

	<p><b>Name:</b> Habib  <b>Last Name:</b> GhanbarpourAsl  <b>Current Position:</b> Assistant Professor  <b>Nationality:</b> Khoy/West Azerbaijan/Iran  <b>Phone:</b> +90(506) 0214718  <b>Date of Birth:</b> 09/21/1970</p>	<p><b>Address:</b> Mechatronics Department,          University of Turkish Aeronautical          Association  <b>Webpage:</b>  <a href="http://mch.thk.edu.tr/Content.aspx?cid=11756">http://mch.thk.edu.tr/Content.aspx?cid=11756</a>  <b>Email:</b> <a href="mailto:hghanbarpourasl@thk.edu.tr">hghanbarpourasl@thk.edu.tr</a>,  <a href="mailto:habib.ghanbarpour@gmail.com">habib.ghanbarpour@gmail</a></p>
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## EDUCATION

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- 2000 - 2007      Sharif University of Technology, Ph.D.  
 Major: Aerospace Engineering  
 Advisor: Prof. Pourtakdoust, Ph.D.  
 Thesis: Application of Adaptive Nonlinear Filters in Integrated Navigation Systems
- 1996 - 1999      Amirkabir University of Technology, M.S.  
 Major: Aerospace Engineering  
 Advisor: Prof. Naghash, Ph.D.  
 Thesis: Control of Vertical Take-off and Landing Rocket Based on Dynamic Inversion Controller.
- 1992 - 1996      Amirkabir University of Technology, M.S.  
 Major: Aerospace Engineering  
 Advisor: Prof. Salehzadeh, Ph.D.  
 Thesis: Influence of Fuselage Vibrations in the Dynamics and Control of Rocket Vehicle

## RESEARCH INTERESTS AND ACTIVITY

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- Mechatronics**      Robotics, Visual Navigation, Machine Vision, Remote Sensing, Photogrammetry  
**Estimation**      Estimation Theory and System Parameter Identification, Digital Signal Processing  
**Control**            Stochastic Control, Nonlinear Control, Predictive Control, Adaptive Control  
**Navigation**        Inertial Navigation and Integrated Navigation Systems, Guidance Systems, Tracking Systems  
**Space**              Space Technology, Space Robotic, Satellite Attitude and Orbit Estimation, Satellite Design  
**Instrumentation**   Avionics Systems, Inertial Sensors, Aircraft and Spacecraft Instruments

## ACADEMIC EMPLOYMENT

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- Feb. 2016 - Present      **Assistant Professor**, University of Turkish Aeronautical Association  
**Faculty/Department:** Engineering/Mechatronics  
 Full time
- Jan. 2013 - Jan. 2016      **Assistant Professor**, Sharif University of Technology  
**Faculty/Department:** Aerospace Engineering/Space  
 Full time
- Aug. 2012 -              **Assistant Professor**, University of Tebriz

Habib Ghanbarpourasl

- Dec. 2013            **Faculty/Department:** New Developed Technology/Mechatronics  
Part time
- Aug. 2008 -        **Assistant Professor**, Shaid Beheshti University  
Dec. 2009        **Faculty/Department:** Emerging Technology/Aerospace  
Part time
- Aug. 2006 -        **Assistant Professor**, Azad Islamic University (Ulum-Tahghighat)  
Dec. 2007        **Faculty/Department:** Aerospace/Space  
Part time
- Aug. 2003 -        **Assistant Professor**, Malek Ashtar University of Technology  
Dec. 2011        **Faculty/Department:** Electrical Engineering/Control  
Part time

**NONACADEMIC EMPLOYMENT** \_\_\_\_\_

- Feb. 2011 -        **Ata Privet Co.**, Founder, Manager, Designer, Researcher  
Jan. 2013        **Department:** System, Guidance and Navigation  
Full time
- Dec. 199 -         **Aerospace Organization**, Head of department, Designer, Researcher  
Mar. 2011        **Department:** System, Sensor, Mechatronics, and Navigation  
Full time
- Aug. 1997 -        **Space Transportation Research Center**, Designer, Researcher  
Nov. 1999        **Department:** System, Control  
Full time
- Sep. 2006 -        **Ata Privet Co.**, Founder, Manager, Designer, Researcher  
Jan. 2011        **Department:** System, Guidance and Navigation  
Part time

