

Kasra Sinaei

Contact Info:

- ☎ (+98) 92242-73846
- ✉ Kasra.sinaei@ut.ac.ir
- ✉ Kasra.sinaei@gmail.com
- 📍 Tehran (1997864711)

Education	BSc University of Tehran, Mechanical Engineering 2017-2021 School of Mechanical Engineering US NEWS Ranking: 24 GPA: 3.52/4.0 (16.84/20)
Research Interests	<ul style="list-style-type: none">✓ Integrating Learning Algorithm with Autonomous Systems✓ Bipedal / Humanoid Robots✓ Controller Design for Dynamic Systems✓ Mechanism Optimization and Analysis✓ Robotic Software Development✓ Social Robots✓ Assistive Robots
Laboratory & Research	Center of Advanced Systems and Technology (CAST) 2018-Now Responsibilities: Research Assistant and Officer University of Tehran, Mechanical Engineering Faculty Supervisor: Dr. Aghil Yousefi Koma CAST website
Teaching Experience	Teaching Assistant <ul style="list-style-type: none">• Mechanical Vibrations Fall 2020• Electrical Circuits and Electrical Machines Fall 2020• Automatic Control of Mechanical Systems Winter 2021
Publications	<ul style="list-style-type: none">• Tuning a PID Controller with Deep Reinforcement Learning Policy Gradients (<i>ISME 2021 conference</i>, Iranian Society of Mechanical Engineers) May 25-28 2021
Selected Courses	<ul style="list-style-type: none">✓ Dynamics (19/20)✓ Automatic Control of Linear Systems (19.8/20)✓ Interactive Learning (18.5/20) {Graduate Course in School of Computer Engineering}✓ Mechatronics (17.2/20)✓ Mechanical Vibrations (18/20)✓ Mechanical Engineering Design (I, II) (19.2/20)✓ Electrical Circuits and Machines (20/20)
Language Skills	English IELTS Band Score 7.0 (Listening: 8.5, Reading: 6.5, Writing: 6.5, Speaking: 7.0) Persian Native Speaker

Programming

- **Python 3/Python 2:** O.O. Programming, GUI app development, Data Science
- **C++:** O.O. and Procedural Programming, Visual C++, Qt
- **MATLAB:** Coding, Simulink, SimScape (SimMechanics)
- **C#:** O.O. Programming, Unity Game Engine Classes
- **Visual Basic:** GUI app development, MS Access Dynamic forms and queries

Software

- **CATIA:** Part design, Surface design, Assembly, DMU Kinematics, Drafting
- **SolidWorks:** Part design, Assembly design, Motion Analysis, Drafting
- **ADAMS:** Kinematic and Kinetic analysis of mechanical mechanisms
- **AutoCAD:** 2D for Civil and Architectural drawings, 3D for Mechanical design
- **ANSYS:** Basics of Static structural analysis and Fluent
- **Adobe Photoshop and Illustrator:** Photo Editing, Poster & Flyer design

Platforms

- **Ubuntu and Windows**
- **ROS:** rospy, roscpp, messages and service generation, *Gazebo* and *RVIZ*
- **Choreonoid** Simulating Multi-body objects, creating controller
- **Git** Version Control
- **MS Office** Excel, Power Point, Word, Access, Project
- **Unity** game engine (2D game development)

I. 5th Generation of SURENA Humanoid Robot

- Increasing previous generation agility by employing an online walking pattern generation algorithm based on capture point (DCM)
- Quaternion based Inverse Kinematic for achieving more human like motions

II. Design, Control and Simulation of Wheeled Biped Robot (Bachelor Thesis)

- Designing and Optimizing knee-pitch mechanism with Genetic Algorithm
- Simulating Robot (Gazebo and Choreonoid)
- Implementing a robust Control loop for balance control and leg kinematics

III. Design, Simulation and Building a Self-Balancing Robot

- Simulating (PyBullet) a coaxial self-balancing robot
- Building a prototype for test (Using Arduino micro-controller)
- Tuning PID controller with deep RL agent and comparing it to Ziegler & Nichols

IV. Learning Whole Body Trajectory for Biped Robot Gait (NAO V3)

- Employing deep RL algorithm for Learning humanoid walking (Agents: DDPG, PPO, A2C)
- Simulating and training agents with PyBullet Physics Engine

V. Analyzing Kinematic and Kinetics of a 6-bar Linkage, Designing Cam-Follower

- Kinetic analysis using Newton-Euler and Energy method
- Designing a Cam and Follower Imitating movements of a Pivot point of mechanism

VI. Identification and Control of a Shaking Beam Vibrations

- Deriving transfer function from Gyro data and analyzing system in frequency domain

VII. Simulation and Designing Gear-Box for a Mixing Machine

- Creating CAD model in Solidworks and Calculate critical torque/force via Motion Analysis
- Designing a helical Gear and a Worm Gear for generating desired motion of system

Extracurricular Courses	<p>C++ Programming 2017 Tehran Institute of Technology (Certificate) Description: Basics (30 hours) + Advanced (30 hours) Object Oriented Programming, Data/File manipulation</p> <p>Mechanical design using CATIA 2018-2019 Tehran Institute of Technology (Certificate) Description: CATIA I (64 hours), CATIA II (64 hours) Part Design, Assembly Design, Surface Design, DMU Kinematics</p> <p>Machine Learning 2020 Coursera (Description, Certificate) Instructed by Andrew NG from Stanford University Regression, Clustering, SVM, Recommender Systems, Image Classification, ...</p>
Professional Affiliations	<p>Middle East Water and Environment MEWE website 2018 CAD Drawing, Financial analysis, Pump Station Design, Firefighting Systems, Photo Voltaic Power plants</p> <p>MAPNA MAPNA group website 2019 Steam Power Plant Simulation with ThermoFlow, Introduction to P&ID Drawings and Symbols</p>
Honors & Awards	<p>Graduate Rank 2021 Ranked among top 20% of Mechanical Eng. school graduate year students</p> <p>Physics Olympiad 2016 Accepted to take part in "Physics Olympiad Stage 2" from top 5% of participants in "Physics Olympiad Stage 1", Iran</p>
Academic References	<p>Dr. Aghil Yousefi-Koma: (aykoma@ut.ac.ir) Professor, School of Mechanical Engineering University of Tehran</p> <p>Dr. Ehsan Hosseinian: (ehosseinian@ut.ac.ir) Assistant Professor, School of Mechanical Engineering University of Tehran</p>
Professional References	<p>Dr. Masoud Nassiri: (nassiri@mewe-ir.com) CEO and Executive director of MEWE®</p>
Hobbies	<p>Music: Intermediate Santoor (Persian instrument) player</p> <p>Sport: Intermediate Tennis play, Volleyball (2nd prize winner in high school competitions)</p> <p>Art: Sketching and drawing with pencil</p>
Accounts & Repositories	<p>GitHub: Kassra-sinaei (Kasra Sinaei) (github.com)</p> <p>ResearchGate: Kasra Sinaei (researchgate.net)</p> <p>GrabCAD: Kasra Sinaei GrabCAD</p> <p>LinkedIn: Kasra Sinaei LinkedIn</p>