Dear Hiring Manager,

I am Dr.-Eng. Ehsan KhademOlama and have studied my PhD in mechatronics at the bergamo university, Italy. Accordingly, please note that I have worked on and have experience on:

Electronics Engineering, as my Bachelor degree is in. I can design Analog and Digital circuits based on the project requirements. After designing I can simulate the circuits in various SPICE programs. After simulation I can design PCB boards based on the EMC/EMI requirements of the project.

Mechatronics, as of my PhD studies; I can design various mechatronic systems, analyses them in MATLAB/Simulink/Simscape. I can design in SolidWorks the mechanical parts and simulate in FEM softwares like Ansys and COMSOL the structural analysis and CFD simulations. During my PhD project, I had worked on industrial IoT control by AWS tools for experimenting on Digital Twins of Physical systems. One of my main works in PhD was modeling and simulation of servo electrohydraulic actuators at the acceleration controlling level.

Control Engineering, as of my master degree on Instrumentation and Automation in the Oil/Gas industry I have learned various theoretical systems and Applicable control tools. In theory the linear and nonlinear controls/state estimation like PID, Kalman filter, Feedforward Control, Model Predictive Control and Sliding mode Control have been practiced. Mathematical modeling of physical systems in the MATLAB/Simulink was practiced for designing and experimenting various sensor fusion algorithms. In practical applications, the PLC controllers have been worked on.

Machine Learning/ Machine Vision, was one of my main studies in the PhD for using in the real time visual data in the control feedback of robotic systems. I had learnt various machine vision algorithms and neural networks including the deep learning in the MATLAB and python through TensorFlow. In my PhD the Neural Network based simulation of servo electrohydraulic actuators at the acceleration controlling level was performed.

Industrial Inspection, I have worked with various Industrial Sensors and Instrumentation fittings equipment and calibration of them. Electrical motors and Electro-Hydraulic, Solenoid Actuators were my case studies during my PhD. I have very good experiences in the inspection of measurement and process tools, functional/operational tests of motors, electrical conductors and material compliance. As a quality control inspector I have good experience with ASME sections IX,V, B16.5 and B31.1-B31.3; NEMA MG 1-2016.

I believe I can be a good fit to your group as a Control Engineer, because of my academic studies and experiences in the industrial environment. Please do not hesitate and contact me if you found my resume interesting for your positions.

With best regards,

Dr.-Eng. Ehsan KhademOlama;

* For my MATLAB/Simulink experience, I would appreciate it if you check out my Robotic Toolbox in MATLAB file Exchange as:
https://www.mathworks.com/matlabcentral/fileexchange/50523-advanced-robot-manipulator-simulator

Ehsan KhademOlama

Curriculum Vitae

✍ 2B, Taunusstr, Eschborn, Hessen 65760, Germany

☎ (+49) 176-43165368

✉ ekoshv.igt@gmail.com

↗ www.linkedin.com/in/ehsan-khademolama-05149865

Review

With a background in mechatronics and a focus on nonlinear dynamic system identification and optimization, as well as model-based linear/nonlinear controller and observer design, I have developed a strong skill set in electronic control board design and testing for mechanical systems and electronic engineering projects. My main coding languages are MATLAB, Python and embedded C/C++. My skills also include knowledge of industrial sensors, electrical motors and hydromechanical systems, as well as functional testing of motors and electrical conductors. In addition, I have designed 3D models in SolidWorks and gained some experience in CFD simulation using Ansys and COMSOL. I have also developed a robot manipulator simulator in MATLAB/Simulink and have built a 300W brushless DC motor driver board, designed using Altium Designer. I have worked on projects involving Industrial IoT for robotic systems. I pride myself on being a fast learner and am always eager to expand my knowledge and skills, making me open to new fields of study and work experiences. I believe that my skills and experience, combined with my ability to learn quickly and adapt to new challenges, make me a suitable candidate for positions in the areas of signal processing, sensor fusion, mechatronics, hydraulic systems, control, and robotics.

