

ALI JEBELLI

Department of Electronics, Carleton University
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Ottawa, Ontario, Canada K1S 5B6

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EDUCATION

Doctor of Philosophy in Electrical and Computer Engineering Sep 2014 - Dec 2016

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Dissertation: Design of an autonomous underwater vehicle with vision capabilities.

Master of Applied Science in Electrical and Computer Engineering Sep 2013 - Aug 2014

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Dissertation: Development of sensors and microcontrollers for underwater robots.

Master of Engineering in Electrical-Mechatronics and Automatic Control: Dec 2007 - Dec 2009

UNIVERSITY OF TECHNOLOGY MALAYSIA, JOHOR BAHRU, JOHOR, MALAYSIA

Dissertation: Intelligent exhaust fan controller system.

Bachelor of Science in Electrical Power Engineering Sep 1999 - Oct 2004

AZAD UNIVERSITY (IAU), RAZAVI KHORASAN, IRAN

POSITIONS AND EMPLOYMENT

CARLETON UNIVERSITY, OTTAWA, ON, CANADA

Postdoctoral Fellow Oct 2019 - Present

Department of Electronics

- Designing a smart farm heating and irrigation system for agriculture with minimal energy consumption.
- Design and implement an autonomous robot for smart weeding.
- Designing and implementing an intelligent sidewalk.
- Smart anti-virus air purifying system.
- Development of a machine vision system to identify weed in different seasons.

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Postdoctoral Fellow Jan 2019 - Dec 2019

Department of Mechanical Engineering

- Intelligent emergency landing system for unmanned aerial vehicles (UAVs) at unsurveyed airfields.
- Cooperative target tracking using underwater robots to explore the sea's dark depths.
- Development of an autonomous fire-fighting robot, increases maneuverability to fight fires better, save lives.
- The effect of cyclone inlet dimensions on the flow pattern and performance for fine dust emission control.

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Postdoctoral Fellow Dec 2016 - Jan 2019

School of Electrical Engineering and Computer Science

- Stability and control of small unmanned aerial vehicles (UAVs).
- Development of self-balancing controller for autonomous underwater vehicles (AUVs) with vision capabilities.
- Effect of low-frequency noise on humpback whale behaviors.
- Design and implementation of a light and small intelligent catheter robot.

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RYERSON UNIVERSITY, TORONTO, ON, CANADA

Postdoctoral Fellow

Oct 2016 - Dec 2016

Department of Mechanical and Industrial Engineering

- In-pipe robotic visual inspection and control.
- Crash landing planning and control of UAVs.

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Research Assistant

Sep 2013 - Oct 2016

School of Electrical Engineering and Computer Science

- Performed dynamic modeling of autonomous underwater vehicles (AUVs), and optimal path planning using general purpose optimization algorithms.

UNIVERSITI TEKNOLOGI MALAYSIA, SKUDAI, JOHOR, MALAYSIA

Research Assistant

Sep 2008 - Dec 2009

School of Electrical Engineering

- A controller design based fuzzy logic for an autonomous underwater robot.
- Design an Intelligent exhaust fan system based fuzzy logic control.

MENTORING EXPERIENCE

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Project Supervisor

Jan 2019 - Dec 2019

Department of Mechanical and Industrial Engineering

- Design and implement an autonomous robot for smart weeding.

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Project Supervisor

Dec 2016 - Jan 2016

School of Electrical Engineering and Computer Science

- Effect of low-frequency noise on humpback whale behaviors.

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Robotic Team Supervisor

Sep 2016 - Dec 2016

Faculty of Engineering

- Provide leadership and mentoring student teams during the build and competition sessions.

RYERSON UNIVERSITY, TORONTO, ON, CANADA

Co-Supervisor

Oct 2016 - Dec 2016

Department of Mechanical and Industrial Engineering

- In-pipe robotic visual inspection and control.

RYERSON UNIVERSITY, TORONTO, ON, CANADA

Co-Supervisor

Oct 2016 - Dec 2016

Department of Mechanical and Industrial Engineering

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- Crash landing planning and control of UAVs.

