

Education

University of the Virginia

PH.D. IN SYSTEMS ENGINEERING - ADVISOR: PROF. DONALD E. BROWN

- GPA: 4.00/4.00

Virginia, USA

2020 - Present

Tarbiat Modares University

PH.D. IN INDUSTRIAL ENGINEERING - ADVISOR: PROF. M.R AMIN-NASERI

- Dissertation: Developing an Integrated Dynamic Model for Iranian Petroleum Supply Chain
- Thesis Grade - 19.9/20 (rank: excellent)
- GPA: 3.82/4.00

Tehran, Iran

2012 - 2016

K. N. Toosi University of Technology

M.Sc. IN INDUSTRIAL ENGINEERING - ADVISOR: PROF. RASOUL SHAFAEI

- Thesis: No-wait two stage hybrid flow shop scheduling by using meta-heuristic algorithms
- Thesis Grade - 19/20 (rank: excellent)
- GPA: 3.91/4.00

Tehran, Iran

2009 - 2011

K. N. Toosi University of Technology

B.Sc. IN INDUSTRIAL ENGINEERING

- GPA: 3.54/4.00

Tehran, Iran

2005 - 2009

Research Interests

- Computer Vision and Foundation models
- Large Language Models and Generative AI
- Multimodal models
- Data Science and Machine Learning
- Time Series classification and segmentation
- Deep Reinforcement Learning

Honors & Awards

- Awarded American Heart Association (AHA) Predoctoral Fellowship (2023-2024): Primary Investor
- Awarded Endowed Fellowship (2022-2023)- Merit-based fellowships based on academic excellence.
- The guest speaker at the Artificial Intelligence in Clinical Research Panel at the Association of Clinical Research Professionals (ACRP) 2024 Fall Symposium
- Awarded member of Iran's National Elites Foundation
- Ranked 1st among the B.Sc. students of Industrial Engineering, K. N. Toosi University of Technology
- Distinguished B.Sc. student award with honorary acceptance for the M.Sc. program
- Best student award, K. N. Toosi University of Technology, 2009
- Ranked 2nd among the M.Sc. students of Industrial Engineering, K. N. Toosi University of Technology
- Awarded member of Young Mathematicians Association of IRAN

Academic & Work Experience

Postdoctoral Research Associate

2024-present

- Developing Multimodal Models:** Designing a multimodal model for situations with limited data and missing modalities, including histopathology, clinical data, radiology reports, and transcriptomics data, to enhance diagnostic accuracy and identify superior disease outcomes.

- **Designing new Domain Adaptation techniques:**
 - Designing a new Unsupervised Domain Adaptation technique called Multi-prototype Gaussian Mixture-based domain adaptation model for semantic segmentation problems. This project aims to improve the performance of the Domain adaptation framework by estimating the underlying multi-prototype source domain data distribution on the feature space.
 - Designing a new Domain adaptation technique for semantic segmentation problems for situations in which we are dealing with corrupted or partially source-labeled data.
- **Developing models to generate synthetic fully-annotated 3D multi-channel immunofluorescent images:**
 - Developing Denoising diffusion models and convolutional auto-encoder to generate synthetic 3D multi-channel immunofluorescent images
- **Developing new approaches for the time series classification tasks:**
 - Improving the classification performance by imaging Multivariate Time Series data using Gramian Angular Field (GAF) and classifying them by extracting features using Convolutional Auto-Encoder Neural networks.
 - Developing a novel approach: the Supervised Contrastive learning for time series classification (SupCon-TSC) for multivariate time series classification (MTSC) task. The proposed approach outperforms State-of-the-art approaches on public datasets (i.e. real-world UEA Multivariate time series archive).
- **Developing label-efficient techniques (Weakly- and Semi-supervised learning) for the segmentation and classification tasks:**
 - Classification of gigapixel images with weak annotation using supervised and unsupervised learning approaches (Case study: Diagnosis of Barrett's esophagus (BE)).
 - Designing a label-efficient contrastive learning model for weakly annotated 3D multi-channel immunofluorescent images for nuclei detection and classification.