**HONORS AND AWARDS** \_\_\_\_\_

- 2015            **Best Paper (First and Second Positions)**  
The First National Navigation Conference
- 2013            **Military Invention Rank 3**  
Attitude Independent Three Axes Magnetometers Calibration
- 2007            **First Rank Ph.D. Student**  
Awarded by Sharif University of Technology
- 2006            **Distinguished Employee**  
Iranian Aerospace Organization
- 2004            **Best Paper**  
3-th International Aerospace Engineering Conference

## PROJECTS

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Inertial sensors laboratory  
Space measurement and navigation laboratory (not completed)  
Design a software for simulation, guidance, control and navigation of a smart vehicle  
Design and manufacturing of a smart short range ballistic system  
Design and manufacturing of helicopter launcher system vibration analyzer  
Design and manufacturing of a miniaturized measuring system for mortar  
Design and hardware in loop simulation of sonar/Gyro/Speed log for ship tracking system  
Design and manufacturing of a miniaturized attitude heading reference system  
Design and software in loop implementation navigation/guidance/control/flight mechanics system of cruise vehicle  
Design and manufacturing low cost system for navigation of sounding rocket  
Identification, calibration and design of new algorithm for navigation IRS-p5 and IRS-p6  
Design and manufacturing of camera based star sensor  
Design and Manufacturing of FOG Gyroscope  
Design and Development of Guidance, Navigation and Control System Software for Train  
Flowing/Avoidance of UAV and Implementation of Software in the Loop  
Identification of hydraulic control system for wing control system  
Missile Simulation (flight dynamics, control systems, guidance loop, seeker, ...)  
Camera based optical seeker design and test  
A naval system design

## PUBLICATIONS

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### *PEER-REVIEWED JOURNAL ARTICLES*

1. H. Nobahari, H. Ghanbarpur and S. F. Abtahi, "A Quaternion Based Back Propagation Approach to Compensate Velocity and Position Errors in an Integrated Inertial/Celestial Navigation System Using Unscented Kalman Filter", Journal of Sharif, Accepted to Publish, Oct., 2015. (In Persian).
2. H. Ashtari, H. Ghanbarpour Asl, "Vehicle Localization by Using of Line of Sight Measurements", Aerospace Mechanics Journal", Vol. 12, No. 1, Jul. 2015. (In Persian).
3. H. Nobahari, H. Ghanbarpur and S. F. Abtahi, "A Back Propagation Approach to Compensate Velocity and Position Errors in an Integrated Inertial/Celestial Navigation System Using Unscented Kalman Filter", Part G- Journal of Aerospace Engineering. Vol. 228, No., 10, Aug. 2014.
4. S. Mohammadloo, H. Ghanbarpour Asl, M. V. Arbabmir , "Design of a Navigation System for an Unmanned Aerial Vehicle Equipped with a Bearing-Only Sensor", Aerospace Science and Technology Journal, Vol. 2, No.1, 2014. (In Persian).
5. Sedaghat H., Toului A., Ghanbarpour Asl H., "Automatic Triangle, Star Identification and Improvement of Search Speed", Journal of Space Science and Technology (JSST), Iranian Aerospace Society, Vol. 4, No. 3 & 4, 2011 (In Persian).
6. Ghanbarpour Asl H., Pourtakdoust S. H., Samani M., "A New Non-linear Algorithm for Complete Pre-Flight Calibration of Magnetometers in the Geomagnetic Field Domain", Proceedings of the IMechE, Volume 223, Part G- Journal of Aerospace Engineering, June, 2009.
7. Ghanbarpour-Asl H., Pourtakdoust S. H., "Attitude Estimation Using Strapdown IMU and Altimeter Integration for Maneuvering Vehicles", Amirkabir Journal of Science and Technology, Volume 41, No.1, December 2009 (in Persian).