TEACHING EXPERIENCE

UNIVERSITY OF OTTAWA, OTTAWA, ON, CANADA

Teaching Assistant

Sep 2013 - May 2016

Faculty of Engineering

- Provide assistance in teaching undergraduate/graduate students on various topics; such as Mechatronics, Advanced Topics in Reliability Engineering, Software Engineering Project Management, Optical Communications Systems, and Fourier Optics.

PRE-UNIVERSITY KHARAZMI, TEHRAN, IRAN

Lecturer and Lab Instructor

Apr 2010 - Nov 2011

- Rendered instructional services to students on various subjects, such as Mathematics, Computer Programming, Computer Laboratory, and English Language.

Earlier Position Held:

AZAD UNIVERSITY, GONABAD, IRAN

Teacher Assistant and Laboratory Instructor

Sep 2001 - Jul 2003

- Rendered instructional services to students on various subjects, such as Software Engineering and English Language.

INDUSTRIAL EXPERIENCE

ROBOTIC CENTURY INC, OTTAWA, ON, CANADA

Director

Sep 2019 - Present

- Design and production of robotics, development and applications of operating system and intelligent manufacturing services in industry, horticulture, agriculture, commerce, education, scientific research, home and etc.

CANADA AGTECH INC, OTTAWA, ON, CANADA

Director

Sep 2018 - Sep 2019

- Design and implementation of agricultural robots to help farmers grow healthier, more abundant and more environmentally friendly crops.

SABZ POOSHESH TOOS COMPANY, MASHHAD, IRAN

Supervisor of Mechanization and Engineering Department

Jun 2010 - Nov 2011

- Designed and repaired agricultural machinery and robots for agricultural purposes as well as reconstructed and simulated greenhouses with intelligent systems.

KHORASAN PROVINCE VETERINARY DEPARTMENT GENERAL, MASHHAD, IRAN

Project Manager

Apr 2010 - Nov 2011

- Initiated the design and implementation of intelligent temperature control system for animal husbandry centers.

TOKLAN TOOS INDUSTRIAL MANUFACTURING COMPANY, MASHHAD, IRAN

Technical Manager and Repair Technician

Jan 2004 - Jul 2007

- Drove key automation initiatives including repair of intelligent systems and robots, as well as reconstruction and programming of industrial computers.

PROFESSIONAL DEVELOPMENT

2018 IEEE International Conference on Industrial Technology (ICIT 2018), Lyon, France.

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- 2014 **International Conference on Robotics and Automation Engineering (ICRAE)**, Bangkok, Thailand.
- 2014 **Institute of Electrical and Electronics Engineers (IEEE) International Systems Conference**, Ottawa, ON, Canada.
- 2014 **MATLAB Virtual Conference**, Ottawa, ON, Canada.
- 2013 **IEEE Symposium Series on Computational Intelligence**, Singapore, Singapore.
- 2012 **IEEE International Workshop on High-Performance Chip, Package, and Systems**, Ottawa, ON, Canada.
- 2012 **Canadian National Capital Region Workshop on Recent Progress in Antenna Analysis and Design for Wireless Communications**, Ottawa, ON, Canada.
- 2008 **Workshop on Fuzzy Logic and Applications**, Kuala Lumpur, Malaysia.
- 2003 **High Voltage Design Workshop**, Mashhad, Iran.
- 2002 **Workshop on MATLAB Programming**, Mashhad, Iran.

AWARDS AND HONOURS

- 2018 **Candidate for the 2018 John Charles Polanyi Prize**, University of Ottawa, ON, Canada.
- 2018 **Conference Travel Grants**, University of Ottawa, ON, Canada.
- 2016 **Best Design Project - Design of an Intelligent Underwater Robot with Flexible Thrusters, Design Day**, Faculty of Engineering, University of Ottawa, ON, Canada.
- 2016 **Latvian Universities Endowment Scholarship**, University of Ottawa, ON, Canada.
- 2016 **University of Ottawa Financial Aid Bursary**, University of Ottawa, ON, Canada.
- 2016 **CUPE Employees Financial Aid**, University of Ottawa, ON, Canada.
- 2016 **Faculty of Engineering General Fund Awards**, University of Ottawa, ON, Canada.
- 2015 **University of Ottawa Financial Aid Bursary**, University of Ottawa, ON, Canada.
- 2015 **CUPE Employees Financial Aid**, University of Ottawa, Canada.
- 2014 **Ryerson Graduate Fellowships (RGF)**, Ryerson University, Toronto, ON, Canada. 2014Conference Travel Grants, University of Ottawa, ON, Canada.
- 2013 **Conference Travel Grants**, University of Ottawa, ON, Canada.
- 2013 **University of Ottawa Financial Aid Bursary**, University of Ottawa, ON, Canada.
- 2012 **Adelaide Scholarships International (ASI)**, University of Adelaide, Adelaide, SA, Australia.

