

PERSONAL INFORMATION

Giacomo Silvagni, Eng. PhD



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Date of birth 18/07/1992 | **Nationality** Italian

AREA OF INTEREST *I am passionate in **R&D area** with focus on testing and modelling activities, **development of new solutions and performance optimization** of existing tasks. I have a very high interest in **Sustainable Energy Production and Hydrogen-based solution, Open Innovation, Industrial Innovation (4.0) processes and product.***

WORK EXPERIENCE

Nov 2022 – present **Postdoctoral Research Fellow - R&D Engineer**

University of Bologna
Via Seganti 103, Forlì, 47121 Forlì (Italy)

Development, Validation and Testing of control systems for sustainable hydrogen-based propulsion and power generation system

H2ICE project – Development of a hydrogen fueled hybrid powertrain for urban buses

Main task:

- Testing facilities design for hydrogen-fueled hybrid propulsion systems.
- Control systems, strategies design and validation for hydrogen-fueled hybrid propulsion systems: fuel-cell and H2ICE.
- Hydrogen-system energy power plant design and optimization.

May 2022 – present **Race Performance Analysis Consultant**

Alma Automotive s.r.l.
Via Terracini 2c, 40131, Bologna (Italy)

Main task: Software Development and Analyst for Racing Cars and Motorbikes Competitions - Freelance

Aug 2022 – Dec 2022 **Research Aide**

The University of Alabama - Department of Mechanical Engineering
401 7th Avenue H.M. Comer Building, Tuscaloosa, AL 35487-0276 (US)

US Department of Energy (DOE) project

Main tasks:

- Experimental investigation and modelling of pollutants production sources in dual-fuel Single Cylinder Research Engine
- Control strategies development and tools for improving the testing facilities.
- Development of Artificial Intelligence and Machine Learning control strategies to control cyclic combustion variations.

Oct. 2022 Research Fellow - R&D Engineer

University of Bologna
Via Seganti 103, Forlì, 47121 Forlì (Italy)

Development of testing methodologies and model-based control strategies for advanced RCCI combustion using innovative fuels

Main task: Experimental Activity aimed at testing innovative combustion methodologies. Control strategies development aimed at improving the combustion efficiency and stability.

Nov. 2021 – Oct. 2022 Postdoctoral Research Fellow - R&D Engineer

University of Bologna
Via Seganti 103, Forlì, 47121 Forlì (Italy)

Development and Experimental Validation of model-based control strategies for Innovative Low-Emission Combustions in Compression Ignited Engines

Main task: Development and experimental validation of model-based control strategies for innovative combustion methodologies

Nov. 2018 – Oct. 2021 Research Fellow - R&D Engineer

University of Bologna
Via Seganti 103, Forlì, 47121 Forlì (Italy)

Main tasks (related to the activity of the PhD program):

- Development and testing of control strategies for advanced combustions
- Experimental activity aimed at investigating the performance and pollutants emissions of modern powertrains
- Data analysis and Software development
- Hardware design
- Development of Rapid Control Prototyping systems.

Mar. 2021 – Apr. 2021 Guest Lecturer

ISAERS Forlì Academy AvioLab – via Fontanelle, 40 – 47121 Forlì, Italy
<https://www.isaers.com/>

Aeronautics Maintenance for Gas Turbine Engine professional course

Lectured in the following thematic:

- Engine Indication Systems.
- Powerplant Installation.

Aug 2020 Research Fellow

University of Bologna
Via Seganti 103, Forlì, 47121 Forlì (Italy)

Control strategies development for advanced powertrains

Main task: Development of control-oriented model for water brake dynamometer

Feb. 2020 – Mar 2020 Guest Lecturer

Manpower Talent Solution Company S.R.L.
<https://www.linkedin.com/company/manpower-talent-solution-company-s.r.l./about/>

Engine Calibration II level Master

Lectured in the following thematic:

- RDE and WLTP/WLTC regulations.
- Compression Ignition engines Control Strategies.
- Vehicles Thermal Management.
- High Efficiency combustion strategies: Low Temperature Combustions.

Feb. 2018 – Oct. 2018 **Software Development Engineer**
Alma Automotive s.r.l.
Via Terracini 2c, 40131, Bologna (Italy)

Main task: Software Development Engineer and Analyst for Racing Competitions.