Work experience

2018 – present

Intertek Group plc, Arotec Inspection Partner, TÜV Süd, TÜV Nord, TÜV Rheinland, McDermott,ABS Group

Engineering Consultant & Industrial Quality Control Inspector

Experience:
*Industrial sensors and instrumentation fittings equipments and calibration.
*Electrical motors and Electro-Hydraulic, Solenoid Actuators.
*Inspection of measurement and process tools.

Skills:
*Functional/operational test of motors, electrical conductor's material compliance.
*Reading P&ID diagrams, single/multi line diagrams, and 2/3D schematics of control panels.
*Witnessing QC tests as per Quality Control Plan and reference standards.
*Witnessing NDT after and before QC tests as per request and review of relative certificates and reports.

Knowledge:
*ASME sections IX, V, B16.5 and B31.1-B31.3.
*NEMA MG 1-2016.
*IEC 62271-200:2021 (International Electrotechnical Commission Standard for high-voltage switchgear and controlgear).

2017 – 2018

Università degli studi di Bergamo

Researcher assistant

Designing and implementing control systems:
* Model Predictive Controller for Brushless motors based on the State Space Approach.
* Velocity Direct Feedback (VDF) for car suspension using sensor fusion based on the Wavelet filters with comparison to Kalman filter methods.

Working on product and process integration:
* Realization of electric motors for road vehicles in partnership with Brembo S.p.a.

* Studying control designs for high performance electric motors.

Designing and implementing additional control systems:

* Robust controllers for hydraulic actuators with a focus on precision optimization, applied on embedded controller boards.
* Modeling hydraulic actuators and solenoid valves in MATLAB/Simulink.
* Developing new methods for estimating the motion states of a car through ego-motion estimation based on real-time video processing and vehicle dynamics on embedded systems.

2014 – 2017

Università degli studi di Bergamo

PhD researcher

Motion state extraction:

The motion states of predefined industrial objects were extracted from the fusion of camera data and IMU (accelerometer) in real time to be used as feedback for force control over robot manipulators Algorithms were developed in C++ using the Pyramidal Lucas Kanade library from OpenCV and the Boost library Parallel methods on both the CPU and GPU were employed to optimize the speed of these processes A new sensor fusion method was developed to combine velocity data from a lower resolution camera with higher resolution velocity data obtained through the integration of accelerometer data.

Shaking table model development:

An empirical nonlinear model was developed for a servo-hydraulic uni-axial shaking table based on fluid mechanical expressions and a modified effective bulk modulus model of hydraulic oil. The model was able to accurately simulate the acceleration, velocity, and position outputs of the system in response to different types of inputs, such as pulse and sinusoidal signals, across a wide range of frequencies and different specimen weights. The model can be used to design and optimize the parameters of a model-based controller for tracking reference force or acceleration signals, which is the goal of the shaking table with only position sensor The parameters of the simulated model were estimated using the nonlinear least square method in MATLAB.

Robot manipulator modeling and control:

A toolbox was developed in MATLAB for symbolically modeling the kinematics and dynamics of robot manipulators The toolbox was used to model and control a multi-DOF robot manipulator using sliding mode control. (https://www.mathworks.com/matlabcentral/fileexchange/50523-advanced-robot-manipulator-simulator)

Motor inverter driver board design and development:

A 300W brushless DC motor inverter driver board was designed and developed for controlling robotic actuators The design included PCBs and writing firmwares for STM32 F4XX electronics embedded systems.

Industrial IoT implementation:

Industrial IoT was implemented for various robotic systems based on the AWS IoT platform and Raspberry Pi3.

2011 – 2014

Sedna Fidar Payeh (StartUp)

Research & Development

* Working on the sensor and data fusion in the chemical plants.(Developing various technologies based on the realtime video processing).

2008 – 2011

Electronic Azarbayejan

Research & Development

* Research and Design Electronic and Mechanical Systems, Specially Electronic Power Transformation systems.