PROFESSIONAL AFFILIATIONS

IEEE Young Professionals | IEEE Robotics and Automation Society | IEEE Control Systems Society | IEEE Oceanic Engineering Society | IEEE Sensors Council | IEEE Systems Council | Ontario Society of Professional Engineers | The Combustion Institute.

COMPUTER SKILLS

CATIA | LabVIEW | AutoCAD | SolidWorks | Ansys Fluent/Ansys HFSS/Ansys Maxwell | ControlDesk | Altium Designer | CodeVisionAVR | OpenCV | C/C++ | Visual C/Basic | Maple | MATLAB/Simulink | S-function | DSpace | SimWise 4D.

LICENSURE/CERTIFICATIONS

Open Water Certification Dives | Boating License

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THESIS

- Jebelli, A.**, "Design of an autonomous underwater vehicle with vision capabilities," School of Electrical Engineering and Computer Science, University of Ottawa, Ottawa, ON, Canada, 2016.
- Jebelli, A.**, "Development of sensors and microcontrollers for underwater robots," School of Electrical Engineering and Computer Science, University of Ottawa, Ottawa, ON, Canada, 2014.
- Jebelli, A.**, "Intelligent exhaust fan controller system," Faculty of Electrical Engineering, University of Technology Malaysia, Johor Bahru, Johor, Malaysia, 2009.

PATENT

- [1] **Jebelli, A.**, Kazemi, S.H., "Intelligent exhaust fan controller system" Registration of Companies, and Industrial and Intellectual Property Rights, Patent number: 2011-3014721, Iran, 2011.
- [2] **Jebelli, A.**, Chaoui, H., "Smart anti-virus air purifying system" United States Patent and Trademark Office (USPTO), In progress.
- [3] **Jebelli, A.**, Chaoui, H., Yagoub, M.C.E., "Microwave system amplifier" United States Patent and Trademark Office (USPTO), In progress.
- [4] **Jebelli, A.**, Chaoui, H., "Multi-layer cyclone dust collector" United States Patent and Trademark Office (USPTO), In progress.

BOOK

- [1] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Computer controlled systems", In progress.
- [2] **Jebelli, A.**, Chaoui, H., Yagoub, M.C.E., "Underwater robotics: science, design & structure", In progress.

CHAPTERS IN BOOKS

- [1] **Jebelli, A.**, Ruzairi, A. R., "A controller design based fuzzy logic for an autonomous underwater robot," Progress in process tomography and instrumentation system, Chapter 10 (143-164), Series 7, ISBN 978-967-354-181-2, 2011.
- [2] **Jebelli, A.**, Ruzairi, A. R., "Intelligent exhaust fan controller system," Progress in process tomography and instrumentation system, Chapter 13 (199-218), Series 4, ISBN 978-967-354-181-2, 2011.

TRANSLATIONS

- [1] **Jebelli, A.**, "S.N. Sivanandam & S.N. Deepa (Problems and solution of control systems)," Tehran: IAU, 2011.
- [2] **Jebelli, A.**, "Siciliano, B., de Luca, A., Melchiorri, C., Casalino, G. (Advances in control of articulated and mobile robots)," Tehran: IAU, 2011.

JOURNAL PUBLICATIONS

- [1] **Jebelli, A.**, Mahabadi, A., Chaoui, H., Dhillon, B.S., "Calculating the magnetic force between two coaxial coils with air core and uniform flow," In review.
- [2] **Jebelli, A.**, Mahabadi, A., Chaoui, H., Yagoub, M.C.E., "Increased Operating Depth of an Autonomous Underwater Vehicle via Fuzzy Logic Controlled Magnetic Field," In review.
- [3] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Quadcopter failsafe algorithm: Recovery after the complete loss of one, two, or three propellers," In review.
- [4] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Design and implementation of an intelligent air purification tunnel to reduce pollution levels in the cities," In review.
- [5] **Jebelli, A.**, Yagoub, M.C.E., Chaoui, H., "A reliable and efficient method to balance underwater robots," In review.

