Yazdan Ghanavati

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LinkedIn | **GitHub** | **Portfolio**

Last Update: 12/25/2023

Higher Education

B.Sc. in Biomedical Engineering *2018 Sept – 2023 Jan*

University of Isfahan, Isfahan, Iran

- **CGPA**: 3.2 out of 4 (16.04/20)
- **GPA** of Senior Level Courses: 3.54 out of 4
- 9 Semesters, Full Scholarship
- **Capstone Project**: "Behneshan; A video game to teach sign language to deaf children using AI and Machine Vision"
- **Supervisor**: Dr. Javad Rasti
- **Selected Courses (Grade out of 20):**
  B.Sc. Project: 20, Biostatistics and Research Methods: 20, Communication Systems in Medicine: 18.3, Data Mining: 19, Advanced Computer Programming: 19.75, Principles of Diagnostic Radiology and Radiation Therapy Systems: 18.4, Physiology: 20, Microcontrollers: 20, Principles of Medical Physics: 20

Research Interests

- Artificial Intelligence in Healthcare
- Human Computer Interaction
- Computer Vision and Human Pose Tracking
- Machine Learning & Pattern Recognition

Skills

- **Programming** Python (OpenCV, TensorFlow, Sklearn, NumPy, Pandas), MATLAB, C++, SQL
- **Research Methodology** Statistical Analysis, Scientific Writing, Experiment Design, Reference Managing
- **Soft Skills** Mentoring, Teamwork, Project Management, Presentation, Problem Solving
- **Software's** EndNote, Mendeley, SPSS, UNITY, Altium Designer, Proteus, Simulink, Figma

Patent and Publications

Patent

"Human Pose Tracking Package", Software Application *2021 Sept - Present*

This Windows-based application enables users to control exergames using physical movements by converting their actions into precise keyboard and mouse commands. It offers an alternative method of exercising for overweight individuals or those with muscle-related issues. Status: under-evaluation

Manuscripts

Yazdan Ghanavati, Javad Rasti, "Behneshan: An Educational Video Game Utilizing Image Processing and Machine Learning Techniques to Teach Persian Sign Language to Deaf Children", *6th International Serious Games Symposium (ISGS)*, 2023, status: Accepted

Yazdan Ghanavati, Javad Rasti, "Real-time PSL (Persian sign language) detection using LSTM neural network and Machine Vision techniques", 2023, status: under-prep

Yazdan Ghanavati, Maryam Salehi, Javad Rasti, "Controlling computer games by tracking the body's anatomical marker points; real immersion Experience in virtual space", *Seventh International Conference of Video Games, Challenges and Opportunities*, Isfahan, Iran, 2022, available: https://civilica.com/doc/1445614, (This Paper is Written in Persian)

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Experiences

Research Experiences:

- **Researcher at 6th International Serious Games Symposium** *2023 Dec*
  SeGaP (Serious Games Prize)
  - Researcher and Presenter
    - Developed two serious games in the field of rehabilitation and education
    - Published one paper in the field of machine learning and computer vision
    - Presented a poster based on the accepted paper for an academic and professional audience
- **Research Assistant of Dr. Javad Rasti** *2021 Jun – 2023 Jan*
  University of Isfahan, BME department
  - Research and Teaching Assistant
    - Human Pose Tracking in Exergames and Rehabilitation
    - Computer Vision Talks and Presentations
    - Patent and Paper Publication, Workshop Instructions and Software Development
- **Internship Program Aimed at Designing and Developing Serious Games** *Summer 2022*
  Entertainment innovation center of Isfahan university in collaboration with BME department
  - Internship supervisor and mentor in field of Computer Vision
    - Held a computer vision workshop
    - Developed telemedicine projects for interns
    - Designed innovative research on serious games development based on machine vision
- **Online Panel Entitled "Online Panel of Exergames "at Research Week** *2021 Dec*
  Entertainment innovation center of Isfahan university in collaboration with BME Department
  - Researcher and Presenter
    - Communicated with officials and scientific teams
    - Lead research focused on Computer Vision applications in rehabilitation
    - Presented a discussion about Tracking Anatomical Body Landmarks using Python and Mediapipe

Teaching Experiences:

- **Microprocessor's course, 2 semesters for Biomedical Engineering students** *Fall 2021,2022*
  University of Isfahan, BME department
  - Teaching assistant for Microprocessor's course (80 hours, more than 100 students)
    - Held classes to solve problems and new samples of each topic and designed home works
    - Taught how to develop a practical robots based on AVR microchips
    - Evaluated final projects and graded student's exams
- **Computer Vision Workshop Instructor for Biomedical Engineering Interns** *Summer 2022*
  Entertainment innovation center of Isfahan university in collaboration with BME Department
  - Workshop instructor for 3 sessions
    - Computer Vision Basics
    - Tracking Pose Landmarks Using Mediapipe
    - Connection between Mediapipe and UNITY game engine

Vocational:

- **Computer Vision and Game Development Internship** *Summer 2021,2022*
  Entertainment innovation center of Isfahan university, Isfahan, Iran

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Selected Projects

Behneshan; A video game to teach sign language to deaf children using AI and Machine Vision *2022 Sept*

University of Isfahan, BME department, Isfahan, Iran

This is an educational software based on LSTM neural networks, specifically designed for teaching Persian Sign Language (PSL) to deaf children via a platformer game, Computer Vision techniques, and pose landmark recognition. The system accurately recognizes 29 PSL letters and practical words with a 96% accuracy rate.

Breast cancer detection *2022 Jun*

Final project of Data mining course

A MATLAB project based on image-processing techniques (thermogram image processing) for breast cancer detection.

Dyslexia treatment *2020 Dec*

Final project of Advanced programming course

A C# based project developed to encourage children, in order to improve their reading and learning skills.

Test Scores

- **GRE** Overall Score: 311, Verbal:143, Quantitative:168, Analytical: 3.5 *2023 Sept*
- **IELTS** Overall Score: 7 *2023 Mar*

Selected Honors and Awards

- **Recognized with the Diploma of Award for the Meritorious Paper in the "6th International Serious Games Symposium"** *2023 Dec*
  Hosted by: *SeGaP (Serious Games Prize)*
  Field of Study: Serious Games based on AI, Computer Vision and Image Processing
- **Biomedical Engineering Graduation** *2023 Jan*
  Ranked within the top 5% among BME students in the same entrance (N=70)
- **Recognized with the Diploma of paper submission in the "7th International Conference of Video Games, Challenges and Opportunities"** *Winter 2022*
  Hosted by: *Entertainment innovation center of Isfahan university, Isfahan, Iran*
  Field of Study: Video Games based on Artificial Intelligence and Computer Vision
- **National Entrance Exam** *Summer 2018*
  Ranked within the top 0.5% of the Iranian university entrance exam for Bachelor degree among ~150,000 students

Letter of Recommendation

Recommendations available upon request.