Yi-Ju Tseng, Ph.D.

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EDUCATION

2013   Ph.D.   Biomedical Electronic and Bioinformatics, National Taiwan University
        Thesis: A Web-based Healthcare-associated Infection Surveillance System based on Rule,
            Population, and Patient
        Advisors: Dr. Feipei Lai and Dr. Yee-Chun Chen

2008   B.S.   Clinical Laboratory Sciences and Medical Biotechnology, National Taiwan University

RESEARCH EXPERIENCE

Associate Professor, National Central University; Taoyuan, Taiwan— 2021-present
Department of Information Management

Affiliated Faculty member, Boston Children's Hospital; Boston, MA, USA — 2017-present
Computational Health Informatics Program

Visiting Assistant Professor, Harvard Medical School; Boston, MA, USA— 2017-present
Department of Pediatrics

Associate Professor, Chang-Gung University; Taoyuan, Taiwan— 2019-2021
Department of Information Management

Assistant Professor, Chang-Gung University; Taoyuan, Taiwan— 2016-2019
Department of Information Management

Adjunct Assistant Research Fellow, Chang Gung Memorial Hospital at Linkou; Taoyuan, Taiwan— 2016-2021
Department of Laboratory Medicine

Research Fellow, Harvard Medical School & Boston Children's Hospital; Boston, MA, USA — 2014-2016
Computational Health Informatics Program, under the mentorship of Dr. Kenneth Mandl
-Focusing on claims data analysis & predictive analytics for clinical/public health decision support

Research Fellow, National Taiwan University; Taipei, Taiwan — 2013
Medical Informatics Lab, under the mentorship of Dr. Feipei Lai
-Developed data integration and data mining algorithms for multiple measurements in clinical data

PROFESSIONAL EXPERIENCE

Executive Secretary, Chang-Gung University; Taoyuan, Taiwan — 2017-2021

Center for Institutional Research

Software Engineer, National Taiwan University Hospital; Taipei, Taiwan — 2008-2014

-Designed and implemented a web-based infection control decision support system
-Successfully integrated information technology into infection control process

IT Specialist Intern, IBM Taiwan Corporation; Taipei, Taiwan — 2011

Research Collaboratory (IBM Watson), under the mentorship of Dr. Sreeram Ramakrishnan
-Transformed medical coding standards to SNOMED-CT, using OWL to describe medical data.

PUBLICATIONS
Journal Papers

CK Hsu, IW Wu, YT Chen, CH Peng, **YJ Tseng**, YC Chen, MJ Hung, YC Kao. Value of the High-Sensitivity Troponin T Assay for Diagnosis of Acute Myocardial Infarction in Patients with and without Renal Insufficiency. Renal Failure. 2020;42(1):1142-1151.

Tseng YJ#, Wang HY#, Lin TW, Lu JJ, Hsieh CH, Liao CT. Development of a Machine Learning Model for Survival Risk Stratification of Patients With Advanced Oral Cancer. JAMA Netw Open. 2020;3(8):e2011768.(#equal contribution)

Tseng YJ, Hu RF, Lee ST, Lin YL, Hsu CL, Lin SW, Liou CW, Lee JD, Peng TI and Lee TH. Risk Factors Associated with Outcomes of Recombinant Tissue Plasminogen Activator Therapy in Patients with Acute Ischemic Stroke. Int. J. Environ. Res. Public Health 2020;17(2):618.

Chung CR, Wang HY, Lien F, **Tseng YJ**, Chen CH, Lee TY, Horng JT and Lu JJ. Incorporating statistical test and machine intelligence into strain typing of *Staphylococcus haemolyticus* based on matrix-assisted laser desorption ionization-time-of flight mass spectrometry. Front Microbiol. 2019; 10:2120.