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- [6] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Efficient approach for reliable sensor implementation in robots," In review.
- [7] **Jebelli, A.**, Chaoui, H., Kazemi, S.H., Mahabadi, A., Dhillon, B.S., "Simulation of Tracking and Mapping System for an Autonomous Underwater Vehicle in Real Position using Sonar System in MATLAB," IAES International Journal of Robotics and Automation (IJRA), Accepted, 2020.
- [8] Kazemi, S.H., **Jebelli, A.**, Shirzad, L., "Gain-forming effect on optical signal-to-noise ratio in Raman fiber amplifier," Journal of Optical Communications (JOC), Vol. 41, No. 4, pp.1-6, 2020.
- [9] **Jebelli, A.**, Chaoui, H., Kazemi, S.H., Mahabadi, A., Dhillon, B.S., "Design and fabrication of broadband dielectric mirrors in the visible range," International Journal of Thin Films Science and Technology, Vol. 3, No. 2, pp.1-9, 2020.
- [10] **Jebelli, A.**, Mahabadi, A., Yagoub, M.C.E., Chaoui, H., "Magnetic force calculation between magnets and coils," International Journal of Physics, Vol. 8, No. 2, pp. 71-80, 2020.
- [11] **Jebelli, A.**, Dhillon, B.S., "Eco-friendly and cost-effective sealing approach for laboratory submarine robots," Modern Approaches in Oceanography and Petrochemical Sciences, Vol. 2, No. 5, pp. 197-201, 2019.
- [12] Kazemi, S.H., **Jebelli, A.**, "Angular spectrum of vortex micro-lens," Journal of Image and Graphics, Vol. 7, No. 4, 2019.
- [13] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Using a high-speed mini-PC to control an autonomous underwater vehicle," American Journal of Mechanical Engineering, Vol. 7, No. 3, pp. 116-128, 2019.
- [14] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., Lotfi, N., "Effect of low-frequency noise on humpback whale behaviors," Oceanography and Marine Research, Vol. 6, No. 4, pp. 1-5, 2018.
- [15] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Design and implementation of an underwater robot with PTFE," Advances in Robotics & Automation, Vol. 7, No. 1, pp. 1-7, 2018.
- [16] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Design and control of a self-balancing autonomous underwater vehicle with vision capabilities," Journal of Marine Science: Research & Development, Vol. 8, No. 1, pp. 1-7, 2018.
- [17] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Intelligent control system for autonomous underwater robots with vision capabilities," Journal of Applied Mechanical Engineering, Vol. 6, No. 3, pp. 1-7, 2017.
- [18] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Modeling of an autonomous underwater robot with rotating thrusters," Advances in Robotics and Automation, Vol. 6, No. 1, pp. 1-10, 2017.
- [19] **Jebelli, A.**, Yagoub, M.C.E., Dhillon, B.S., "Design and control of underwater robots with rotating thrusters," International Journal of Robotics and Automation (IJRA), Vol. 5, No. 4, pp. 284-294, 2016.
- [20] **Jebelli, A.**, Yagoub, M.C.E., "Fuzzy logic PID-based control design for a small underwater robot with minimum energy consumption," International Journal of Mechanical Engineering and Robotics Research, Vol. 5, No. 3, pp. 186-190, 2016.
- [21] **Jebelli, A.**, Yagoub, M.C.E., "Development of sensors and microcontrollers for small temperature controller systems," Journal of Automation and Control Engineering, Vol. 3, No. 4, pp. 322-328, 2015.
- [22] **Jebelli, A.**, Kazemi, S.H., Dhillon, B.S., "Design of multilayer optical filters using the Fourier transform approach," Journal of Image and Graphics, Vol. 3, No. 1, pp. 60-64, 2015.
- [23] **Jebelli, A.**, Yagoub, M.C.E., Kazemi, S. H., "Fuzzy-based controller design for intelligent robot arm," International Review of Mechanical Engineering, Vol. 8, No. 1, pp. 214-222, 2014.

