**ABBAS SHOJAEE MD, CHDA**

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Health data science and HEOR researcher centered on using large-scale real-world health data for pragmatic outcomes research, decision support, and inferring causal hypothesis. Vast expertise in the application of pattern mining, clustering, classification, and deep neural networks. A track record of developing analytic products that inform healthcare decisions and policies; and improve patients' outcomes. Result oriented and productive, experienced in leading research and development projects/teams in academia and industry.

## Education

[1992-2002] University of Medical Sciences Mashhad, Iran

Doctor of medicine

**Postdoctoral Studies** Yale University New Haven, USA

[2013- April 2015]

Data science in healthcare & Outcomes research

Center for Outcomes Research and Evaluation

## Mini MBA

[2018-2019] Design Technologies New Haven, USA

ABCT entrepreneourship program

## Courses and Certifications

*Certified Health Data Analyst (AHIMA)*

*Teaching in American Classes, Yale University (Course and Certification)*

*Health Informatics: Academic Medical Center, Amsterdam, the Netherlands (Course and Certification)*

*Critical Thinking, TUMS (Course)*

*Evidence-Based Medicine, TUMS (Course)*

*Geo-computing, Yale University (Training)*

*Project Management, FU (Certification)*

**Career/Academic Appointments:**

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|  | 1996-1997 | Head, Student Research Assembly- Artificial Intelligence Group. |
|  | 1998-2002 | Internship, Mashhad University of Medical Sciences, in 4 Academic Hospitals(Ghaem , Imam Reza, Kamiab, Hasheminejad)  |
|  | 2002-2003 | Hospital Information System Consultant and OLAP Analyst, Tehran-Athena-Beirut, DC Soft SAL Co. (on behalf of Pegahsoft Co.) |
|  | 2003-2005 | Software architect to Iran Diabetes Registry project in Charity Foundation for Special Diseases in collaboration with Endocrine and Metabolism Research Institute of Tehran University of Medical Sciences, Tehran, Iran  |
|  | 2006-2013 | Data Mining and outcomes research advisor, Tehran, National Peritoneal Dialysis Registry, Shafa Dialysis Research Center, Tehran, Iran (on behalf of Pegahsoft Co.) |
|  | 2009-2010 | Lecturer of Health Informatics, Shahid Beheshti University of Medical Sciences, Tehran, Iran & Mashhad University of Medical Sciences |
|  | 2009-2011 | Software Architect and advisor – Iran Diabetes Registry, Endocrine, and Metabolism Research Institute, Tehran University of Medical Sciences. (on behalf of Pegahsoft Co.) |
|  | 2010- 2012 | Managing consultant of IT and Chief Medical Information Officer, Red Crescent Hospitals in Dubai, UAE, |
|  | 2012- 2013 | Member of Strategy Council for Safe Communities |
|  | April 2013– April 2015 | Postdoctoral research associate – Center for Outcomes Research and Evaluation, Yale University |
|  | 2015-October 2016 | Faculty Associate Research Scientist Center for Outcomes Research and Evaluation, Big Data To Knowledge Group, Yale University/ Yale-New Haven Hospital |
|  | November 2016Present | Faculty member, Health Data Scientists,Section for Pulmonary and Intensive CareYale University/ Yale-New Haven Hospital |
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**Administrative Positions:**

2004-2007 VP of Analytics, Pegahsoft Co., Mashhad & Tehran, Iran

2008-2010 Chief Technical Officer & Chairman of the board, Pegahsoft Co. Dubai, UAE

2010-2012 Executive consultant in Medical Informatics and IT departments. Red Crescent Hospitals, Dubai, UAE

2012-2013 Managing consultant at Mashhad municipality safe communities project and member of National Strategy Council for Iran Safe Communities.

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## Knowledge and Skills summary

As an applied scientist and lecturer, I have expertise in the following technologies and concepts.