Tseng YJ*# and Shih YL#. Developing epidemic forecasting models to assist disease surveillance for influenza with electronic health records. Int J Comput Appl. 2019 Epub (*Corresponding author, #equal contribution)

Wang HY, Hung CC, Chen CH, Lee TY, Huang KY, Ning HC, Lai NC, Tsai MH, Lu LC, **Tseng YJ*** and Lu JJ*. Increase *Trichomonas vaginalis* detection based on urine routine analysis through a machine learning approach. Sci. Rep. 2019;9:11074. (*Corresponding author)

Tseng YJ, Huang CE, Wen CN, Lai PY, Wu MH, Sun YC, Wang HY* and Lu JJ*. Predicting breast cancer metastasis by using serum biomarkers and clinicopathological data with machine learning technologies. Int J Med Inform. 2019;128:79-86.

Wang HY, Chen CH, Lee TY, Horng JT, Liu TP, **Tseng YJ*** and Lu JJ*. Rapid Detection of Heterogeneous Vancomycin-Intermediate *Staphylococcus aureus* Based on Matrix-Assisted Laser

Desorption Ionization Time-of-Flight: Using a Machine Learning Approach and Unbiased Validation. Front Microbiol.,2018; 9:2393.

Wang HY, Lee TY, **Tseng YJ**, Liu TP, Huang KY, Chang YT, Chen CC and Lu JJ. A New Scheme for Strain Typing of Methicillin-Resistant *Staphylococcus aureus* on the basis of Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry by using Machine Learning Approach. PLoS One. 2018;13(3):e0194289.

Lin WY#, Chen CC#, **Tseng YJ**#, Tsai YT, Chang CY, Wang HY, Chen CK. Predicting Post-Stroke Activities of Daily Living on Initiating Rehabilitation by a Machine Learning-Based Approach. Int J Med Inform. 2018;111:159-64. (#equal contribution)

Tseng YJ, Steinberg G, Fox KP, Armstrong J, Mandl KD. Antihyperglycemic Medications: A Claims-Based Estimate of First-line Therapy Use Prior to Initialization of Second-line Medications. Diabetes Care 2017;40(11):1500-05.

Tseng YJ, Mandl KD. Difference Between Estimated Purchase Price and Insurance Payments for Knee and Hip Implants in Privately Insured Patients Younger Than 65 Years. JAMA. 2017;317(8):854-5.

Tseng YJ, DeMaria A Jr., Goldmann DA, Mandl KD. Claims-based Diagnostic Patterns of Patients Evaluated for Lyme Disease and Given Extended Antibiotic Therapy. Vector Borne Zoonotic Dis 2017, 17(2): 116-22.

Tseng YJ, Cami A, Goldmann DA, DeMaria A Jr., Mandl KD. Incidence and Patterns of Extended-Course Antibiotic Therapy in Patients Evaluated for Lyme Disease. Clin Infect Dis 2015; 61(10): 1536-42.

Tseng YJ, Wu JH, Lin HC, Chen MY, Ping XO, Sun CC, Shang RJ, Sheng WH, Chen YC, Lai F, Chang SC. Development and Evaluation of a Web-Based, Hospital-Wide Healthcare-Associated Bloodstream Infection Surveillance and Classification System. JMIR Med Inform 2015; 21;3(3):e31.

Tseng YJ, Cami A, Goldmann DA, DeMaria A Jr., Mandl KD. Using Nation-wide Health Insurance Claims Data to Augment Lyme Disease Surveillance. Vector Borne Zoonotic Dis 2015; 15(10):591-6.

Ping XO, **Tseng YJ***, Lin YP, Chiu HJ, Lai F, Liang JD, Huang GT, Yang PM. A Multiple Measurements Case-based Reasoning Method for Predicting Recurrent Status of Liver Cancer Patients. Comput Ind 2015; 69:12-21.

Tseng YJ, Ping XO, Liang JD, Yang PM, Huang GT, Lai F. Multiple Time Series Clinical Data Processing for Classification with Merging Algorithm and Statistical Measures. IEEE J Biomed Health Inform 2015; 15(3):1036-43.