2010 - 2013 **Lifeguard**
Logistic&Lifeguard s.r.l., 44121 Ferrara (Italy)
C.U.S. Salvataggio s.a.s., 44121 Ferrara (Italy)

Main task: lifeguard for Italian beaches

QUALIFICATIONS

Sept. 2020 **Graduation to Professional Engineer**
Italian legislation graduation
University of Bologna

Apr. 2020 **Certified LabVIEW Associate Developer (CLAD)**
National Instrument Corp.

EDUCATION

Nov. 2018 – Oct. 2021 **PhD in Automotive for an Intelligent Mobility, 34th cycle**
University of Bologna, Department of Industrial Engineering DIN

Title of the research project: and dissertation: "***Development and testing of control strategies for advanced combustions using in-cylinder pressure sensors***" (The document can be provided on demand).

Sept. 2021 – Dec. 2021 **Training course "Talenti per l'Open Innovation 2"**
ARTER – S.cons.p.a.
Training topics: Intrapreneurship, Open Innovation Management, Industrial Innovation, Industry 4.0

Sept.2015 – Feb. 2018 **Master's Degree in Mechanical Engineering - Advanced Mechanics**
University of Bologna

Grade: 110/110 cum Laude
Title of Degree Dissertation: "***Development and testing of advanced combustions methodologies for Diesel Engine***".
(The document can be provided on demand).

Sept. 2011 – Mar. 2015 **Bachelor's Degree in Mechanical Engineering**
University of Bologna

Grade: 100/110
Title of Degree Dissertation: "***Design of 6-axis Strain Gauge Load Cell for wind tunnel***".
(The document can be provided on demand).

Sept. 2006 – Jun. 2011 **High School Graduation**
Liceo A. Oriani
Via Cesare Battisti, 2 48121, Ravenna (Italia)

Grade: 82/100

PERSONAL SKILLS

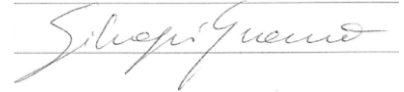
Language I have good knowledge of the English language, B2 Certificate - 2022.
(Certificate can be provided on demand).

Management skills I have an excellent attitude to teamwork, acquired after fifteen years of sporting activity with volleyball teams.

Job skills I have developed excellent mentoring skills, acquired through tutoring students during University internships and dissertations.

- Digital skills**
- Excellent knowledge of Matlab&Simulink tools
 - Excellent knowledge of Labview, Veristand and National Instruments Hardware
 - Good knowledge of the ETAS INCA software and tools
 - Excellent knowledge of Microsoft Office tools
 - Good knowledge of CAD softwares (Solidworks and Inventor)

Giacomo Silvagni

A handwritten signature in black ink, reading "Giacomo Silvagni", is written over a horizontal line. The signature is cursive and fluid.

Patents

Inventor for industrial patent: “METODO PER STIMARE LA PRESSIONE MASSIMA ALL’INTERNO DI UNA CAMERA DI COMBUSTIONE DI UN CILINDRO DI UN MOTORE A COMBUSTIONE INTERNA”, with Marelli Europe.

Scientific Dissemination

Title of Paper: “Development and validation of a virtual sensor for estimating the maximum in-cylinder pressure of SI and GCI engines”

Authors: Scocozza, G. F., Silvagni, G., Brusa, A., Cavina, N., Ponti, F., Ravaglioli, V., University of Bologna, De Cesare, M., Pancioli, M., Benedetti, C., Marelli Europe SpA - Powertrain BU

Place: 15th International Conference on Engines & Vehicles, Capri 2021-09-12-16, Italy

Type: SAE Technical Paper 2021-04-0026, 2021, <https://doi.org/10.4271/2021-04-0026>

Title of Paper: “Analysis of the Effects of Injection Pressure Variation in Gasoline Partially Premixed Combustion”

Authors: Stola, F., Marelli Europe SpA, Ravaglioli, V., Silvagni, G., University of Bologna, De Cesare, M., Marelli Europe SpA

Place: WCX SAE World Congress Experience 2021, Detroit 2021-04-13,14,15, USA

Type: SAE Technical Paper 2021-01-0517, 2021, <https://doi.org/10.4271/2021-01-0517>