* **Domains**: health data science, causal inference, integrative studies, outcomes research and evaluation, health informatics
* **Concepts and standards**: UMLS, SNOMED CT, LOINC, HL7, OpenEHR, CCR, CDR, DICOM, HIPAA
* **Data:** large-scale healthcare administrative data(HCUP & CMS), electronic medical records, disease registries, hospital information systems, mixed healthcare data(e.g. UK Biobank)
* **Data Science methods**: Causal inference and knowledge discovery, supervised and unsupervised machine learning methods, predictive and prescriptive modeling, Probabilistic graphical models such as Bayesian network and Markov Chain data, Pathway analysis, Text Mining, Natural Language Processing(NLP), Information Extraction, Associative rule mining, Sequential rule mining & Discrete Time Series Analysis, Artificial Neural Networks, Deep Neural Networks, Decision trees, ensemble methods: boosting, bagging and stacking methods, Fuzzy Inference Systems, Formal Languages & automata, Genetic programming, Discrete Event Simulation, Monte Carlo discrete event simulation, geospatial data analysis, Locality-sensitive hashing, and fuzzy search
* **Database and distributed data technologies**: SQL Server, MySql, NoSQL, Neo4j, MonetDB, Spark, Hadoop
* **Programming languages**: R, C++, C, C#, F#, VBA, VB.NET
* **Technologies:** XML, XSL, JSON, Regular Expressions, SQL, TSQL
* **Architectures**: Object-Oriented design, Aspect-Oriented Design, Dependency Injection
* **Tools**: MS Project, Microsoft Office, Excel, VISIO, Altova XML Spy, Gephi, Cytoscape, Weka, RapidMiner, ArcGIS, SQL Server SSIS & SSRS, Ingenuity IPA, Qlucore Omics Explorer
* **Enterprise analysis and project management**: Enterprise Analysis with TOGAF, SCRUM, Microsoft Solution Framework (MSF), Rational Unified Process (RUP), Spiral, and Waterfall models.

**Professional Honors & Recognition (most recent to earliest):**

 **2013**: Member of Strategy Council for Iran Safe Communities.

 **2011**: Leading applied scientist of Khorasan State. Granted by the Governor-General of the state.

**2009**: Award certification for the distinguished project in the nationwide Clinical Governance festival. Granted by Tehran University of Medical Sciences

**2008**: Honored for the most innovative ICT product from Khorasan State and granted by ICT High Council of the state.

**2008**: Certification of excellence for the development of Electronic Medical Record for the chemically injured patients and spinal injuries. Granted by Research Deputy of Baghiattelah University.

**2007**: Prize winner, UN World Summit Award 2008, for Hakim Electronic Health Record, as the best eHealth Solution in Iran. WSIS organization.

**2007**: Certification of excellence for enhancing research and improving patients' outcomes in national Peritoneal Dialysis Registry through successful data integration, data mining techniques and inventing a new technique and tool to compensate for missed data. It is granted by Shafa Peritoneal Dialysis Research Center.

 **2006**: Certification of excellence for development and implementation of research-oriented Medical Record for Endocrine and Metabolism Diseases in National Diabetes Research Network. Granted by Endocrine and Metabolism Research Institute of TUMS

 **2006**: Certification of excellence for the development of inpatient Electronic Medical Record and empowering research for colorectal cancer, breast cancer in Imam Khomeini academic hospital. Granted by Research Deputy's Office, TUMS.

**2005**: Certification of excellence for Analysis and design of electronic health records for HIV/ AIDS patients in Iranian Research Center for HIV and AIDS (IRCHA).

 **2002**: Certification of excellence for Managing joint venture of 3 companies for enhancement and internationalization of IHIS (a hospital information system). Granted by Patsa Co.

