Siamak Salimy

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Professional Summary

Highly motivated Computational Biology Postdoctoral Fellow with a Ph.D. in Bioinformatics from the University of Tehran, specializing in cancer biology, personalized medicine, and genomic data analysis. Proven expertise in machine learning, multi-omics integration, and biomarker discovery. Passionate about leveraging computational techniques to unravel complex biological systems and improve patient outcomes. Skilled in Python, R, and deep learning frameworks, with a strong track record of publications in high-impact journals. Committed to advancing research in computational biology through innovative algorithms and collaborative projects.

AREAS OF EXPERTISE:

1. Computational Systems Biology
    a. Expertise in modeling and simulating complex biological systems using computational approaches .
    b. Proficient in integrating multi-omics data (genomics, transcriptomics, proteomics, metabolomics) to understand biological networks and pathways .
    c. Skilled in developing predictive models for disease mechanisms and therapeutic targets .
2. Bioinformatics & Cancer Systems Biology
    a. Extensive experience in analyzing high-throughput genomic and transcriptomic data to identify cancer biomarkers .
    b. Proficient in using bioinformatics tools for cancer subtype classification, survival analysis, and drug response prediction .
    c. Expertise in single-cell RNA sequencing (scRNA-seq) analysis to uncover tumor heterogeneity and resistance mechanisms .
3. Metabolomics & Proteomics Analysis
    - Skilled in processing and interpreting metabolomics and proteomics data to identify metabolic pathways and protein interactions .
    - Experience in using mass spectrometry data for biomarker discovery and validation .
    - Proficient in integrating metabolomics and proteomics data with other omics datasets for comprehensive biological insights .
4. Artificial Intelligence in Biology
    - Expertise in applying machine learning and deep learning techniques to biological data analysis .
    - Proficient in developing AI models for disease diagnosis, prognosis, and treatment prediction .
    - Skilled in using neural networks for image analysis, sequence analysis, and pattern recognition in biological datasets .
5. Network-Based Biomarker Development
    - Experience in constructing and analyzing biological networks (e.g., protein-protein interaction networks, gene regulatory networks) .
    - Proficient in identifying network-based biomarkers for disease diagnosis and prognosis .
    - Skilled in using network analysis tools to uncover key drivers of disease progression .
6. Drug Repositioning & Drug-Target Networks Analysis
    - Expertise in computational drug repositioning strategies to identify new therapeutic uses for existing drugs .

- Proficient in analyzing drug-target interaction networks to predict drug efficacy and side effects .
- Skilled in using cheminformatics tools for virtual screening and drug discovery .

7. R and Python Programming
   - Advanced proficiency in R and Python for data analysis, visualization, and statistical modeling .
   - Experience in developing custom scripts and pipelines for bioinformatics analysis .
   - Skilled in using R and Python libraries for machine learning, deep learning, and network analysis .
8. Deep Neural Networks
   - Expertise in designing and implementing deep neural networks for biological data analysis .
   - Proficient in using convolutional neural networks (CNNs) for image analysis and recurrent neural networks (RNNs) for sequence analysis .
   - Skilled in applying transfer learning and ensemble methods to improve model performance .
9. Microbiome & Metagenome Data Analysis
   - Experience in analyzing metagenome data to study their roles in health and disease .
   - Skilled in integrating microbiome data with host omics data for holistic insights .
10. Next-Generation Sequencing (NGS) Analysis
    - Expertise in analyzing NGS data, including RNA-seq, whole exome sequencing (WES), whole genome sequencing (WGS), single-cell RNA-seq, ATAC-seq, and ChIP-seq .
    - Proficient in using bioinformatics pipelines for read alignment and differential expression analysis .
    - Skilled in interpreting NGS data to uncover gene expression patterns, and epigenetic modifications .

WORK EXPERIENCE:

2018 – 2005

Head of IT Department, District 1 Municipality of Hamedan

-Implementation of Automation Systems: Designed and implemented the Renovation Automation System to streamline operational processes .

-Development of Digital Platforms: Launched and managed the District 1 Municipality Internet Platform to enhance public accessibility and online services .

-Help Desk Management: Provided technical support for 58 users continuously for 11 years, ensuring system stability and efficient troubleshooting .

2019 – 2018

-Charter Development: Authored the Charter for the City Council Studies Center of Hamedan, establishing a robust foundation for the center's operations .

-Workshops and Book Critique Sessions: Organized and led over five workshops and book critique sessions, fostering intellectual discourse within the City Council Studies Center .

2021 – 2019

-SDI Project Leadership: Served as CEO for the implementation of Hamedan's comprehensive SDI (Spatial Data Infrastructure) project, enhancing spatial data accessibility and integration .www.sdi.hamedan.ir

-Portal Development: Managed the development of 42 informational portals for sub-entities of the municipality, significantly improving inter-departmental communication and public engagement .Hamedan.ir

-Web-Based Correspondence System: Established and managed the Municipality's web-based correspondence system, modernizing internal communication and document management .

