

# Alireza Barekatin

Isfahan, Iran

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(Please check my projects at [abarekatin.github.io](https://github.com/abarekatin))

## EDUCATION

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09/2018 – 07/2020 (Expected)

**Master of Science**, Isfahan University of Technology, Iran

Manufacturing Engineering, **Thesis Title:** *Cloud-based Mapping Using Multi-Robot Systems*

- GPA: **18.4/20 (4/4)**

09/2014 – 09/2018

**Bachelor of Science**, Isfahan University of Technology, Iran

Mechanical Engineering, **Thesis Title:** *Design and Development of a Passive Wrist and Forearm Rehabilitative Exoskeleton*

- GPA: **18.96/20 (4/4)**
- **Ranked 2<sup>nd</sup>** among 135 B.Sc. students in the Department of Mechanical Engineering

## RESEARCH EXPERIENCE

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07/2019 – Current

**Graduate Research Assistant**, Dept. of Mechanical Engineering, Isfahan University of Technology

MSc Thesis, *Cloud-based Mapping Using Multi-Robot Systems*

- Implement the mapping process using ROS and simulate using Gazebo
- Deploy cooperative behaviour and Machine-to-Machine communication via the IoT network

12/2017 – 09/2018

**Undergraduate Research Assistant**, Dept. of Mechanical Engineering, Isfahan University of Technology

BSc Thesis, *Design and Development of a Passive Wrist and Forearm Rehabilitative Exoskeleton*

- **Led** a team of four people, Responsible for Device Design using **CAD software packages**
- Gained practical experience in **Design Principles and Manufacturing operations** (Milling & Lathe)

02/2018 – 04/2018

**Rehabilitation Robotics**, Advanced Robotics & Mechatronics Lab., Isfahan University of Technology

Development of an interactive interface for Rehabilitation Robotics

- Responsible for development of an **interactive interface** between KUKA Robot and patient
- Developed by **Unity3D, C#, C++**, Gained familiarity with **iiwa KUKA robot**

## WORK EXPERIENCE

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07/2016 – 04/2017

**Independent(Indie) Game Development**

Development of a 2D cognitive game targeted for android platform

- **Unity3D/C# Developer**, Game **Designer**, Collaborated in a team of three people
- **Nominated** for 'Game Design' and 'Innovation' among 133 games at 3rd Festival of Independent Game Developers (IGDF), Tehran, Iran

07/2016 – 04/2017

**Graphical User Interface Programming**, Rayan Tahlil Co., Isfahan Science and Technology Town, Iran

Development of a GUI for visualizing thermal parameters of hot rolling process at Mobarakeh Steel Company

- GUI **Designer**, C# **Programmer**

06/2015 – 03/2016

**Game Programming**, Talee Ltd., London, UK

Development a Talking Robot Simulation Game

- C# **Programmer**

07/2015 – 11/2015

**Virtual Lab Simulation**, 1<sup>st</sup> National Fluid Mechanics Competition, Isfahan University of Technology, Iran.

Development of an application visualizing a real laboratory experiment

- C# Programmer, **Led** a team of four people
- **Awarded** 1<sup>st</sup> Place among 15 teams

## SKILLS

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### Technical Skills & Knowledge

- Proficiency in Software Programming, **Game Development** and 3D Simulation, GUI Design and Development
- Knowledge of Data Structures and Algorithms, **Computer Networking**, Kinematics and Dynamics, Linear Algebra, **Electrical and Mechanical principles of Sensors and Actuators**
- Experience with **Object-Oriented Programming**, **Event-Driven Programming**, CFD, CNC Milling and Manual Lathe Machine
- Familiar with Electronic Circuit Design, Finite Element Analysis, **Machine Learning**, **Computer Vision**
- Familiar with **Electrical and Mechanical design principles**, CAD/CAM/CAE tools, AR/VR Development

### Software Skills

- Proficiency in **C#**, **Unity3D** Game Engine, Abaqus
- Experience with **C++**, **Python**, **Ubuntu** Linux, **ROS**, Git, Visual Studio, Websocket programming, Twisted framework Keil, ARM programming, Photoshop, AutoCAD, Inventor, tecPlot,
- Familiar with, **Matlab**, **Java**, Fortran, V-Rep, Altium Designer

### Language proficiency

- Persian: Native Language
- English: Fluent (IELTS Band Score: **7.5**)

## SELECTED COURSES & PROJECTS

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### University Courses

- Fundamentals of Mechatronic Systems
- Mechanics in Robotic Systems
- Computer Programming (C++)
- Advanced Engineering Mathematics
- Numerical Methods
- Automatic Control
- Applied Electrics and Electronics
- Manufacturing Automation
- Mechanical Vibrations
- Differential Equations

### Extra Courses

- Probabilistic Robotics
- Python Programming (Online)
- Algorithms and Data Structures (Online)
- Introduction to ROS (Online)
- Machine Learning
- Computation Structures (Online)
- CCNA Routing & Switching
- Network+

### Projects

- Kinematics Analysis, Trajectory Planning, and Control of a UR5 Robot using **Simulink** and **V-Rep** ([Link](#))
- **Electronic circuit design**, assembly, and **programming** of a temperature controller device ([Link](#))
- 3D Printing Analysis and Simulation of a Structured Material in Abaqus
- CFD Analysis and Visualization of a 2D geometry using Finite-Volume method ([Link 1](#), [Link 2](#))
- Design of HVAC Systems for a residential complex
- Injection Molding Analysis and Simulation of a dog bone test sample using MoldFlow & Abaqus

## HONORS & AWARDS

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- Distinguished Student Award, 2<sup>nd</sup> rank among 135 undergraduate students of department of mechanical engineering at Isfahan university of technology, four consecutive years (**2014 to 2018**)
- **National Elite Recognition**, Iran National Organization of Elites (**2018 to 2020**)
- Member of exceptional talents of Isfahan University of Technology (**2014 to 2020**)
- Awarded merit-based admission to study at Isfahan University of Technology for graduate program without entrance exam (**2018**)
- Ranked **197<sup>th</sup> (Top 0.2%)** among 191466 students in National University Entrance Exam (**2014**)

## PERSONAL INTERESTS & ACTIVITIES

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- Piano & Taar (a traditional instrument)
- Volleyball