Education

2014 – 2017 **Ph.D-Eng Mechatronic Engineering**
Università degli studi di Bergamo, Italy

2008 – 2014 **M.Sc-Eng Instrumentation and Automation Engineering**
Petroleum University of Technology, Iran

2003 – 2008 **B.Sc-Eng Electronic Engineering**
Urmia University, Iran

Freelance Projects

- Research and design on the various sensor types for textile yarn breakage based on the image and video processing.
- Design a walnut's sorting based on the neural-network image processing in MATLAB.
- Design and implementation of high accuracy Blood Cell Counter with image processing in MATLAB.

- Indirect Flare Temperature estimation from real time video of the flares with Tensorflow and Keras.
- Design and Implementation of Kalman Filter on AVR microcontrollers(8Bit Processor types)

Communication skills

Persian, Azeri	Native speaker
English	C1
German, Italian	A2

Skills

Good level	MATLAB/Simulink, Hardware/ Software -in- the-loop, C/C++, Python, OpenCV, Boost library, Keras, Tensorflow, Multisim, Proteus, Altium Designer, Keil uVision, FreeRTOS, CAN, SPI, Solidworks,LaTeX
Intermediate	VB, SIEMENS PLC ecosystem, ROS, Ansys, COMSOL, Networks

Awards

- Full Scholarship in M.Scs. from ministry of Petroleum 2008.
- Full Scholarship in Ph.D. from Bergamo University for mechatronics 2014.
- Full funds for all conferences and publication from Bergamo University.
- Full scholarship for summer school on mechanism design for applications MDA 2016 Palermo University, Italy.
- DAAD Full scholarship for summer school on Robot Operating System (ROS) 2017 FH Aachen University, Germany.
- Winning the research grant of university of Bergamo for the project with title "Product and process integration for the realization of electric motors for road vehicles".

Publications

- Olama, E.K.; Valiloo, S., "A fast wavelet denoising method," IEEE conference in Computer Research and Development (ICCRD), 2011 3rd International Conference on, vol.1, no., pp.492, 494, 11-13 March 2011. Doi: 10.1109/ICCRD.2011.5764065
- E. Khadem Olama, H. Jazayeri-Rad, "Online Averaging Wavelet Denoising Method," IEEE conference in Computer Modelling and Simulation, UKSIM European Symposium on, pp. 202-204, 2011 UKSim 5th European Symposium on Computer Modelling and Simulation, 2011 ISBN: 978-0-7695-4619-3
- Valiloo, S.; Olama, E.K.; Olama, A.K., "A sliding mode controller with generalized H2 performance for dynamic of nonholonomic mobile robot," IEEE conference in AI & Robotics and 5th RoboCup Iran Open International Symposium (RIOS), 2013 3rd Joint Conference of , vol., no., pp.1,7, 8-8 April 2013 Doi: 10.1109/RIOS.2013.6595329
- P. Righettini, R. Strada, E. K. Olama and S. Valilou, "Symbolic kinematic and dynamic modelling toolbox for Multi-DOF robotic manipulators," Automation and Computing (ICAC), 2015 21st International Conference on, Glasgow, 2015, pp. 1-7. doi: 10.1109/IConAC.2015.7313939
- P. Righettini, R. Strada, S. Valilou and E. Khadem Olama, "Output feedback sliding mode controller with H2 performance for robot manipulator," Automation and Computing (ICAC), 2015 21st International Conference on, Glasgow, 2015, pp. 1-6. doi: 10.1109/IConAC.2015.7313943
- Paolo Righettini, Roberto Strada, Shirin Valilou, Ehsan Khademolama, “Nonlinear Modeling and Experimental Validation of Uni-Axial Servo-Hydraulic Shaking Table”, BATH/ASME 2016 Symposium on Fluid Power and Motion Control Bath, UK, September 7–9,

2016, Paper No. FPMC2016-1773, pp. V001T01A037; 8 pages, doi: 10.1115/FPMC2016-1773.

- Paolo Righettini, Roberto Strada, Shirin Valilou, Ehsan Khademolama, “Gray-Box Acceleration Modeling of an Electro Hydraulic Servo Shaking Table with Neural Network”, 2017 IEEE International Conference on Advanced Intelligent Mechatronics, July 3-7, 2017, Sheraton Arabella Park Hotel, Munich, Germany doi: 10.1109/AIM.2017.8014212.