# Lectures and Courses: (list from most recent to earliest)

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| 2017 | lecturer, "**Graph Network Analysis for Causal Inference in Observational Healthcare Data**," Cincinnati Children Hospital, Department of Biomedical Informatics, June 6th, 2017,  |
| 2016 | lecturer, "**Graph network visualization and analysis to gain insights into the healthcare outcomes**," Department of Health Management & Policy, Saint Louis University, December 12th, 2016,  |
| 2015 | Lecturer, "**Trajectories of care in cardiovascular patients with multiple chronic conditions**," Department of Internal Medicine, Yale-New Haven Hospital, October 2015. |
| 2015 | Lecturer, "**Trajectory Analysis: Analysis of healthcare journey**" Day of Data Spring Discussion Series 2015, February 26th, Yale University. |
| 2011 | Lecturer, "**Iranian Hospital Information Systems, International trends, and intramural survivability**. 2nd Medical Informatics Conference, February 2011, Shahid Beheshti University of Medical Sciences. |
| 2011 | Lecturer, "**Timeboxing to cure missing data of longitudinal studies: new achievements"** (IPDR) - Shafa CAPD Research Center," the 13th International Congress of Nephrology, Dec 2011, held by Iranian Society of Nephrology. By Abbas Shojaee et al.  |
| 2011 | Lecturer, "**eHealth Paradigm Shift: how to react at the level of Hospital Information Systems**," 3rd eHealth Conference in the Middle East, February 2nd 2011, Hamdan Bin Mohamad University, Dubai, UAE  |
| 2009 -2010 | Course lecturer: "**Healthcare Interoperability with HL7 and SNOMED CT**", Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Course lecturer: "**HL7 Messaging**", Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Course lecturer: "**Security in Healthcare Data**," Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Course lecturer: "**Healthcare Data Structures**," Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Course lecturer: "**Clinical Decision Support Systems**," Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Course lecturer: "**Software life cycle management**," Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Lecturer: "**Disease Registries, design principals**," Shahid Beheshti University of Medical Sciences |
| 2009 -2010 | Workshop lecturer: "**Architecture of modern Hospital Information Systems**," Mashhad University of Medical Sciences |
| 2009 -2010 | Workshop lecturer: "**HL7 based Healthcare Information Systems**", Mashhad University of Medical Sciences |
| 2009 -2010 | Workshop lecturer: "**Software life cycle management methodologies: Microsoft Solution Framework V 3.x**" |
| 2009 |  "**Time boxing a new technique to cure missing data of chronic studies, while minimizing information loss and perturbation**: Implementation in Iran Peritoneal Dialysis Registry (IPDR) - Shafa CAPD Research Center", 12th International Congress of Nephrology, Dec 2009, held by Iranian Society of Nephrology. By Abbas Shojaee et al. |
| 2008 | "**eHealth paradigm shift**", 1st Iranian Congress on Hospital Automation, Jan 2008. Held by Medical Informatics Department of University of Amsterdam and Mashhad University of Medical Sciences. By Abbas Shojaee.  |
| 2007 | "**Using Computerized Registries in Chronic Kidney Diseases: National Registry of Peritoneal Dialysis**", 11th International Congress of Nephrology - Nov 2007. By Abbas Shojaee, Iraj Najafi, Hoshang Sanadgol, Mostafa Hosseini |
| 2007 | "**Successful implementation of Electronic Medical Record in Research Settings for Diabetes and Vascular surgery"**, Diabetes and Vascular Surgery Congress Oct 2007, By Abbas Shojaee, Iman Rahimi |
| 2006 | "**Reproductive Electronic Health Record: Lessons Learned**," By Abbas Shojaee, 2006, Royan International TWIN Congress: seventh congress on Reproductive Biomedicine & 2nd Congress on Stem Cell Biology and Technology.  |
| 2006 | "**National Diabetes Shared Care Project**," By Bagher Larijani, MohammadReza Rahimi, Abbas Shojaee, 2006, 2nd Health Informatics National Congress, Beheshti University of Medical Sciences. |
| **2004** | **"Computer-assisted resource planning using HL7 based EHR, through learning expert systems",** By Abbas Shojaee, Farid Abolhasani, Marjan Maali, 2004, 4th Regional (Asia and Oceania) eHealth congress. |
| 2004 | "**Using EHR farm to enrich knowledgebase of evolving diagnostic medical expert systems: An experimental trial**,"By Mansour Nassiri Kashani, Abbas Shojaee, Marjan Maali, 2004, 4th Regional (Asia and Oceania) eHealth congress. (Elected as the best article) |
| 1998 | Course lecturer: "**Artificial Neural Networks**" by Abbas Shojaee, Ferdowsi University, School of Engineering. |
| 1997 | "**Medical expert systems: principals and new advances**" by Abbas Shojaee, Ghaem Hospital, Mashhad Iran (1997). |
| 1997 | "**The effect of changes in environment and severity of Beta-thalassemia on Beta-thalassemia gene frequency in small populations: A computer simulation model**" By Kayhan Azadmanesh, Abbas Shojaee. – Distinguished as the best presentation in the 6th annual conference of Iranian medical student researchers (1997) |
| 1996 | "**Evaluating different policies for beta-Thalassemia control using a computer simulation model**" by Kayhan Azadmanesh, Abbas Shojaee. Ghaem Hospital, Mashhad Iran (1996) |

