107學年度第2學期資訊管理研究所博士班資格考

科目:高等健康資訊學

1. 請詳述何謂Unified Medical Language System (UMLS)? (11%)
2. 如何運用UMLS於醫療資訊相關研究?請具體說明。(11%)
3. 運用電子病歷資料(Electronic Medical Record, EMR)進行醫療數據分析相關研究時，其可能遇到的困難與風險為何?並請說明可能的解決方法。(11%)
4. The following are the titles of articles and abstract adopted from each issues in JAMIA, 2018, one issue one article. Please pick “one” of them to describe contents of the article, like the research method, material, model (if mentioned), (empirical) finding, etc. You should write no less than 100 Chinese words or 150 English words about the article. You can comment the article after you describe its contents to enhance your description. The higher correctness matching the article you describe for its contents, the higher score you can get. (33%)
   * [Secondary use of electronic health record data for clinical workflow analysis](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080808/)

Michelle R Hribar, Sarah Read-Brown, Isaac H Goldstein, Leah G Reznick, Lorinna Lombardi, Mansi Parikh, Winston Chamberlain, Michael F Chiang

J Am Med Inform Assoc. 2018 Jan; 25(1): 40–46.

Abstract: Outpatient clinics lack guidance for tackling modern efficiency and productivity demands. Workflow studies require large amounts of timing data that are prohibitively expensive to collect through observation or tracking devices. Electronic health records (EHRs) contain a vast amount of timing data – timestamps collected during regular use – that can be mapped to workflow steps. This study validates using EHR timestamp data to predict outpatient ophthalmology clinic workflow timings at Oregon Health and Science University and demonstrates their usefulness in 3 different studies.

* + [Representation of occupational information across resources and validation of the occupational data for health model](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080809/)

Sripriya Rajamani, Elizabeth S Chen, Elizabeth Lindemann, Ranyah Aldekhyyel, Yan Wang, Genevieve B Melton

J Am Med Inform Assoc. 2018 Feb; 25(2): 197–205.

Abstract: Reports by the National Academy of Medicine and leading public health organizations advocate including occupational information as part of an individual’s social context. Given recent National Academy of Medicine recommendations on occupation-related data in the electronic health record, there is a critical need for improved representation. The National Institute for Occupational Safety and Health has developed an Occupational Data for Health (ODH) model, currently in draft format. This study aimed to validate the ODH model by mapping occupation-related elements from resources representing recommendations, standards, public health reports and surveys, and research measures, along with preliminary evaluation of associated value sets. All 247 occupation-related items across 20 resources mapped to the ODH model. Recommended value sets had high variability across the evaluated resources. This study demonstrates the ODH model’s value, the multifaceted nature of occupation information, and the critical need for occupation value sets to support clinical care, population health, and research.

* + [Patient preferences toward an interactive e-consent application for research using electronic health records](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5992814/)

Christopher A Harle, Elizabeth H Golembiewski, Kiarash P Rahmanian, Janice L Krieger, Dorothy Hagmajer, Arch G Mainous, 3rd, Ray E Moseley

J Am Med Inform Assoc. 2018 Mar; 25(3): 360–368

Abstract: The purpose of this study was to assess patient perceptions of using an interactive electronic consent (e-consent) application when deciding whether or not to grant broad consent for research use of their identifiable electronic health record (EHR) information.

* + [FACETS: using open data to measure community social determinants of health](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5885799/)

Michael N Cantor, Rajan Chandras, Claudia Pulgarin

J Am Med Inform Assoc. 2018 Apr; 25(4): 419–422.

Abstract: To develop a dataset based on open data sources reflective of community-level social determinants of health (SDH).

* + [Impact of problem-based charting on the utilization and accuracy of the electronic problem list](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6018915/)

Ron C Li, Trit Garg, Tony Cun, Lisa Shieh, Gomathi Krishnan, Daniel Fang, Jonathan H Chen

J Am Med Inform Assoc. 2018 May; 25(5): 548–554.

Abstract: Problem-based charting (PBC) is a method for clinician documentation in commercially available electronic medical record systems that integrates note writing and problem list management. We report the effect of PBC on problem list utilization and accuracy at an academic intensive care unit (ICU).

* + [A value set for documenting adverse reactions in electronic health records](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6251510/)

Foster R Goss, Kenneth H Lai, Maxim Topaz, Warren W Acker, Leigh Kowalski, Joseph M Plasek, Kimberly G Blumenthal, Diane L Seger, Sarah P Slight, Kin Wah Fung, Frank Y Chang, David W Bates, Li Zhou

J Am Med Inform Assoc. 2018 Jun; 25(6): 661–669.