- Paolo Righettini, Roberto Strada, Ehsan KhademOlama, Shirin Valilou, Online Wavelet Complementary velocity Estimator, ISA Transactions,2018,ISSN 0019-0578, https://doi.org/10.1016/j.isatra.2017.12.013.

- P. Righettini, R. Strada, S. Valilou, E. Khademolama, "Nonlinear Model of a Servo-Hydraulic Shaking Table with Dynamic Model of Effective Bulk Modulus" Mechanical Systems and Signal Processing, Elsevier,2018, https://doi.org/10.1016/j.ymssp.2018.03.024.

Repubblica Italiana
In nome della Legge

Noi Professore Remo Morzenti Pellegrini Rettore della

UNIVERSITÀ DEGLI STUDI DI BERGAMO

veduti gli studi compiuti
veduto il risultato positivo dell'esame sostenuto presso l'Università degli studi di Bergamo il 21 marzo 2018
conferiamo a

Ehsan Khademolama

nato a Oroumieh (Iran) l'1 novembre 1984

il titolo di
DOTTORE di RICERCA in

Ingegneria e scienze applicate
Engineering and Applied Sciences

Il presente diploma viene rilasciato a tutti gli effetti di legge.

Bergamo, addì 8 ottobre 2018

N. 764 Registro Diplomi dottorato di ricerca

Il Rettore
Prof. Remo Morzenti Pellegrini

Il Coordinatore
Prof. Valerio Re

Realizzato dall'Antica Bottega Artigiana di Scanzi

Impresa di bollo assolta in modo virtuale autorizz. Ag. Entrate di Bergamo

UNIVERSITÀ DEGLI STUDI DI BERGAMO

SERVIZIO STUDENTI - SEGRETERIA STUDENTI

Enrollment registration no. 1036207

STATEMENT

This is to certify that, in accordance with our records, Mr. **Khademolama Ehsan** born in Oroumieh-IRAN on November 1st 1984, passed the final exam on March 21st 2018 and was awarded a Research Doctorate in **Engineering and Applied Sciences (XXX cycle)**.

We also hereby certify that Mr. Khademolama Ehsan defended his final doctoral thesis entitled:
"Vision in the Loop for Force and Position Control of the Robot Manipulators" S.S.D. ING-IND/13).

The Judging Committee of the final exam was composed of:

- Prof. Mariapia Pedeferri
- Prof. Simone Garatti
- Prof. Giuseppe Cocchetti

The present certificate is issued on legal paper FOR USES ALLOWED BY THE LAW.

By virtue of Article 40, D.P.R. 445/00 this Certificate has validity only abroad.

Bergamo, April 4th 2018
Ref. no. 56194/V/8

THE STUDENT SERVICES OFFICER
(Dott.ssa Silvia Perrucchini)

The information in this certificate is taken from the digital records of the Student Services of the University (Legislative Decree No. 39, 12.02.1993)

(BG) via Einstein 2 tel. 035 2052 333 fax 035 2052 377 / 035 562 779
di Bergamo www.unibg.it Cod. Fiscale 80004350163 P.IVA 01612800167

IRI EMBLEM

Ministry of Science, Research & Technology

Ministry of Oil and Gas

Petroleum University of Technology

Date: 22 September 2014

No: 93/413/MKAR

By virtue of approval dated August 1989 of Higher Education Development Council, whereas,

Mr. Ehsan KhademOlama

Son of Ali, holder of ID card No. 1777, issued at Oroumieh, born in 1984, has successfully completed the course of studies prescribed by Faculty of Instrumentation and Automation of Petroleum University of Technology in January 2012 with the average 16.40/20. This diploma of Master's degree in the field of Instrumentation and Automation is conferred upon him.

May God bestow him success in taking advantage of her knowledge in both theory and practice, following the path of piety and seeking God's gratification and serving the people.