-Data Mining and Decision-Making Initiatives: Implemented data mining studies and introduced data-driven decision-making frameworks to optimize the municipality's operational efficiency .

2024 – 2019

-Doctoral Proposal Supervision: Directed the development of five doctoral research proposals, providing strategic academic guidance .

-Machine Learning Consultation: Acted as an advisor on machine learning-based projects at Fasa University of Medical Sciences, contributing to two successful initiatives .

-CTO for Energy Optimization: Served as Chief Technology Officer for the Fuel Consumption Optimization Plan at Mehr Company, leveraging advanced technologies for sustainability .

-Ongoing Initiatives: Currently leading multiple projects focused on integrating AI and machine learning into urban management and healthcare systems .

Research Assistant in Bioinformatics

University of Tehran, Iran

– 2022/01 Present

-Conducted research in bioinformatics, network analysis, non-coding RNA discovery, drug repurposing, and co-expression-based biomarker development in cancer .

-Utilized Python programming and machine learning techniques for advanced data analysis .

-Engaged in projects focused on various cancers and eye diseases .

-Assisted Ph.D. students in learning analysis protocols and manuscript writing .

EDUCATION:

PhD in bioinformatics **University of Tehran, Iran** 09/2018 – 02/2024

- Focus: Omics data integration using deep learning-based methods for the identification of survival-associated subgroups in colon cancer

MSc. in Computer Science **Malayer University, Iran** 09/2014 – 02/2018

- Focus: Decision making with data mining and big data in urban management

BSc in Software Engineering **University of Hamedan, Iran**09/2008 – 02/2010

- Fault tolerance algorithms in adhoc networks

ADDITIONAL SKILLS:

Languages:

- English (Fluent in writing, speaking)
- German (Fluent in writing, speaking)
- Persian (native)

IT-Skills:

- Network (5/5)
- Help Desk (5/5)
- R (4/5)
- Python(4/5)

REFERENCES:

Prof. Ali Masoudi-Nejad | University of Tehran | amasoudin@ut.ac.ir

Dr. Leili Tapak | University of Hamadan | l.tapak@umsha.ac.ir

Dr. Saeid Afshar | University of Hamadan | s.afshar@umsha.ac.ir

Published/Accepted/Submitted/etc.:

1. **Siamak Salimy** , Hossein Lanjanian , Karim Abbasi , Mahdieh Salimi , Ali Najafi , Leili Tapak , Ali Masoudi-Nejad .A Deep Learning-Based Framework for Predicting Survival-Associated Groups in Colon Cancer by Integrating Multi-Omics and Clinical Data. DOI:10.1016/j.heliyon.2023.e.17653

2. 2- **Siamak Salimy**, Leili Tapak, Behnaz Haji Molla Hoseyni, Mahdieh Salimi, Ali Masoudi-Nejad (2023) Deep Learning-Based Multi-Omics Analysis and Pathological Feature Selection for Predicting Survival in Colon Adenocarcinoma Patients. Heliyon. Under Review.

3. **Siamak Salimy**, Mahdieh Salimi, Ali Masoudi-Nejad (2023) Transcriptomic Heterogeneity and Therapeutic Insights in Ovarian Cancer: A Comprehensive Study on Platinum Resistance, Single-Cell RNA Sequencing, and Differential Gene Expression Analysis. Scientific Reports. Under Review.

4. **Siamak Salimy**, Mahdieh Salimi, Ali Masoudi-Nejad (2023) Unraveling the Heterogeneity and Molecular Landscape of Uveal Melanoma and Circulating Tumor Cells through Single-Cell Analysis: Implications for Diagnosis, Prognosis, and Therapy. submitted.

5. Leili Tapak , Omid Hamidi , Payam Amini , Saeid Afshar , **Siamak Salimy** , Irina Dinu
6. Identification of Prognostic Biomarkers for Breast Cancer metastasis Using Penalized Additive Hazards Regression Model. DOI: 11769351231157942/10.1177

7. Prediction and Diagnosis of Diabetes by Using Data Mining Techniques. doi: 10.15171/ajmb.2018.02

8. A Datamining base approach to Decision Making on Metropolises: Case study Hamedan municipality. 20/1/2016

9. The use of predictive algorithms to extract and predictable pattern of urban growth on District one, Hamedan Municipality. 10/11/2015

10. Fault-tolerant algorithm on ad-hoc networks. 1079- Conference: National Conference of Computer Engineering, Electrical and Information Technology. sama. At: Hamedan Volume: 1st

11. Identification of lncRNA associated with the SERPINE1 gene in colorectal cancer through TGF-β pathway. https://doi.org/10.1016/j.compbiomed.2025.110037