Samaneh Shirinnezhad

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Education

B.Sc. in Computer Engineering *September 2012 - December 2016*

Jundi Shapur University of Technology Dezful, Iran

- **Capstone Topic:** Design and Development of a VR Game with Motion Sensor Integration for Mobile Platforms using Unity and Google Cardboard
- **GPA:** 145 credits program with GPA of 17.51/20. GPA of the last two years is (3.81 / 4.00)
- **Selected Courses:** Advanced Programming, Algorithm Design, Data Structures, Artificial Intelligence, Data Transmission, Discrete Structures, Internet Engineering

Research Interests

- Human-Computer Interaction
- Interaction & UI/UX Design
- Information Visualization
- Applied Machine Learning
- Natural Language Processing
- AI in Healthcare & Education

Recent Publications

C=Conference, J=Journal, P=In Press, S=Submitted, U=Under Review

Find me at: Google Scholar ORCID

[J.4] **Navigating the Canadian Renewable Energy Landscape through Bibliometric and Machine Learning Insights**.
Samaneh Shirinnezhad, & Davoud Ghahremanlou.
International Journal of Global Warming, 37, 2025. [DOI]

[J.3] **Optimizing Hybrid Energy Solutions for Enhanced Energy Resilience and Sustainability in Repulse Bay Using HOMER Pro**.
A. Ashouri Vajari, S. Kotian, S. Shirinnezhad, et al.
Journal of Green Economy and Low-Carbon Development, 3(2), 69–81, 2024. [DOI]

[J.2] **Enhancing Sustainability in Hopedale, Newfoundland and Labrador, Through Hybrid Microgrid System Design**.
A. Maliat, S. Kotian, S. Shirinnezhad, et al.
Power Engineering and Engineering Thermophysics, 3(1), 58–76, 2024. [DOI]

[J.1] **Optimizing Hybrid Energy Systems for Sustainable Development at the Canadian Arctic: A Case Study for Arviat**.
A. Ashouri Vajari, S. Kotian, S. Shirinnezhad, et al.
Journal of Urban Development and Management, 3(3), 150–163, 2024. [DOI]

Research Experience

Independent Researcher *2023 – Present*

AI-Assisted Literacy Tools (AirSpell, Smart Text Enhancer)

- Ongoing research, exploring interactive systems that support literacy and accessibility, combining HCI methods with NLP/ML approaches.
- Built AirSpell, a React + TensorFlow.js tool enabling early learners to practice spelling by writing letters in the air, combining kinesthetic and visual learning. Currently expanding it into a structured HCI study comparing gesture/control designs to evaluate engagement and learning.
- Developed Smart Text Enhancer, a Chrome extension powered by GPT for in-place text transformation on any webpage. Currently exploring how in-situ AI text transformation affect comprehension time and recall compared to traditional copy–paste workflows.

International Research Collaboration [🌐] *2023 – 2024*

Data Modeling and Policy Engagement in Clean Energy Remote, Canada

- Collaborated with the NLTK Infinity initiative on clean energy supply chains, leading data modeling efforts that informed consultations with Newfoundland and Labrador's Department of Industry, Energy, and Technology.
- Developed predictive models to support decision-making in energy resilience and supply chain optimization.
- Identified a critical gap in accessibility: while technically sound, these models were often inaccessible to Indigenous and rural communities most affected by their outcomes, motivating my interest in human-centered visualization and interpretability.
- This work contributed to multiple authorship and co-authorship of peer-reviewed publications.

Research Assistant to Dr. Mohsen Shakiba *2015 – 2016*
Virtual Reality for Mobile Platforms Jundi Shapur University of Technology, Dezful, Iran

- Assisted in research on applying VR technologies to mobile platforms using Unity and Google Cardboard, forming the foundation of my undergraduate capstone project.
- Implemented motion-sensor integration techniques to explore immersive interaction and usability in resource-constrained environments.
- Contributed to experimental design and early testing of VR gameplay mechanics, linking research insights to practical development.

Selected Projects

AirSpell: AI-Powered Air-Writing for Early Literacy *July 2025*
Tools: React, TensorFlow.js, HTML5 Canvas, JavaScript [GitHub]

- Designed a React + TensorFlow.js app for spelling practice via real-time hand tracking and air-writing.
- Addresses literacy and motor skill development through playful, embodied interaction.
- Supports adaptive feedback, undo/redo controls, and accessibility for diverse learners, with future plans to add scoring and gamification.

Smart Text Enhancer *May 2025*
Tools: JavaScript, Chrome Extensions, OpenAI API [GitHub]

- Built a GPT-3.5-powered Chrome extension for simplifying, translating, and rephrasing text directly on webpages.
- Enhances comprehension and digital literacy by adapting content to reading level, language, and tone.
- Offers customizable reading aids (e.g., dyslexia font, font size), supporting personalized engagement.

Stock Market Prediction Analysis *October 2024*
Tools: Python, Pandas, Scikit-learn, TensorFlow, LSTM, Random Forest [GitHub]

- Predicted significant stock price movements using a Random Forest model, achieving an F1 score of 82%.
- Utilized an LSTM network to forecast daily closing prices, reaching an MSE of 0.004 on the test dataset.