Liang JD, Ping XO, **Tseng YJ**, Huang GT, Lai F, Yang PM. Recurrence Predictive Models for Patients with Hepatocellular Carcinoma after Radiofrequency Ablation Using Support Vector Machines with Feature Selection Methods. Comput Methods Programs Biomed 2014;117(3):425-34.

Ping XO, Chung Y, **Tseng YJ***, Liang JD, Yang PM, Huang GT, Lai F. A Web-Based Data Querying Tool Based on Ontology-Driven Methodology and Flowchart-Based Model. JMIR Med Inform 2013; 1(1):e2.

Chen WH, Hsieh SL, Hsu KP, Chen HP, Su XY, **Tseng YJ**, Chien YH, Hwu WL, Lai F. Web-Based Newborn Screening System for Metabolic Diseases: Machine Learning Versus Clinicians. J Med Internet Res 2013;15(5):e98.

Tseng YJ, Wu JH, Lin HC, Chiu HJ, Huang BC, Shang RJ, Chen MY, Chen WH, Chen HT, Lai F, Chen YC. Rule-based Healthcare-associated Bloodstream Infection Classification and Surveillance System. Stud Health Technol Inform 2013;186:145-9.

Ping XO, **Tseng YJ**, Chung Y, Wu WL, Hsu CW, Yang PM, Huang GT, Lai F, Liang JD. Information Extraction for Tracking Liver Cancer Patients' Statuses: from Mixture of Clinical Narrative Report Types. Telemed E-health 2013;19(9):704-10.

Tseng YJ, Wu JH, Ping XO, Lin HC, Chen YY, Shang RJ, Chen MY, Lai F, Chen YC. A Web-Based Multidrug-Resistant Organisms Surveillance and Outbreak Detection System with Rule-Based Classification and Clustering. J Med Internet Res 2012;14(5):e131.

Wu ZY, **Tseng YJ**, Chung Y, Chen YC, Lai F. A Reliable User Authentication and Key Agreement Scheme for Web-Based Hospital-Acquired Infection Surveillance Information System. J Med Syst 2012;36(4):2547-55.

Conference Presentations

Chiu YY, Su CY and **Tseng YJ***. pharm: An R package for medication analysis of electronic health data. ICMHI 2019, 2019 May 17–19; Xiamen, China (Oral)

Chiu HJ and **Tseng YJ***. emr: An R package for electronic health records preprocessing and integration. ICMHI 2019, 2019 May 17–19; Xiamen, China (Oral)

Shih YL and **Tseng YJ***. Developing epidemic forecasting models to assist disease surveillance for influenza with electronic health records. ICMHI 2018, 2018 Jun 8-10; Tsukuba, Japan (Oral)

Huang CE, Wang HY, PY Lai, YC Sun, CN Wen, Lu JJ and **Tseng YJ***. Using machine learning methods for breast cancer recurrence prediction. MIE 2018, 2018 Apr 24-26; Gothenburg, Sweden (Oral)

Tseng YJ, DeMaria A Jr., Goldmann DA, Mandl KD. Diagnostic Journeys of Patients Evaluated for Lyme Disease and Given Extended Antibiotic Therapy. AMIA 2016 Annual Symposium; 2016 Nov. 12-16; Chicago, IL, USA, Nov., 2016 (Oral)

Tseng YJ, Mandl KD. Diagnostic Journeys of Patients Evaluated for Lyme Disease and Given Extended Antibiotic Therapy. Association of American Physicians, American Society for Clinical Investigation, and American Physician Scientists Association Joint Meeting; 2016 April 15-17; Chicago, IL, USA, Apr., 2016 (Poster)

Tseng YJ, Cami A, Goldmann DA, DeMaria A Jr., Mandl KD. Incidence and Patterns of Extended-Course Antibiotic Therapy in Patients Evaluated for Lyme Disease. The 9th Dr. M. Judah Folkman Research Day; 2015 May 12; Boston, MA, USA, May, 2015 (Poster)