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| Shojaee A, Gomez J, Perez M. Lithium Therapy Is Associated with Increased Risk of COPD Exacerbation. B35 EPIDEMIOLOGICAL STUDIES AND MANAGEMENT OF COPD: American Thoracic Society; 2019. p. A2991-A. (Paper in preparation) |
| Shojaee A, Platelet Transfusion Is an Independent Risk Factor for Idiopathic Pulmonary Fibrosis: Results of Large-Scale Longitudinal Population-Level Data. C35 HEALTH SERVICES RESEARCH IN COUGH, CF, AND ILD: American Thoracic Society; 2019. p. A4625-A. (Paper in preparation) |
| Bade B, Shojaee A, Gulati M. Hospital-Associated Outcomes for IPF Patients with Lung Cancer. D103 IDIOPATHIC INTERSTITIAL PNEUMONIAs: NATURAL HISTORY AND PROGNOSIS: American Thoracic Society; 2019. p. A7129-A. (Paper in preparation) |
| Shojaee A, Gomez Villalobos, J., Wang, X., Kaminski, N., Siner, J., Takyar, S., . . . Chupp, G. (2018). Asthma-Neoplasms Relationships: New Insights Using Machine Inference, Epidemiological Reasoning, And Big Data. (Under review in Lancet Digital Health) |
| Shojaee A, Gomez J, Kaminski N, Siner J, Wang X, Aani A, et al. Asthma Is Associated with Benign Glandular Neoplasms in a Large-Scale Population-Based Cohort. A53 ASTHMA EPIDEMIOLOGY: American Thoracic Society; 2018. p. A1913-A. |
| Shojaee A, Kaminski N, Pisani M, Liu Y, Siner J. The Associations of Invasive Procedures and Subsequent Psychiatric Diagnoses. C46 CRITICAL CARE: HUMAN TOUCH-PATIENT AND FAMILY ENGAGEMENT AND PALLIATIVE CARE: American Thoracic Society; 2018. p. A5081-A. (Paper in preparation) |
| Zinchuk A, Yaggi K, Wenlan Z, Siner J, Shojaee A. Obstructive Sleep Apnea Increases the Risk of Diastolic Heart Failure: Results of a Large Population Study. A77 EFFECT OF SLEEP DISORDERED BREATHING ON CARDIOMETABOLIC AND NEUROCOGNITIVE OUTCOMES: American Thoracic Society; 2018. p. A7694-A. (Paper in preparation) |
| Haimovich, J. S., Venkatesh, A. K., Shojaee, A., Coppi, A., Warner, F., Li, S.-X., & Krumholz, H. M. (2017). Discovery of temporal and disease association patterns in condition-specific hospital utilization rates. PLoS One, 12(3), e0172049.  |
| Shojaee, Abbas. "Revisiting Causal Inference In Memory-Less Transition Networks.", 2016: arxiv.1608.02658. |
| Ranasinghe, I., Shojaee, A., Bikdeli, B., Gupta, A., Chen, R., Ross, J. S., . . . Krumholz, H. M. (2015). Poorly Cited Articles in Peer-Reviewed Cardiovascular Journals from 1997-2007: Analysis of 5-Year Citation Rates. Circulation. doi: 10.1161/circulationaha.114.015080 |