Personal Portfolio Website *August 2024*
Tools: Next.js, React, Tailwind CSS, JavaScript, GitHub Pages [GitHub]

- Designed and developed a responsive personal portfolio website showcasing my skills and projects, with a modern, clean, and interactive UI.
- Built with Next.js and React for performance, SEO, and component-based architecture; styled with Tailwind CSS.

GIS - Sensor Data Mapping *June 2024*
Tools: R, GIS, ggplot2, Leaflet, dplyr, geosphere [GitHub]

- Conducted spatial interpolation and k-means clustering analysis to identify patterns and anomalies in atmospheric pressure measurements along road segments.
- Developed interactive visualizations to support infrastructure planning and enhance environmental monitoring through geospatial data insights.

Insights into ChatGPT Research *May 2023*
Tools: Python, BeautifulSoup, Google Scholar API, Pandas, NLTK, spaCy, LDA [GitHub]

- Applied web scraping, NLP preprocessing, and machine learning (LDA) to analyze research trends and key topics in ChatGPT studies.

Social Media Analysis of ChatGPT (Twitter and Reddit) *April 2022*
Tools: Python, Pandas, NLTK, spaCy, LDA [GitHub]

- Scraped and analyzed Twitter and Reddit data on ChatGPT, using sentiment analysis and topic modeling to uncover community insights.

Teaching Experience

Jundi Shapur University of Technology *Fall 2015*
Teaching Assistant — Data Structures and Algorithms Dezful, Iran

- Assisted in teaching undergraduate students core concepts in algorithms and data structures.
- Graded assignments, midterms, and final exams; held tutorials and provided 1-on-1 academic support.

Amoun Computer Institute *2020 – 2023*
Computer Science Tutor Andimeshk, Iran

- Tutored students in programming (Python, C++), data structures, and algorithms, guiding them through projects and exam preparation.

Bartar Language School *2016 – 2020*
English Instructor Dezful, Iran

- Taught English as a Second Language (ESL) through interactive workshops, fostering student engagement and confidence in communication.

Work Experience

Upwork [🌐] *April 2023 - Present*
Freelance Data Scientist & Frontend Developer Remote

- Delivered full-stack solutions in data analytics, frontend development, and UI/UX design for dashboards and interactive web tools.
- Designed clean, responsive interfaces with a focus on usability and accessibility across projects involving business intelligence, GIS, and social media analytics.
- Built custom machine learning models and visualization tools to support client decision-making.

Cafe Bazaar - Iran's Largest Android Marketplace [🌐] *August 2022 – May 2023*
Software Engineer (ML/Data) Remote

- Designed and maintained machine learning pipelines for analyzing user reviews and app ratings, extracting sentiment and feature-level insights to guide product development.
- Collaborated with product and engineering teams to operationalize insights, improving recommendation systems and customer satisfaction.
- Contributed to scalable backend services, ensuring performance and reliability in high-traffic environments.

Honors and Awards

Dean's List *Multiple Semesters (Fall 2014, Winter 2015, Fall 2015, Winter 2016)*
Jundi Shapur University of Technology

- Recognized for consistent high academic performance over multiple semesters.
- Demonstrated exceptional academic dedication and achievement, placing in the top 10% of the class.

Annual JSU Programming Contest Winner *September 2015*
Jundi Shapur University of Technology

- Secured first place in the annual JSU Programming Contest, specializing in algorithm design and implementation using C++.
- Excelled in solving complex problems under rigorous time constraints, demonstrating advanced proficiency in C++.
- Outperformed other competitors, showcasing superior competitive programming skills.
- Received a certificate and a recognition plaque for outstanding performance.

Service and Community Engagement

Community STEM Outreach *2023*
Workshop Facilitator Dezful, Iran

- Delivered introductory programming and problem-solving workshops for local high school students.
- Promoted early interest in computer science by mentoring participants through hands-on coding activities.

Local Public Library *2023*
Volunteer Technology Mentor Dezful, Iran

- Assisted older adults in developing computer literacy skills, including using email, online resources, and mobile applications.
- Organized small group sessions to promote digital confidence and independence, bridging generational gaps in technology use.

Jundi Shapur University of Technology *2015*
Conference Organizer — Student Research Day Dezful, Iran

- Organized a student-led academic event where undergraduate projects were showcased to faculty and peers.
- Coordinated call for submissions, scheduling, and volunteer teams, encouraging knowledge exchange across departments.

Skills

Languages: English (IELTS Academic - Overall Band Score: 8.5), Persian (Native)
Programming Languages: C++, C#, Java, Python, R, Julia, SQL
Data Science & Machine Learning: NumPy, Pandas, SciPy, Scikit-learn, TensorFlow, Keras, PyTorch, Gensim, NLTK, SpaCy, Transformers
Web Development: HTML, CSS, JavaScript, TypeScript, React, Next.js, Node.js (Express), PostgreSQL
Dev & Research Tools: Jupyter Notebook, RStudio, LaTeX/Overleaf, Tableau, Excel, NVivo, Git, Docker
Design Tools: Figma, Adobe Creative Suite (Photoshop, Illustrator, Premiere)
Virtual & Augmented Reality: Unity3D, VR SDKs