Signed and Sealed by
Deputy of Academic Affairs
Chancellor of University
Overleaf:
Signature & seal of university officials are confirmed.
Director General of Inland Student's Affairs
Ministry of Sciences, Research and Technology

بسمه تعالی

شماره : م ک/۱۴۱۴/۹۴
تاریخ : ۹۴/۶/۴۱

یرفع ا... الذین آمنوا منکم و الذین اوتوا العلم درجات

گواهینامه پایان تحصیلات

گواهی می شود :

آقای **احسان خادم علماء** فرزند **علی** دارنده شناسنامه شماره **۱۷۷۷** صادره از **ارومیه** متولد سال **۱۳۶۳** (صاحب عکس فوق) در مقطع **کارشناسی ارشد** رشته **مهندسی ابزار دقیق و اتوماسیون** تحصیلات خود را در **دانشکده نفت اهواز** این دانشگاه با معدل کل **۱۶/۴۰ (شانزده و چهل صدم)** در تاریخ **دی ماه سال ۱۳۹۰** با موفقیت به پایان رسانیده است.

توفیق نامبرده را در کسب رضایت خداوند و توام نمودن ایمان و علم در خدمت به امت اسلامی آرزومندیم.

محمدحسین مداحی
مدیر کل امور آموزشی دانشگاه

محبوبه عشقی خاص
مترجم رسمی زبان انگلیسی قوه قضائیه جمهوری اسلامی ایران به شماره پروانه 733
تهران، ضلع جنوب شرقی میدان انقلاب، بازار بزرگ کتاب، طبقه اول
تلفکس: 66485796 ، تلفن: 66463172، موبایل: 0912-3189332
Mahboobeh ESHGHI KHASS
Official English Translator to the Judiciary of I. R. Iran
1st Floor, No. 23, Enghelab Sq., Tehran, Iran
Tel/Fax: 0098-21-66485796, 66463172, E-mail: hezareh.translation@gmail.com

جمهوری اسلامی ایران
قوه قضائیه ـ اداره مترجمین رسمی

شماره ۱۸۲۴۱۱ سری ا

ردیف دفتر ثبت

OFFICIAL TRANSLATION FROM PERSIAN

IRI EMBLEM

Ministry of Science, Research & Technology

Urmia University

By Virtue of the Law for Establishment of the Provinces Universities Approved in June 1949,

MR. EHSAN KHADEMOLAMA

Son of Ali, holder of ID card No. 1777, issued at Oroumieh, born in 1984, has successfully completed the undergraduate course of studies in the field of **Electrical Engineering – Electronics** on Sept. 09, 2008 at the faculty of Technology & Engineering, therefore, this diploma of **Bachelor's degree** is conferred upon him.

May God bestow him success in taking advantage of his knowledge both in theory and practice, following the path of piety and seeking God's gratification and serving the people.

Signed and sealed by
Dean of Faculty
Chancellor of University
Overleaf:
Signature & Seal of University officials are confirmed.
Director General of Inland Student's Affairs
Ministry of Sciences, Research & Technology

True Translation Certified.
File Address: C2-(V); March 11, 2014; Hezareh/Ehsan Khademolama-BS & rec--15019

Department of Official Translators' Affairs of the Judiciary of the Islamic Republic of Iran

Only the authenticity of the seal and signature of the Official Translator is certified. This certification does not include confirmation of the accuracy of the translation and the authenticity of the translated document. Department of Official Translators' Affairs of the Judiciary of the Islamic Republic of Iran.

M.Eshghi Khass
Official English Translator to the Judiciary

15 MAR 2014

ISLAMIC REPUBLIC OF IRAN
MINISTRY OF FOREIGN AFFAIRS
REGISTRATION AND PERSONAL STATUS DEPARTMENT

The authenticity of the seal & signature marked (X) is certified without any consideration to the contents.