| Nuti, S. V., Ranasinghe, I., Murugiah, K., Shojaee, A., Li, S.-X., & Krumholz, H. M. (2015). Association between journal citation distribution and impact factor: a novel application of the Gini coefficient. J Am Coll Cardiol, 65(16), 1711-1712.  |
| Shojaee Abbas MD, Shu-Xia Li Ph.D., Isuru Ranasinghe, Sudhakar V. Nuti, Emily Bucholz, MPH, Rachel Dreyer, Karthik Murugiah, Bobak Mortazavi, Harlan M. Krumholz. " Visualizing Distinct Trajectories of Healthcare Utilization Patterns Leading to Heart Failure Readmission", Yale Day Of Data, 2014.  |
| Murugiah, K., Chen, S. I., Dharmarajan, K., Nuti, S. V., Wayda, B., Shojaee, A., . . . Dreyer, R. P. (2014). Most important outcomes research papers on cardiac arrest and cardiopulmonary resuscitation. Circulation: Cardiovascular Quality and Outcomes, 7(2), 335-345.  |
| Aakriti Gupta, MBBS, Kumar Dharmarajan, MD, MBA, Rachel Dreyer, Ph.D., Behnood Bikdeli, MD, Ruijun Chen, BA, Vivek T. Kulkarni, AB, Ruizhi Shi, MD, MPH, Abbas Shojaee, MD, Isuru Ranasinghe, MBChB, MMed, Ph.D. "Most Important Outcomes Research Papers on Device Therapies for Cardiomyopathies." Circulation: Cardiovascular Quality and Outcomes, 2013. |
| Ali Asghar Akhlaghi, Iraj Najafi, Mahmood Mahmoodi, Abbas Shojaee, Mahmoud Yousefifard, Mostafa Hosseini. "Survival Analysis of Iranian Patients Undergoing Continuous Ambulatory Peritoneal Dialysis Using Cure Model." Journal of Research in Health Sciences 13(1) (2013): 32-36. |
| Najafi I, Alatab S, Atabak S, Majelan NN, Sanadgol H, Makhdoomi K, Shojaee A. Seventeen years' experience of peritoneal dialysis in Iran: the first official report of the Iranian peritoneal dialysis registry. Peritoneal Dialysis International. 2014;34(6):636-42. |
| Shojaee Abbas, Hosseini Mostafa, Najafi Iraj. "Time Boxing – A new technique to cure missing data of chronic studies and to minimize information loss and perturbation: Implementation in Iran Peritoneal Dialysis Registry (IPDR)." 12th Congress of Nephrology, Dialysis, and Transplantation. Kish Island: Iranian Journal of Kidney Diseases, 2011. 66. |
| Najafi I, Saddadi F, Amini M., Hakemi M, Nasiri S, Shojaee A., Hosseini SM. "Using Time Boxing method for evaluation of patient and technique survival in PD patients, based on IRANIAN CAPD registry." Iranian Journal of Kidney Disease (IJKD) 5 (2011): 38-39. |
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| Azadmanesh, Keyhan, Shojaee Abbas. "The effect of changes in environment and severity of Beta-thalassemia on Beta-thalassemia gene frequency in small populations: A computer simulation model." Omid journal 2 (1997). |