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- [24] **Jebelli, A.**, Yagoub, M.C.E, Dhillon, B.S., "Fuzzy-based system for efficient and cost-effective control of light power consumption in autonomous vehicles," International Review of Automatic Control, Vol. 6, No. 4, pp. 489-493, 2013.
- [25] **Jebelli, A.**, Yagoub, M.C.E., Lotfi, N., Dhillon, B.S., "Intelligent control of a small climbing robot," International Review of Automatic Control, Vol. 6, No. 6, pp. 751-758, 2013.
- [26] **Jebelli, A.**, Yagoub, M.C.E., Ruzairi, A. R., Kazemi, S.H., "Design and construction of an underwater robot based fuzzy logic controller," International Review of Mechanical Engineering, Vol. 7, No. 1, pp. 147-153, 2013.
- [27] **Jebelli, A.**, Ruzairi, A.R., Kazemi, S.H., "Limits of phase only approach in micro-lens design," Jurnal Teknologi, Special Edition (Instrumentation & Sensor Technology), Vol. 54, pp. 61-68, 2011.

CONFERENCE PUBLICATIONS

- [1] **Jebelli, A.**, Yagoub, M.C.E, Dhillon, B.S., "Submarine robot sealing with minimum cost and environmental pollution," In review.
- [2] **Jebelli, A.**, Yagoub, M.C.E, Dhillon, B.S., "Using mini-PCs with high-speed processing to control advanced robots," In review.
- [3] **Jebelli, A.**, Yagoub, M.C.E, Dhillon, B.S., "Design and implementation of a light and small intelligent catheter robot," In review.
- [4] **Jebelli, A.**, Yagoub, M.C.E, Dhillon, B.S., "Feedback linearization approach to fault tolerance for a micro quadrotor," 2018 IEEE International Conference on Industrial Technology (ICIT), Lyon, France, pp. 165-168, 2018.
- [5] **Jebelli, A.**, Yagoub, M.C.E., "Efficient robot vision system for underwater object tracking," IEEE International Conference on Control Science and Systems Engineering (CCSSE 2016), Singapore, Singapore, pp. 1-4, 2016.
- [6] **Jebelli, A.**, Yagoub, M.C.E., "Fuzzy logic PID based control design for a small underwater robot with minimum energy consumption," International Conference on Robotics and Automation Engineering (ICRAE 2015), Beijing, China, pp. 1-4, 2015.
- [7] **Jebelli, A.**, Yagoub, M.C.E., "Development of sensors and microcontrollers for small temperature controller systems," International Conference on Robotics and Automation Engineering (ICRAE 2014), Bangkok, Thailand, 2014, pp. 1-6, 2014.
- [8] **Jebelli, A.**, Neculescu, D., Yagoub, M.C.E., "Fuzzy logic temperature controller for small robots," IEEE Workshop on Robotic Intelligence in Informationally Structured Space (RiSS 2013), Singapore, Singapore, pp. 25-29, 2013.

JOURNAL REVIEWER

- IEEE Transactions on Vehicular Technology.
- Applied Sciences (Switzerland) – MDPI.
- International Journal of Robotics and Automation - ACTA Press.
- IAES International Journal of Artificial Intelligence (IJ-AI).
- TELKOMNIKA (Telecommunication, Computing, Electronics and Control).
- International Journal of Power Electronics and Drive Systems (IJPEDS).
- IAES International Journal of Robotics and Automation (IJRA).

CONFERENCE REVIEWER

- International Conference on Renewable Energy and Sustainability 2020 (RES20).
- 7th International Conference on Electrical Engineering, Computer Science and Informatics 2020 (EECSI 2020).

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- 2nd Ahmad Dahlan International Conference Series on Engineering, Science and Information Technology 2020 (ADICS-ESIT 2020).
- 1st Conference on Internet of Things and Embedded Intelligence 2020 (CITEI 2020).
- International Conference on Artificial Intelligence and Signal Processing 2020 (AISP 2020).
- International Conference on Smart Energy Systems 2019 (SES 2019).
- 10th IEEE-GCC Conference and Exhibition 2019 (IEEEG CCCE 2019).
- International Conference on Control, Electronics, Renewable Energy, and Communications 2017 (ICCEREC 2017).
- International Conference on Control, Electronics, Renewable Energy, and Communications 2016 (ICCEREC 2016).