8. Ghanbarpour Asl H., Pourtakdoust S. H., "UD Covariance Factorization for Unscented Kalman Filter using Sequential Measurements Update", International Journal of Engineering and Applied Sciences, Vol. 3, No. 8, 2007.
9. Pourtakdoust S. H., Ghanbarpour Asl H., "An Adaptive Unscented Kalman Filter for Quaternion Based Orientation Estimation in Low Cost AHRS", Journal of Aircraft Engineering and Aerospace Technology, Vol. 79, No. 5, pp. 485-493, Emerald Group Publishing, 2007.
10. Pourtakdoust S. H., Ghanbarpour Asl H., "Heat Control of a bar with Point Sensors and Heaters with Variable Boundary Condition", Osveh Journal, No. 2, Vol. 7 & 8, June 2006 (In Persian).
11. Havangi R., Teshnelab M., Ghanbarpour Asl H., "INS/GPS Combination and Performance Improvement using Adaptive Fuzzy Kalman Filter", The Modarres Journal of Electrical Engineering Journal, Vol. 4, Issue 1, summer and Autumn 2004, Page 67-80. (In Persian).

## **MANUSCRIPTS IN PREPARATION/SUBMITTED FOR REVIEW**

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1. H. GhanbarpourAsl, "Robust Initial Alignment of Strapdown Inertial Navigation System", Submitted to International Journal of Advanced Robotics Systems, May, 2017.
2. H. GhanbarpourAsl, K. YoudeHan, "Investigation On Influence of Parameter Uncertainties In Position Tracking of Robot Manipulators", Submitted to International Journal of Advanced Robotic Systems, feb., 2017.
3. H. GhanbarpourAsl, A. Dehghani, "Integration of INS and Camera for Relative Navigation", Submitted to IEEE Transactions on Aerospace and Electronic Systems, feb., 2017.

## **CONFERENCE PAPERS**

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1. Ghanbarpour Asl H., Shahgholiyan M. B., "Attitude Independent Calibration and Localization of Camera in Three Dimension", Accepted to Publish in Modern Achievement on Aerospace and Related Science. Summer 2015 (In Persian).
2. Ghanbarpour Asl H., Shahgholiyan M. B., "Calibration of IMU and Camera Relative to Each Other based on Batch Least Squares Errors", The First National Navigation Conference, February, 2015 (In Persian).
3. H. Nobahari, H. Ghanbarpour asl, F. Abtahi, "Compensation of Position and Velocity Errors in an Integrated Inertial/Celestial Navigation System using Propagation, Smoothing and UKF", First National Conference, Tehran, Iran, February 2015 (In Persian).
4. Mahdiyoun S. H., Ghanbarpour Asl H., "Integration of IMU and Camera for Positioning of a Mobile Robot", Proceedings of the 13-th Iranian Aerospace Society Conference, February, 2014, (In Persian).
5. Mohammadloo S., Arbabmir M. V., Ghanbarpour Asl H., "New Constrained Initialization for Bearing-Only SLAM", IEEE International Conference on Control System, Computing and Engineering, November, 2013.
6. Arbabmir M. V., Ghanbarpour Asl H., Dehghani H., "Optimal Selection of Joint Points in Sequential Image for Error Compensation of Inertial Navigation System in a UAV", 7-th Image Possessing and Machine Vision Conference, 2012 (In Persian).
7. Ghanbarpour Asl H., Jafari A., Pourtakdoust S. H., "Integrated Attitude Estimation utilizing Star Sensor and Gyroscopes via Multiplicative Quaternion Filters", Proceedings of the 10-th Iranian Aerospace Society Conference, February 2011, Iran (In Persian).
8. Ghanbarpour Asl H., Pourtakdoust H., "Aircraft Aerodynamic Parameter Estimation by Separation of State And Parameters in Estimation Problem", Proceedings of the 10-th Iranian Aerospace Society Conference, Jan., 2011 (In Persian).
9. Ghanbarpour Asl H., Jafari A., Pourtakdoust S. H., "Increased Star Identification Search through Catalogue for a Satellite with Star Sensor", Proceedings of the 8-th Iranian Aerospace Society Conference, February 2011, Iran (In Persian).