Graduate Teaching Assistant: University of Virginia

2020-2021

- **DS 5001 (Spring 2021)**- Exploratory Text Analytics (Prof. Sree Mallikarjun)
- **SYS 6016 (Spring 2021)**- Deep Learning (Prof. Scott Schwartz)
- **SYS 3021 (Fall 2020)**- Deterministic Decision Models (Prof. Garrick Louis, and Prof. Robert Riggs)
- **SYS 6014 (Spring 2020)** - Decision Analysis (Prof. Arthur Small)

Member of Strategic Planning Team: Department of Road Maintenance and Transportation

2011-2012

- Providing strategic plans and analyzing company performance
- Research competition to recognizing threats and opportunities
- Understanding and defining the company's strategy and mission

Course Work at the University of Virginia

- **SYS 4582-6582: Special Topics: Reinforcement Learning:** Grade: A+ (100/100), Prof. Peter A Beling, Spring 2021
- **CS 6501-4501: Vision and Language:** Grade: A+ (100/100), Prof. Vicente Ordóñez-Román, Fall 2020
- **CS 6316-001: Machine Learning:** Grade: A (97.84/100), Prof. Aidong Zhang, Fall 2020
- **CS 6501-003: Deep Learning for Visual Recognition:** Grade: A+ (100/100), Prof. Vicente Ordóñez-Román, Spring 2020

Google Scholar

Citations: 400 **h-index:** 10 **i10-index:** 10

Publications

1. **Nazanin Moradinasab**, Hassan Jafarzadeh, Donald E. Brown, 2024. GenGMM: Generalized Gaussian-Mixture-based Domain Adaptation Model for Semantic Segmentation. IEEE International Conference on Image Processing. (Accepted)
2. **Nazanin Moradinasab**, Rebecca A. Deaton, Laura S. Shankman, Gary K. Owens, Donald E. Brown, 2024. ProtoGMM: Multi-prototype Gaussian Mixture-based domain adaptation model for semantic segmentation. International Conference on Machine Learning and Applications. (Accepted)
3. **Nazanin Moradinasab**, Suchetha Sharma, Donald E Brown, 2024. Universal Representation Learning for Multivariate Time Series using the instance-level and cluster-level Supervised Contrastive Learning. Data Mining

and Knowledge Discovery, pp.1-27.

4. **Nazanin Moradinasab**, Rebecca A. Deaton, Laura S. Shankman, Gary K. Owens, Donald E. Brown, 2023. Label-efficient Contrastive Learning-based model for nuclei detection and classification in 3D Cardiovascular Immunofluorescent Images, pp. 24-34. Cham: Springer Nature Switzerland. *26th MICCAI Conference Workshop*
5. McBee, P., **Nazanin Moradinasab**, Brown, D.E. and Syed, S., 2023. Pre-training Segmentation Models for Histopathology. In *Medical Imaging with Deep Learning*, short paper track.
6. **Nazanin Moradinasab**, Yash Sharma, Laura S. Shankman, Gary K. Owens, Donald E. Brown, 2022. Weakly Supervised Deep Instance Nuclei Detection using Points Annotation in 3D Cardiovascular Immunofluorescent Images. *Machine Learning for Healthcare Conference*, PMLR, pp.182:1–20.
7. Ronen Bar-Yoseph, Shlomit Random-Aizik, Nick Coronato, **Nazanin Moradinasab**, Thomas Barstow, Annamarie Stehli, Donald E Brown, Dan Cooper, 2022. Heart rate and gas exchange dynamics responses to multiple brief exercise bouts (MBEB) in early- and late- pubertal boys and girls. *Physiological Reports*. (Impact factor: 2.261)
8. Annapareddy, Navya, Kara Fallin, Ryan Folks, William Jarrard, Marcel Durieux, **Nazanin Moradinasab**, Bhiken Naik, Saurav Sengupta, Christian Ndaribitse, and Donald Brown, 2022. Handwritten Text and Digit Classification on Rwandan Perioperative Flowsheets via YOLOv5. In *2022 Systems and Information Engineering Design Symposium (SIEDS)*, pp. 270-275. IEEE.
9. Rasoul Sali, **Nazanin Moradinasab**, Shan Guleria, Lubaina Ehsan, Philip Fernandes, Tilak U Shah, Sana Syed, Donald E Brown, 2020. Deep Learning for Whole-Slide Tissue Histopathology Classification: A Comparative Study in the Identification of Dysplastic and Non-Dysplastic Barrett's Esophagus. *Journal of Personalized Medicine*, 10(4), pp.141-157. (Impact Factor: 3.4)
10. **Moradinasab, N.**, Amin-Naseri, M.R., Behbahani, T.J. and Jafarzadeh, H., 2018. Competition and cooperation between supply chains in multi-objective petroleum green supply chain: A game theoretic approach. *Journal of Cleaner Production*, 170, pp.818-841. (Impact Factor: 11.1)
11. **Moradinasab, N.** and Amin-Naseri, M.R., 2016. Designing an integrated model for a multi-period, multi-echelon and multi-product petroleum supply chain. *Energy*, 114, pp.708-733. (Impact Factor: 9)
12. Abedzadeh, M., Mazinani, M., **Moradinasab, N.** and Roghanian, E., 2013. Parallel variable neighborhood search for solving fuzzy multi-objective dynamic facility layout problem. *The International Journal of Advanced Manufacturing Technology*, pp.1-15. (Impact Factor: 3.4)
13. **Moradinasab, N.**, Shafaei, R., Rabiee, M. and Ramezani, P., 2013. No-wait two stage hybrid flow shop scheduling with genetic and adaptive imperialist competitive algorithms. *Journal of Experimental & Theoretical Artificial Intelligence*, 25(2), pp.207-225. (Impact Factor: 2.2)
14. **Moradinasab, N.**, Amin-Naseri, M.R., Behbahani, T.J. and Nakhai Kamal Abadi, I., 2016. An integrated economic model of fossil fuel energy planning for government and private sectors. *Energy Sources, Part B: Economics, Planning, and Policy*, 11(7), pp.651-664. (Impact Factor: 4.621)
15. Roghanian, E., **Moradinasab, N.**, Afruzi, E.N. and Soofifard, R., 2015. Project risk management using fuzzy failure mode and effect analysis and fuzzy logic. *International Journal of Services and Operations Management*, 20(2), pp.207-227.
16. **Moradinasab, N.**, Amin-Naseri, M.R, Jafarzadeh, H. , A Benders Decomposition Method to solve a multi-period, multi-echelon and multi-product Integrated Petroleum Supply Chain. *Process Integration and Optimization for Sustainability*.
17. **Moradinasab, N.**, Hassan Jafarzadeh², M. R. Amin-Naseri³ and Cody H. Fleming, 2019. A Dynamic Sustainable Competitive Petroleum Supply Chain Model for Various Stakeholders with Shared Facilities. *arXiv*.
18. **Moradinasab, N.**, Shafaei, R., Rabiee, M. and Mazinani, M., 2012. Minimization of maximum tardiness in a no-wait two stage flexible flow shop. *International Journal of Artificial Intelligence*, 8(S12), pp.166-181.
19. **Moradinasab, N.**, Soofifard, R. and Asili, G.R., 2016. Developing an effective mathematical model for leadership styles selection by using fuzzy logic: a case on RIPI HR characteristics. *International Journal of Productivity and Quality Management*, 19(4), pp.466-484.