Tseng YJ, Ichise R, Huang BC, Lin HC , Chen MY, Shang RJ, Sheng WH, Chen YC*, Lai F and Chang SC**.** Validation and Comparison of A Candidemia Prediction Models: a case-control study. The 7th

International Congress of Asia Pacific Society of Infection Control; 2015 Mar. 26-9; Taipei, Taiwan, Mar., 2015. (Oral)

Tseng YJ, Huang BC, Lin HC, Chen MY, Shang RJ, Sheng WH, Chen YC*, Lai F and Chang SC. Development and Evaluation of A Hospital-wide Healthcare-associated Surgical Site Infection Detection Algorithm. The 7th International Congress of Asia Pacific Society of Infection Control; 2015 Mar. 26-9; Taipei, Taiwan, Mar., 2015. (Oral)

Ping XO, **Tseng YJ**, Liang JD, Huang GT, Yang PM, Lai F. Missing Value Imputation on Multiple Measurements for Prediction of Liver Cancer Recurrence: A Comparative Study. International Computer Symposium 2014 Workshop on Healthcare and Bioinformatics; 2014 Dec 12-4; Taichung, Taiwan, Dec, 2014. (Oral)

Huang BC, **Tseng YJ**, Ho TW, Chen YC, Lin HC, Lai F. A Healthcare-associated Surgical Site Infection Surveillance and Decision Support System. The 2014 Biomedical Engineering International Conference (BMEiCON 2014); 2014 Nov. 26-8; Fukuoka, Japan, Nov, 2014. (Oral)

Ping XO, Lai F, **Tseng YJ**, Liang JD, Huang GT, Yang PM. Evaluation of Imputation Methods for Missing Data and Their Effect on the Reliability of Predictive Models. The Sixth International Conference on Bioinformatics, Biocomputational Systems and Biotechnologies (BIOTECHNO 2014); 2014 Apr 20-4; Chamonix, France, Apr, 2014. (Oral)

Tseng YJ, Wu JH, Ping XO, Lin HC, Chen YY, Shang RJ, Chen MY, Lai F, Chen YC. A Web-Based Multidrug-Resistant Organisms Surveillance and Outbreak Detection System with Rule-Based Classification and Clustering. Medicine 2.0'13; 2013 13-4 Sep; London, UK, Sep, 2013. (Oral)

Tseng YJ, Lai F, Lin PC, Shen CP, Kao JH, Wu JM, Liu ST, Zhou W, Jamleh HO, Chen CC. Telecare with Integrated Health Portal and Smart Phones. Medicine 2.0'12; 2012 15-6 Sep; Boston, MA, USA, Sep, 2012. (Oral)

Tseng YJ, Lee S YF, Ping XO, Chang H, Lai F. Describing Electronic Medical Record by Semantic Web Technology. The Second AMA-IEEE Medical Technology Conference on Healthcare; 2011 Oct. 16-8; Boston, MA, USA, Oct, 2011. (Poster)

Tseng YJ, Chen YC, Lin HC, Wu JH, Chen MY, Lai F. A web-based hospital-acquired infection surveillance information system. Information Technology and Applications in Biomedicine (ITAB), 2010 10th IEEE International Conference on; 2010 3-5 Nov; Corfu, Greece. 2010. (Oral)

Chen WH, Chen HP, **Tseng YJ**, Hsu KP, Hsieh SL, Chien YH, Hwu WL, Lai F, Newborn Screening for Phenylketonuria: Machine Learning vs Clinicians. The 2012 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining; 2012 Aug 27-8; Istanbul, Turkey, Aug, 2012. (Oral)