A.AGHASHAHI
LEGALIZATOIN OFFICER

15000

15 3 14

Robot Operating System
Summer School 2017

by MASCOR

FH AACHEN
UNIVERSITY OF APPLIED SCIENCES

CERTIFICATE

Ehsan Khadem Olama

successfully completed the

Robot Operating System (ROS) Summer School 2017

at the FH Aachen University of Applied Sciences, Germany

Topics covered:

Introduction to Mobile Robotics
ROS File System
ROS Communication
Hardware and Sensors
ROS Serial and Teleoperation
AR-Tag Detection
GAZEBO Simulation
Localization and Navigation
Introduction to SLAM Algorithms
Participation at Urban Challenge Competition
Visit to Paris, France

Duration: August 14th – August 25th, 2017

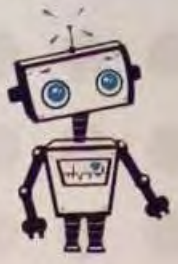
Course workload: 80 working hours

Prof. Stephan Kallweit Prof. Walter Reichert

Aachen, August 25th 2017

ROS.org GAZEBO ubuntu

Robot Operating System
Summer School 2017
by MASCOR



ROS.org

FH AACHEN
UNIVERSITY OF APPLIED SCIENCES

DAAD Deutscher Akademischer Austausch Dienst
German Academic Exchange Service

Stipendienurkunde

Der Deutsche Akademische Austauschdienst ist eine gemeinsame Einrichtung der deutschen Hochschulen. Er fördert mit öffentlichen Mitteln die internationale akademische Zusammenarbeit, insbesondere den Austausch von Studierenden und Wissenschaftlern.

Die FH Aachen vergibt aus Projektfördermitteln des Deutschen Akademischen Austauschdienstes (DAAD) ein Stipendium für die Teilnahme an der Robotic Operating System (ROS) Summer School 2017 an der FH Aachen in Deutschland. Dieses Stipendium wird an

Ehsan Khadem Olama

vergeben.

Wir beglückwünschen Sie zu diesem Stipendium und wünschen Ihnen einen erfolgreichen Aufenthalt in Deutschland. Wir würden uns freuen, wenn Sie sich auch nach Ihrem Auslandsaufenthalt für die internationale akademische Zusammenarbeit engagieren und mit der FH Aachen und dem DAAD in Verbindung bleiben würden.

Aachen, den 25. August 2017

FH Aachen
Akademisches Auslandsamt
Bayernallee 11 • 52066 Aachen

UNIVERSITÀ DEGLI STUDI DI BERGAMO

Dottorato in Ingegneria e Scienze Applicate

Dalmine, December 10th/2015

This to certify that

EHSAN KHADEMOLAMA

attended the Ph.D. course: VIBRO ACOUSTICS

during the period: November 17th/2015 – December 10th/2015

for a total amount of 18 hours.

The course instructor

Prof. E. Carrera

24044 Dalmine (BG), viale Marconi 5 tel. 035 2052 307/383 fax 035 2052 077
Università degli Studi di Bergamo www.unibg.it Cod. Fiscale 80004350163 P.IVA 01612800167

Dalmine, February 26, 2016

This is to certify that

EHSAN KHADEMOLAMA

attended the PhD course *REAL TIME COMPUTER VISION* held by Prof. Costantino Grana at the University of Bergamo in February 2016, for a total duration of *20 hours*.

The Instructor

Prof. Costantino Grana

Dottorato di Ricerca in Ingegneria e Scienza Applicate

Università degli Studi di Bergamo

Viale Marconi 5 – 24044 Dalmine (BG)

UNIVERSITÀ DEGLI STUDI DI BERGAMO

Dottorato di Ricerca in Ingegneria e Scienze Applicate (ISA)

Dipartimento di Ingegneria Gestionale, dell'Informazione e della Produzione

TO WHOM IT MAY CONCERN

This is to attest that **EHSAN KHADEMOLAMA** has attended the PhD course *"Model-based decision support with medical applications"* offered at the Dipartimento di Ingegneria Gestionale, dell'Informazione e della Produzione by Prof. Steen Andreassen from Aalborg University, Center for Model-based Medical Decision Support, from June 27th to July 5th (24 hours).