10. Nilfrushan O., Nikkhah A. A., Ghanbarpour Asl H., "An Integrated Inertial Navigation System Design for Carrier Missile", Proceedings of the 8-th Iranian Aerospace Society Conference, February 2011, Iran (In Persian).
11. Samani M., Ghanbarpour Asl H., Pourtakdoust H., "Satellite Orbit Estimation by Radar Measurements and Linearized Kalman Filter", Proceedings of the 10-th Iranian Aerospace Society Conference, February 2011, Iran (In Persian).
12. Arbabmir M. V., Ghanbarpour Asl H., Dehghani H., "Error Correction of Inertial navigation system by Sequential Image without using any Map Information", 10-th International Conference of Aerospace Engineering, Jan., 2011 (In Persian).
13. Arbabmir M. V., Ghanbarpour Asl H., Dehghani H., "Error Correction of Inertial navigation system for UAV by Sequential Image In Unknown Environments", Proceedings of the 19- th International Conference of Electrical Engineering, 2011 (In Persian).
14. Mohamadloo S., Ghanbarpour Asl H., "Path Design for Autonomous UAV by Using of Localization and Mapping Algorithm", Proceedings of the 12-th International student Conference of Electrical Engineering, Tabriz., 2010 (In Persian).
15. Mohamadloo S., Ghanbarpour Asl H., "Real Time Navigation and Surveying for Flying Robot", Proceedings of the 9-th International Conference of Aerospace Engineering, 2010 (In Persian).
16. Shekari M., Ghanbarpour Asl H., Sadati H., "Optimal Control of a UAV Path by using of Quaternions", Proceedings of the 8-th Iranian Aerospace Society Conference, Jan., 2009 (In Persian).
17. Mohamadloo S., Ghanbarpour Asl H., Khugar A R., "Pitch Control of a Micro UAV Via Neural Networks", 8-th International Conference of Aerospace Engineering, Jan., 2009 (In Persian).
18. Ghanbarpour Asl H., Pourtakdoust S. H., "UD Covariance Factorization for Unscented Kalman Filter using Sequential Measurements Update", Proceedings of the World Academy of Science, Engineering and Technology, Vol. 25, November 2007, ISSN: 1307- 6884, Italy.
19. Ghanbarpur-Asl H., Pourtakdoust S. H., "A New Kalman Filter for Nonlinear Systems with Non-Gaussian Noise", Proceedings of the 6-th Iranian Aerospace Society Conference, February 2007, Tehran, Iran. (In Persian).
20. Ghanbarpour Asl H., Pourtakdust S. H., "A Robust Algorithm for MEMS Vertical Gyro in Accelerated Motions", First International Navigation Systems Symposium, Tehran, Dec. 2006 (In Persian).
21. Abaszadeh A., Ghanbarpour Asl H., ygmai Kh., "Integration of Inertial Navigation and Visual Navigation Systems", 13-th Electrical engineering Conference, Zanjan, May, 2005 (In Persian).
22. Ghanbarpour Asl H., Pourtakdust S. H., "Smart Cantilevered Supersonic Panel with LQG Control under Random Gust Excitation", Proceedings of the 3-th Iranian Aerospace Society Conference, 2004 (In Persian).
23. Ghanbarpour Asl H., Khayyat A. A., "Control of a Fighter by Using of Sensitivity Functions and Robust Filter", Proceedings of the 3-th Iranian Aerospace Society Conference, 2004 (In Persian).
24. Abedi A. A., Ghanbarpour Asl H., Lotfi Rad M., "A New Method for GPS Ambiguity Resolution", Proceedings of the 3-th Iranian Aerospace Society Conference, 2004 (In Persian).
25. Abedi A. A., Ghanbarpour Asl H., Lotfi Rad M., "Improvement of Speed and Reliability of GPS Ambiguity Resolution", 12-th International Conference of Electrical Engineering, Mashhad, April, 2004 (In Persian).
26. Hvangi R., Ghanbarpour Asl H., Teshnelab M., "GPS/INS Integration by Using of Adaptive Fuzzy Kalman Filter", 12-th International Conference of Electrical Engineering, Mashhad, April, 2004 (In Persian).
27. Ghanbarpour Asl H., Pourtakdust S. H., "Adaptive Control of Dynamically Unknown Systems Based on Neural Network and Extended Kalman Filter", 11-th International Mechanical Engineering Conference, Tehran, 2003.
28. Ghanbarpour Asl H., Naghash A., "Control of a Rocket for Vertical Take-off and Landing based on Dynamic Inversion Method", Proceeding of the 1-th Iranian Organization Conference, Tehran, 2000 (In Persian).