Ping XO, Liang JD, **Tseng YJ**, Yang PM, Huang GT, Lai F. The Methodology for Handling Missing Data during Development of Predictive Model. The Second AMA-IEEE Medical Technology Conference on Healthcare; 2011 Oct 16-8; Boston, MA, USA, Oct, 2011. (Poster)

Hsu CW, Ping XO, Liang JD, **Tseng YJ**, Wu YL, Yang PM, Huang GT, Chung Y, Lai F. A CBR-Based Method for Retrieving Similar Patients from Case Base. The Second AMA-IEEE Medical Technology Conference on Healthcare; 2011 Oct. 16-8; Boston, MA, USA, Oct, 2011. (Poster)

Wu YL, Ping XO, Liang JD, **Tseng YJ**, Hsu CW, Yang PM, Huang GT, Lai F. A Method for Identifying Confidence Level of the Extracted Results from Medical Narrative Reports: A Case Study Focus on the Patient with Liver Cancer. The Second AMA-IEEE Medical Technology Conference on Healthcare; 2011 Oct. 16-8; Boston, MA, USA, Oct, 2011. (Poster)

Chen CH, Ping XO, Wang ZJ, Hsieh SL, Chen LC, **Tseng YJ**, Hsu CW, Lai F. The keyword-based and semantic-driven data matching approach for assisting structuralizing the textual clinical documents. 3rd International Conference on Biomedical Engineering and Informatics (BMEI); 2010 Oct 16-8; Yantia, China, Oct, 2010. (Oral)

Ping XO, Lai MS, Tan CT, Liang JD, Lee HC, Chen CH, **Tseng YJ**, Wang ZJ, Lai F. An infrastructure for clinical data extraction, medical knowledge and mining services sharing. The First AMA-IEEE Medical Technology Conference on Individualized Healthcare; 2010 Mar 21-3 ; Washington D.C., USA, Mar. 2010. (Poster)

GRANDS

2018-2023 Exploring EHR Phenotype: Mining Disease Journeys using Healthcare Big Data
Ministry of Science and Technology, Taiwan (PI)

2017 Using Electronic Health Records for Influenza Surveillance and Prediction
Ministry of Science and Technology, Taiwan (PI)

2017 A Machine Learning-based Strategy to Cost-effectively Detect *Trichomonas vaginalis* in Urine, Chang Gung Medical Research Program, Taiwan (PI)

2016 Integrating healthcare data to estimate the incidence of infectious diseases
Ministry of Science and Technology, Taiwan (PI)

2016 Application of machine learning methods in multiple clinical parameters analysis for prediction of cancer outcomes, Chang Gung Medical Research Program, Taiwan (PI)

AWARDS

2018 MOST Young Scholar Fellowship, Ministry of Science and Technology, Taiwan

2018 Research Excellence Award, Chang Gung University, Taiwan

2016-2019 Special Outstanding Talent Award, Ministry of Science and Technology, Taiwan

2014 Postdoctoral Research Abroad Program Fellowship, Nation Science Council, Taiwan

2013 Smart Hospital Award, The Joint Commission of Taiwan (to Multidrug-Resistant Organisms Surveillance and Outbreak Detection System)

2012 IICM S.M. Cho IT Student Leader Award, Institute of Information & Computing Machinery, Taiwan

2012 Graduate Student Research Excellence Award, Graduate Institute Biomedical Electronic and Bioinformatics, National Taiwan University

PROFESSIONAL ACTIVITIES

Member of *Institute of Information & Computing Machinery, Taiwan*

Member of *Taiwan Association for Medical Informatics, Taiwan*

Reviewer for *BMJ, IEEE Journal of Biomedical and Health Informatics, Neurocomputing, Computer and Electrical Engineering, Journal of Medical Systems, International Journal of Medical Sciences, Enterprise Information Systems, Frontiers in Public Health, Frontiers in ICT*

Reviewer for *HEALTHINF 2020-21, ICMHI 2019, ICHM 2017, AMIA CRI 2015, Medicine 2.0 2013-2014*