Abstract: To develop a comprehensive value set for documenting and encoding adverse reactions in the allergy module of an electronic health record.

* + [Design and evaluation of a pharmacogenomics information resource for pharmacists](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080676/)

Katrina M Romagnoli, Richard D Boyce, Philip E Empey, Yifan Ning, Solomon Adams, Harry Hochheiser

J Am Med Inform Assoc. 2017 Jul; 24(4): 822–831

Abstract: To develop and evaluate a pharmacogenomics information resource for pharmacists.

* + [Designing risk prediction models for ambulatory no-shows across different specialties and clinics](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6077778/)

Xiruo Ding, Ziad F Gellad, Chad Mather, III, Pamela Barth, Eric G Poon, Mark Newman, Benjamin A Goldstein

J Am Med Inform Assoc. 2018 Aug; 25(8): 924–930.

Abstract: As available data increases, so does the opportunity to develop risk scores on more refined patient populations. In this paper we assessed the ability to derive a risk score for a patient no-showing to a clinic visit.

* + [Advancing the efficiency and efficacy of patient reported outcomes with multivariate computer adaptive testing](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080674/)

Scott Morris, Mike Bass, Mirinae Lee, Richard E Neapolitan

J Am Med Inform Assoc. 2017 Sep; 24(5): 897–902.

Abstract: The Patient Reported Outcomes Measurement Information System (PROMIS) initiative developed an array of patient reported outcome (PRO) measures. To reduce the number of questions administered, PROMIS utilizes unidimensional item response theory and unidimensional computer adaptive testing (UCAT), which means a separate set of questions is administered for each measured trait. Multidimensional item response theory (MIRT) and multidimensional computer adaptive testing (MCAT) simultaneously assess correlated traits. The objective was to investigate the extent to which MCAT reduces patient burden relative to UCAT in the case of PROs.

* + [Data and systems for medication-related text classification and concept normalization from Twitter: insights from the Social Media Mining for Health (SMM4H)-2017 shared task](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6188524/)

Abeed Sarker, Maksim Belousov, Jasper Friedrichs, Kai Hakala, Svetlana Kiritchenko, Farrokh Mehryary, Sifei Han, Tung Tran, Anthony Rios, Ramakanth Kavuluru, Berry de Bruijn, Filip Ginter, Debanjan Mahata, Saif M Mohammad, Goran Nenadic, Graciela Gonzalez-Hernandez

J Am Med Inform Assoc. 2018 Oct; 25(10): 1274–1283.

Abstract: We executed the Social Media Mining for Health (SMM4H) 2017 shared tasks to enable the community-driven development and large-scale evaluation of automatic text processing methods for the classification and normalization of health-related text from social media. An additional objective was to publicly release manually annotated data.

* + [Biases introduced by filtering electronic health records for patients with “complete data”](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6080680/)

Griffin M Weber, William G Adams, Elmer V Bernstam, Jonathan P Bickel, Kathe P Fox, Keith Marsolo, Vijay A Raghavan, Alexander Turchin, Xiaobo Zhou, Shawn N Murphy, Kenneth D Mandl

J Am Med Inform Assoc. 2017 Nov; 24(6): 1134–1141.

Abstract: One promise of nationwide adoption of electronic health records (EHRs) is the availability of data for large-scale clinical research studies. However, because the same patient could be treated at multiple health care institutions, data from only a single site might not contain the complete medical history for that patient, meaning that critical events could be missing. In this study, we evaluate how simple heuristic checks for data “completeness” affect the number of patients in the resulting cohort and introduce potential biases.

* + [Effect of vocabulary mapping for conditions on phenotype cohorts](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6289550/)

George Hripcsak, Matthew E Levine, Ning Shang, Patrick B Ryan

J Am Med Inform Assoc. 2018 Dec; 25(12): 1618–1625.

Abstract: To study the effect on patient cohorts of mapping condition (diagnosis) codes from source billing vocabularies to a clinical vocabulary.

1. 由於網際網路的發達，線上健康諮詢平台已成為各國政府或醫療機構服務其民眾的管道之一，然上網諮詢對個人資料有相當的揭露，試以近五年醫資相關期刊論文評論，影響民眾保護個人資料之因素及其使用線上諮詢平台的影響因素。(33%)