## TEACHING EXPERIENCE

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**Courses for Undergraduate:** Robotics, Flying Robots, Mechatronics Instrumentation, Dynamics, Inertial Measuring Systems (Lab), Inertial Sensors, Orbital Mechanics, Fundamentals of Space Engineering, Statistic and Probability for Engineering, Flight Mechanics, Automatic Control I, Modern Control,

**Courses for Graduate** Automatic Flight Control Systems, Orbit and Attitude Determination/Estimation, Applied Remote Sensing, Satellite System Design, Guidance and Navigation, Nonlinear Control Systems, Inertial Navigation Systems, Advanced Inertial Navigation Systems, Advanced Guidance, Gyroscopes and Accelerometers, Control of Aerial Vehicles, Integrated Navigation Systems, Gyroscopic Systems, Space Navigation Systems, Aircraft and Spacecraft Instruments, Advanced Mathematics,

**Courses for Industries** Nonlinear Filters for Target Tracking, Applied Inertial Sensors' Calibration, Identification of Aerodynamics Parameters, Applied Integration Navigation Systems, Applied Integrated Navigation System, Applied Autopilot Design, Advanced Orbital Mechanics

## STUDENTS

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**Master Science Thesis**

- IMU Fault Detection and Reliability Increasing
- INS Error Correction by Camera without any Priori Images
- Integration of two IMU and Accuracy Improvement/Fault Detection
- Robust Control of Vertical Gyro
- Stochastic Error Modeling of FOG Gyro using Allan Variance and Spectral Methods
- Robot Localization with Bearing Sensor and IMU
- Attitude Independent Calibration of IMU
- Train Avoidance/Flowing of a UAV based on Particle Filter and Optimization Methods
- Control System design for Path Tracking for A UAV with Invert Dynamic Method
- Alignment of Inertial Navigation Systems by Using of Robust Kalman Filter
- Stable Platform Simulation, Control, and Error Analysis
- Attitude and Position Control for UAV by Using of Quaternions
- UD Factorization of Kalman Filter for GPS/INS Integration
- Modeling and Closed Loop Identification of Hydraulic Servo Mechanism
- Aircraft Parameter Identification for Real Tests
- Development of Software for Radar Tracking based on Unscented Kalman Filter
- Nonlinear Error Modeling and Compensation for IMU/INS
- Development triangle search method for star sensor
- Calibration of Camera with Respect to IMU
- Integration of Inertial Navigation System and Camera for a Moving Robot
- Integration of INS and Star Sensor for Lang Range Ballistic Missile
- Orbit and Attitude Estimation of Satellite with Integration of Star and Earth Sensors
- Optimal Control of Magnetic Suspend Gyroscope.
- A New Method for Simultaneously Localization and Mapping for a Cruise Vehicle
- Attitude and Orbit Estimation by using of Images
- Guidance and Control of the moon Landing System by Dual Quaternions
- Attitude Estimation by Integration of Code Phase measurements and triad Rate Gyros
- Landing Control of Moon Lander by Using of Dual Quaternions

**Ph.D. Thesis** Control of Two Link Robot Arm for Discrete Waypoints Tracking (Not Completed)