. Z. (2019). Language Model-Driven Topic Clustering and Summarization for News Articles. <i>IEEE Access</i>, 7, 185506-185519. doi:10.1109/access.2019.2960538</p> <p>Week 16：以潛在語意分析應用於文章剽竊偵測 Ullah, F., Wang, J. F., Farhan, M., Jabbar, S., Wu, Z. M., &amp; Khalid, S. (2020). Plagiarism detection in students' programming assignments based on semantics: multimedia e-learning based smart assessment methodology. <i>Multimedia Tools and Applications</i>, 79(13-14), 8581-8598. doi:10.1007/s11042-018-5827-6</p> <p>Week 17：潛在語意分析在臨床上的應用 Corcoran, C. M., &amp; Cecchi, G. A. (2020). Using Language Processing and Speech Analysis for the Identification of</p>
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	<p>Psychosis and Other Disorders. Biological Psychiatry-Cognitive Neuroscience and Neuroimaging, 5(8), 770-779. doi:10.1016/j.bpsc.2020.06.004</p> <p>Week 18：個人專題報告</p>
六、成績考核	<p>(1) 每週課題參與討論 25%</p> <p>(2) 每週課題參與實作 25%</p> <p>(3) 個人專題 50%</p>
七、講義位址 http://	<p><a href="https://www.semanticscholar.org/paper/Latent-Semantic-Mapping%3A-Principles-%26-Applications-Bellegarda/b097656c453c99727fec85ef067cca819397c412">https://www.semanticscholar.org/paper/Latent-Semantic-Mapping%3A-Principles-%26-Applications-Bellegarda/b097656c453c99727fec85ef067cca819397c412</a></p>