20. Shafaei, R., **Moradinasab, N.** and Rabiee, M., 2011. Efficient meta heuristic algorithms to minimize mean flow time in no-wait two stage flow shops with parallel and identical machines. *International Journal of Management Science and Engineering Management*, 6(6), pp.421-430.
21. Parvazdavani, M., Nadri, M., Motahari, M., Zare-Reisabadi, M. and **Moradinasab, N.**, 2015. Application of Combination of TOPSIS and ANP Method to Prioritize Artificial Lift Methods.
22. Jafarzadeh, H., **Moradinasab, N.**, Eskandari, H. and Gholami, S., 2017. Genetic Algorithm for A Generic Model of Reverse Logistics Network. *International Journal of Engineering Innovation & Research*, 6 (4), pp 174-178
23. Jafarzadeh, H., **Moradinasab, N.**, Gerami, A., 2017. Solving No-Wait Two-Stage Flexible Flow Shop Scheduling Problem with Unrelated Parallel Machines and Rework Time by the Adjusted Discrete Multi Objective Invasive Weed Optimization and Fuzzy Dominance Approach. *Journal of Industrial Engineering and Management*, 10(5), pp 73-89.
24. Jafarzadeh, H., **Moradinasab, N.**, 2017. An Enhanced Genetic Algorithm for the Generalized Traveling Salesman Problem. *Engineering, Technology & Applied Science Research*.
25. Mazinani, M. and **Moradinasab, N.**, 2011. Solving Bi-objective facility layout problem by using NPGA. *4th international operational research conference*, Iran.
26. Shafaei, R. and **Moradinasab, N.**, 2011. Solving no-wait two stage flexible flow shop by using NPGA. *4th international operational research conference*, Iran.
27. sheikhmohammady, M. and **Moradinasab, N.**, 2010. Conceptual framework of system of systems and importance of its importation in Iran, *7th international industrial engineering conference*, Iran.

Computer Skills

Programming Language: Python (Pytorch, Tensorflow, Numpy, Pandas, Matplotlib, Seaborn, Scipy, Scikit-Learn, OpenCV, Gym), R, SQL

Optimization Software: CPLEX, OPL, GAMS

Statistical Software: SPSS, MiniTab

Control Project Software: MSP, Primavera

General Software: \LaTeX