Title of Paper: “Development of a Methodology for the Investigation of Residual Gases Effects on Gasoline Compression Ignition”

Authors: Ravaglioli, V., Ponti, F., University of Bologna, Silvagni, G., University of Bologna; De Cesare, M., Stola, F., Marelli Europe SpA

Place: ASME 2020 Internal Combustion Engine Fall Technical Conference, Denver 2020-11-1,2,3,4 USA

Type: ASME Proceedings Paper, <https://doi.org/10.1115/ICEF2020-2996>

Title of Paper: “Injection Pattern Investigation for Gasoline Partially Premixed Combustion Analysis”

Authors: Stola, F., Magneti Marelli SpA - Powertrain; Ravaglioli, V., Silvagni, G., Ponti, F., University of Bologna; Matteo De Cesare, Magneti Marelli SpA - Powertrain

Place: 14th International Conference on Engines & Vehicles, Capri 2019-09-25, Italy

Type: SAE Technical Paper 2019-24-0112, 2019, <https://doi.org/10.4271/2019-24-0112>

Title of Paper: “A Review of Remote-Control Strategies for Reactivity Controlled Compression Ignition Combustion”

Authors: Silvagni, G., Ravaglioli, V., Ponti, F., University of Bologna

Place: 74th National ATI Congress: “Energy Conversion: Research, Innovation and development for the Industry and the Environment, Modena 2019-09-11,12,13, Italy, <https://doi.org/10.1063/1.5138871>

Type: Conference Paper

Title of Paper: “Investigation of Gasoline Partially Premixed Combustion with External Exhaust Gas Recirculation”

Authors: Ravaglioli, V., Silvagni, G., Ponti, F., University of Bologna; Stola, F., De Cesare, M., Marelli Europe SpA - Powertrain BU

Place: SAE International Journal of Engines, <https://doi.org/10.4271/03-15-05-003>

Type: Journal Paper

Title of Paper: “Development of a Pressure Waves Predictive Model for High-Pressure Common Rail Injection Systems”

Authors: Silvagni, G., Ravaglioli, V., Raggini, L., Scocozza, G. F., Ponti, F., Corti, E., University of Bologna; Stola, F., De Cesare, M., Marelli Europe SpA - Powertrain BU, <https://doi.org/10.4271/03-15-05-0039>

Place: SAE International Journal of Engines

Type: Journal Paper

Title of Paper: “Performance Assessment of Gasoline PPC in a Light-Duty CI Engine”

Authors: Ravaglioli, V., Ponti, F., University of Bologna, Stola, F., Marelli Europe SpA, Silvagni, G., Moro D., University of Bologna, De Cesare, M., Marelli Europe SpA

Place: WCX SAE World Congress Experience 2022

Type: SAE Technical Paper 2022-01-0456, 2022, <https://doi.org/10.4271/2022-01-0456>

Title of Paper: “Development of a Control-Oriented Ignition Delay Model for GCI Combustion”

Authors: Silvagni, G., Ravaglioli, V., Falfari, S., Ponti, F., Mariani, V., University of Bologna

Place: Energies 2022

Type: Journal Paper, <https://doi.org/10.3390/en15176470>.

Title of Paper: “1D-3D coupled approach for the evaluation of the in-cylinder conditions for Gasoline Compression Ignition Combustion”

Authors: Viscione, D., Bianchi, G. M., Ravaglioli, V., Falfari, S., Cazzoli, G., Silvagni, G., Mariani, V., Corsi, M., DIN – Dipartimento di Ingegneria Industriale, Alma Mater Studiorum – Università di Bologna, Bologna, 40121 Italy

Place: ATI Conference 2022

Type: Conference Paper, <https://doi.org/10.1088/1742-6596/2385/1/012067>.

Title of Paper: “Accelerometer-based SOC estimation methodology for combustion control applied to Gasoline Compression Ignition”

Authors: Silvagni, G., Ravaglioli, V., Ponti, F., Corti, E., Moro, D., Brusa, A., Cavina, N., DIN – Dipartimento di Ingegneria Industriale, Alma Mater Studiorum – Università di Bologna, Bologna, 40121 Italy

Place: ATI Conference 2022

Type: Conference Paper, <https://doi.org/10.1088/1742-6596/2385/1/012064>.