Sincerely,

S Andreassen

Prof. Steen Andreassen

Dalmine, July 5th, 2016

Dalmine, November 25th, 2016

This is to certify that

EHSAN KHADEMOLAMA

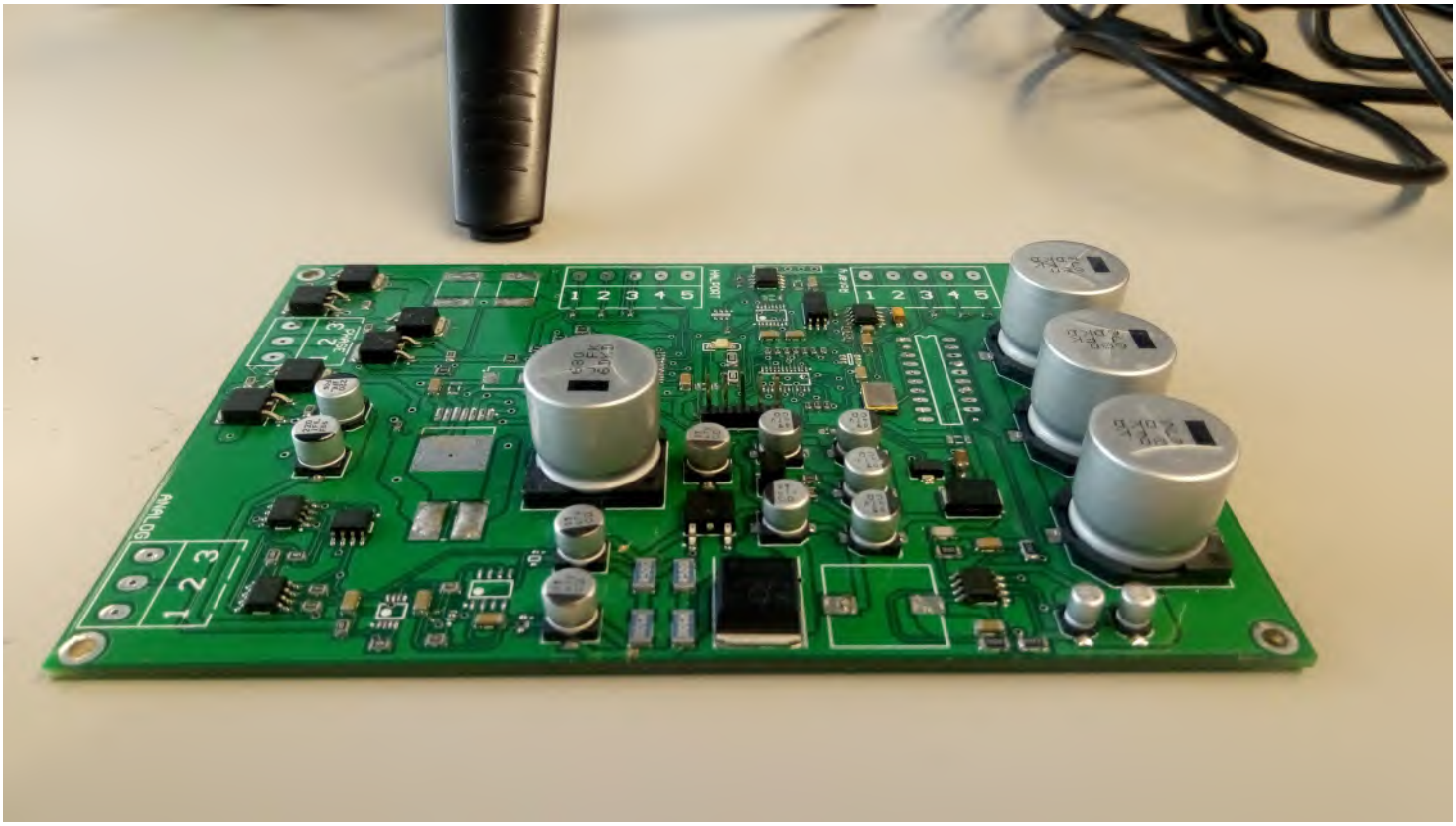
Attended the PhD course **"Robot Control: state of the art and research trends"**

Offered at the Dipartimento di Ingegneria Gestionale, dell'Informazione e della Produzione by Prof. Andrea Maria Zanchettin from Politecnico di Milano, from November 21st to November 25th (20 hours).

Sincerely,

The instructor

Prof. Andrea Maria Zanchettin



One of my Designs
BLDC motor contoller